

Easysoft ODBC- FreeAgent Driver User's Guide

This manual documents version 1.0.n of the Easysoft ODBC-FreeAgent Driver.

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Getting started

This section shows you how to install the Easysoft ODBC-FreeAgent Driver and configure the ODBC data source that stores the connection details for your FreeAgent organization. You're then ready to work with FreeAgent data in your application.

- [Installing the Easysoft ODBC-FreeAgent Driver](#)
- [Connecting to FreeAgent](#)
- [Logging](#)
- [Working with FreeAgent data](#)

Installing the Easysoft ODBC-FreeAgent Driver

Install the Easysoft ODBC-FreeAgent Driver on the computer where the application you want to connect to FreeAgent is running.

Installing on Windows

The Windows installation can be done by anyone with local administrator privileges.

1. [Download the Easysoft ODBC-FreeAgent Driver installer.](#)
2. Follow the onscreen instructions to progress through the installation wizard.

Updating files that are in use

To avoid rebooting your computer, the Easysoft ODBC-FreeAgent Driver installer prompts you when files that it needs to update are in use by another application or service. This frees the locked files and allows the installation to complete without a system restart. The installer uses the **Restart Manager** to locate the applications that are using files that need updating. These applications are displayed in the **Files in Use** dialog box. To avoid a system restart, choose **Automatically close applications and attempt to restart them after setup is complete**. The Easysoft ODBC-FreeAgent Driver installer then uses **Restart Manager** to try to stop and restart each application or service in the list. If possible, **Restart Manager** restores applications to the same state that they were in before it shut them down.

Licensing

By default, the installer starts the Easysoft License Manager, because you can't use the Easysoft ODBC-FreeAgent Driver until you have a license. If you choose not to run Easysoft License Manager as part of the installation process, run License Manager from the **Easysoft** group in the Windows **Start** menu when you're ready to license the Easysoft ODBC-FreeAgent Driver. These types of license are available:

- A free time-limited trial license which gives you free and unrestricted use of the product for a limited period (usually 14 days).
- A full license if you have purchased the product. On purchasing the product you are given an authorization code, which you use to obtain a license.

To license the Easysoft ODBC-FreeAgent Driver:

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1. In License Manager, enter your contact details.

You **must** complete the **Name**, **E-Mail Address**, and **Company** fields.

The e-mail address **must** be the same as the one used to register at the Easysoft web site. Otherwise, you won't be able to obtain a trial license.

2. Choose **Request License**.

You're prompted to choose a license type.

3. Do one of the following:

- For a trial license, choose **Time Limited Trial**, and then choose **Next**.

-Or-

- For a purchased license, choose **Non-expiring License**, and then choose **Next**.

4. Choose your product from the drop-down list when prompted, and then choose **Next**.

5. For a purchased license, enter your authorization code when prompted, and then choose **Next**.

6. Choose how to get your license when prompted.

7. Do one of the following:

- Choose **On-line Request** if your machine is connected to the internet and can make outgoing connections to port 8884.

With this method, License Manager automatically requests and then applies your license.

-Or-

- Choose **View Request**. Then open a web browser and go to https://www.easysoft.com/support/licensing/trial_license.html or https://www.easysoft.com/support/licensing/full_license.html, as appropriate. In the web page, enter your machine number (labelled **Number** in the license request). For purchased licenses, you also need to enter your authorization code (labelled **Ref** in the license request).

We'll automatically email your license to the email address you supplied in License Manager.

-Or-

- Choose **Email Request** to email your license request to our licensing team. Once we've processed your request, we'll email your license to the email address you supplied in License Manager.

8. Close the License Manager windows and then choose **Finish**.

If you chose either **View Request** or **Email Request**, apply your license by double-clicking the email attachment when you get the license email from us. Alternatively, start License Manager from the **Easysoft** folder in the Windows **Start** menu. Then choose **Enter License** and paste the license in the space provided.

Once you've licensed the Easysoft ODBC-FreeAgent Driver, the installation is complete.

Repairing the installation

The installer can repair a broken Easysoft ODBC-FreeAgent Driver installation. For example, you can use the installer to restore missing Easysoft ODBC-FreeAgent Driver files or registry keys. To do this:

1. In the Windows **taskbar**, enter Add or remove programs in the Windows **search** box.
2. Select Easysoft ODBC-FreeAgent Driver in the list, and then choose **Repair**.

Uninstalling on Windows

This section explains how to remove the Easysoft ODBC-FreeAgent Driver from your system.

Removing Easysoft ODBC-FreeAgent Driver data sources

Easysoft ODBC-FreeAgent Driver data sources are not removed when you uninstall the Easysoft ODBC-FreeAgent Driver. You don't therefore need to recreate your Easysoft ODBC-FreeAgent Driver data sources if you reinstall or upgrade. If you don't want to keep your Easysoft ODBC-FreeAgent Driver data sources, use Microsoft **ODBC Data Source Administrator** to remove them, **before** uninstalling the Easysoft ODBC-FreeAgent Driver:

1. In the Windows **taskbar**, enter Run in the Windows **search** box.
2. In the Windows **Run** dialog box, enter:

```
odbcad32.exe
```

3. Locate your data source in either the **User** or **System** tab.
4. Select the data source from the list, and then choose **Remove**.

If the **Remove** button isn't available, close **ODBC Data Source Administrator**, and then, in the Windows **Run** dialog box, enter:

```
%windir%\syswow64\odbcad32.exe
```

Repeat the previous two steps.

Removing the Easysoft ODBC-FreeAgent Driver

1. In the Windows **taskbar**, enter Add or remove programs in the Windows **search** box.
2. Select Easysoft ODBC-FreeAgent Driver in the list, and then choose **Uninstall**.

Note Easysoft product licenses are stored in the Windows registry. When you uninstall, your licenses are not removed, so you do not need to relicense the product if you reinstall or upgrade.

Connecting to FreeAgent

Applications that support ODBC interface with an ODBC Driver Manager, which is included with the operating system, and also the Easysoft ODBC driver distribution on some platforms. One of the jobs that the ODBC Driver Manager does is to manage ODBC data sources. A data source specifies which ODBC driver to load, which data store to connect to, and how to connect to it.

Before setting up a data source, you must have [successfully installed the Easysoft ODBC-FreeAgent Driver](#).

Connecting from Windows

Creating an ODBC data source

1. In the Windows **taskbar search** box, enter "Run".
2. Do one of the following:
 - If your application is 64-bit, in the **Run** dialog box, enter:

```
odbcad32.exe
```

-Or-

- If your application is 32-bit, in the **Run** dialog box, enter:

```
%windir%\syswow64\odbcad32.exe
```

Note

If you're not sure whether your application is 32-bit or 64-bit, start your application, then in Windows **Task Manager** check whether your application's process name contains (32-bit). For example, the process name for the 32-bit version of Excel is Microsoft Excel (32-bit); the process name for the 64-bit version of Excel is Microsoft Excel. On older versions of Windows, 32-bit applications contain *32 in the process name rather than (32-bit).

For applications such as Oracle or SQL Server that run as a service, check the *Background processes* list rather than the **Apps** list in **Task Manager**. If you're running a programming language from within a Windows command-line shell (for example, Command or PowerShell), in your shell, run the .exe file for the programming language. For example, run perl, php, python, or node. In **Task Manager**, expand the process list for **Windows Command Processor** or **Windows PowerShell**, as appropriate, and check whether the process for your programming language contains (32-bit).

3. Do one of the following:
 - To create a data source that only the user you're currently logged in as can access, choose the **User** tab.
If your application is a Windows service (for example, SQL Server or Oracle) creating a user data source won't work, unless the service is running as the same user you're logged in as.
 - To create a data source that all users on this computer can access, choose the **System** tab.
4. Choose **Add**.
5. In the list of ODBC drivers, select Easysoft ODBC-FreeAgent Driver, and then choose **Finish**.
6. Complete the Easysoft ODBC-FreeAgent Driver configuration dialog box.
To find out how to do this, refer to [the Connection attributes](#) section.
7. To test the connection to FreeAgent, choose **Test**.
Note that this doesn't test that the Easysoft ODBC-FreeAgent Driver is licensed. If you haven't yet [licensed](#) the Easysoft ODBC-FreeAgent Driver, this ODBC data source won't work with your

application, even if the **Test** button succeeds.

Authentication

FreeAgent uses the OAuth security standard to authorise users.

To use the Easysoft ODBC-FreeAgent Driver, you need to obtain a refresh token, which enables the driver to get the access tokens it needs to make FreeAgent API requests.

By default, the Easysoft ODBC-FreeAgent Driver uses an app that we have registered with FreeAgent to supply an OAuth client ID and secret. If you want to use your own FreeAgent OAuth app, specify its client ID and secret in your Easysoft ODBC-FreeAgent Driver data source.

The reasons for using your own OAuth app are:

- You want to replace our text with your own text in the web page that prompts users to grant access to their FreeAgent data. This page displays when users initially authenticate and obtain a FreeAgent refresh token. This is done as when configuring an Easysoft ODBC-FreeAgent Driver data source.

To create an OAuth app:

1. In the FreeAgent [Developer Dashboard](#), choose **My Apps**.
2. Choose **Create New App** page, enter a name, description, and home page URL.
3. In the **Create a new app** page, enter a name.

This name is displayed to users in the web page that prompts them to allow access to their FreeAgent data.

4. In the **OAuth Redirect URIs** box, enter <http://localhost:port>. For example, <http://localhost:8090>.
5. Choose **Create App**.

The page that displays next contains the client id (**OAuth identifier**) and client secret (**OAuth secret**) that you need to supply in the Easysoft ODBC-FreeAgent Driver DSN configuration dialog box.

To obtain a refresh token on Windows, choose the **Authenticate and obtain token** button in the configuration dialog box when setting up your data source. This launches your default browser. Sign into your FreeAgent account and grant the permissions the Easysoft ODBC-FreeAgent Driver needs when prompted. Close the web browser window or tab when prompted.

You now have a refresh token. The Easysoft ODBC-FreeAgent Driver uses this to request the access tokens it needs to access your FreeAgent data.

Connection attributes

Name	Value
DSN	The name of the data source. You'll need to specify this in your application. For example, your application may prompt you to choose this from a list of DSNs.
Description	Some applications display this to help users identify a particular data source.
Refresh Token	The FreeAgent refresh token that enables the Easysoft ODBC-FreeAgent Driver to work with your FreeAgent data.
Local Filtering	<p>When turned on, the Easysoft ODBC-FreeAgent Driver increases its preferred batch size for queries, which alters the number of FreeAgent API calls it makes. FreeAgent may create batches that are larger or smaller than the requested size to maximise performance.</p> <p>There is no one correct setting for Local Filtering, it depends on how your application executes its queries. You may find that this attribute increases query performance for one application and decreases performance for another.</p> <p>By default, Local Filtering is turned off.</p>
Proxy	<p>If you use a proxy server connect to FreeAgent, use this attribute to specify this server's details. Use this format:</p> <p><code>http://address:port</code></p> <p>where <i>address</i> is the host name or IP address of the proxy server and <i>port</i> is the proxy server port. For example:</p> <p>http://squid.example.com:8080</p>
Proxy User	<p>If your proxy server has authentication turned on, use this attribute to supply a user name that can connect to the proxy server.</p> <p>The Easysoft ODBC-FreeAgent Driver supports the Basic and Digest proxy authentication schemes.</p>
Proxy Password	The password for the proxy user.

Name	Value
Driver Logging	Whether to turn on Easysoft ODBC-FreeAgent Driver logging. Normally, you'll only do this if so directed by the Easysoft support team.
Log File	<p>The file name and path of the file you want the driver to write log information to. For example:</p> <p>C:\Windows\Temp\Easysoft.log</p> <p>If the file doesn't exist, the Easysoft ODBC-FreeAgent Driver creates it.</p>
Flush On Update	Whether the Easysoft ODBC-FreeAgent Driver flushes its cache when it is used to update or delete FreeAgent data. When this setting is turned on, the effect of your changes will apply in your current session. For example, you turn on this setting and delete a record. If you then do a select in the same session, the record will no longer be present in the result set, If you do the same with Flush On Update turned off, the result set contains the deleted record until the Easysoft ODBC-FreeAgent Driver cache expires or you reconnect your application (for example, you restart your SQL Server instance).
Sandbox	Turn on this option if you're connecting to the FreeAgent sandbox.
Max Num	The maximum number of records to return for each FreeAgent API request the Easysoft ODBC-FreeAgent Driver makes.

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Name	Value
Cache Timeout	<p>The time in seconds that Easysoft ODBC-FreeAgent Driver stores records in its cache. If you set the timeout to 0, the Easysoft ODBC-FreeAgent Driver always caches records. The default value for Cache Timeout is 0.</p> <p>The Easysoft ODBC-FreeAgent Driver flushes the cache when you close the connection to FreeAgent. (For example, you quit your application or restart your application's service.)</p> <p>To reduce FreeAgent API usage and reduce the amount of data retrieved over the network, the Easysoft ODBC-FreeAgent Driver caches FreeAgent records. By default, a record remains in the cache until the timeout elapses.</p> <p>Note that any changes to the record that happen at the FreeAgent end aren't reflected in the cached copy until the cache is refreshed (that is, the timeout expires and the record is fetched again.) If a cached record is changed by the Easysoft ODBC-FreeAgent Driver, the cache is refreshed to reflect this change.</p>
Client Id	If you have created your own FreeAgent OAuth client app, enter the app's client id here. Otherwise, leave this field blank.
Client Secret	The client secret for your FreeAgent OAuth client app.

DSN-less connections

Some applications allow you to make an ODBC connection without configuring a data source. To do this, you supply a connection string that contains the ODBC driver name and other driver-specific attribute-value pairs. Connection string attributes have different names to the ones shown in the Easysoft ODBC-FreeAgent Driver data source configuration dialog box. Use these attribute names in a connection string:

- Cache_Timeout
- Description
- Filter_Local
- Flush_On_Update
- Logfile
- Logging
- Max_Num
- Proxy_Pass
- Proxy_User
- Proxy
- Refresh-Token
- Sandbox

Here's an example connection string for the Windows version of the Easysoft ODBC-FreeAgent Driver:

```
Driver={Easysoft FreeAgent ODBC  
Driver};Refresh-Token=2000.d2927da21cff612e6818f832a47c256e.379428ee4a4abc3040799df  
f191f8620;LogFile=C:\\Temp\\FA.log;
```

Logging

If you report an issue to us, we may ask you to turn on ODBC Driver Manager or Easysoft ODBC-FreeAgent Driver logging, to help us diagnose the cause of the issue.

To turn on logging, refer to the following sections.

Note If your application is a service (for example, Oracle or SQL Server), you may need to restart the service before enabling logging takes effect. To do this on Linux or UNIX, use `service`, `systemctl`, or a vendor-supplied script. To do this on Windows, use the Windows **Services** app.

ODBC Driver Manager logging on Windows

1. In the Windows **taskbar search** box, enter "Run".
2. Do one of the following:
 - If your application is 64-bit, in the **Run** dialog box, enter:

```
odbcad32.exe
```

-Or-

- If your application is 32-bit, in the **Run** dialog box, enter:

```
%windir%\syswow64\odbcad32.exe
```

Note If you're not sure whether your application is 32-bit or 64-bit, start your application, then in Windows **Task Manager** check whether your application's process name contains (32-bit). For example, the process name for the 32-bit version of Excel is Microsoft Excel (32-bit); the process name for the 64-bit version of Excel is Microsoft Excel. On older versions of Windows, 32-bit applications contain *32 in the process name rather than (32-bit). For applications such as Oracle or SQL Server that run as a service, check the *Background processes* list rather than the **Apps** list in **Task Manager**. If you're running a programming language from within a Windows command-line shell (for example, Command or PowerShell), in your shell, run the .exe file for the programming language. For example, run `perl`, `php`, `python`, or `node`. In **Task Manager**, expand the process list for **Windows Command Processor** or **Windows PowerShell**, as appropriate, and check whether the process for your programming language contains (32-bit).

3. Choose the **Tracing** tab.
4. Select **Machine-Wide tracing for all identities**.
5. Enter a log file name and path in the space provided. For example:

```
C:\Windows\Temp\SQL.log
```

6. Choose **Start Tracing Now**.

Note With SQL Server, you may get two Driver Manager log files, we need both. The first log file is in the folder that you specify in **ODBC Data Source Administrator**. The second file's location is defined by SQL Server. Two possible locations are the top-level folder (for example, C:\SQL.log) or the SQL Server temporary folder (for example, C:\Users\MSSQL\$SQLEXPRESS\AppData\Local\Temp\SQL.log). If the Driver Manager log file isn't in these folders, search for it on the drive where SQL Server is installed.

Easysoft ODBC-FreeAgent Driver logging on Windows

1. In the Windows **taskbar search** box, enter "Run".
2. Do one of the following:
 - If your application is 64-bit, in the **Run** dialog box, enter:

```
odbcad32.exe
```

-Or-

- If your application is 32-bit, in the **Run** dialog box, enter:

```
%windir%\syswow64\odbcad32.exe
```

Note If you're not sure whether your application is 32-bit or 64-bit, start your application, then in Windows **Task Manager** check whether your application's process name contains (32-bit). For example, the process name for the 32-bit version of Excel is Microsoft Excel (32-bit); the process name for the 64-bit version of Excel is Microsoft Excel. On older versions of Windows, 32-bit applications contain *32 in the process name rather than (32-bit).

For applications such as Oracle or SQL Server that run as a service, check the *Background processes* list rather than the **Apps** list in **Task Manager**. If you're running a programming language from within a Windows command-line shell (for example, Command or PowerShell), in your shell, run the .exe file for the programming language. For example, run perl, php, python, or node. In **Task Manager**, expand the process list for **Windows Command Processor** or **Windows PowerShell**, as appropriate, and check whether the process for your programming language contains (32-bit).

3. Do one of the following:
 - If you configured a system data source, choose the **System DSN** tab.
 - Or-
 - If you configured a system data source, choose the **System DSN** tab.
4. Choose your Easysoft ODBC-FreeAgent Driver data source from the list, and then choose **Configure**.
5. In the Easysoft ODBC-FreeAgent Driver data source configuration dialog box, turn on **Driver Logging**.
6. Enter a log file name and path in the space provided. For example:

```
C:\Windows\Temp\Easysoft.log
```

Finding out what product version you have on Windows

If you have an issue with the Easysoft ODBC-FreeAgent Driver, we may ask you to tell us what your product version is. To find this out:

1. In the Windows **taskbar**, enter “Add or remove programs” in the Windows **search** box.
2. Select Easysoft ODBC-FreeAgent Driver in the list.

The product version displays below.

Working with FreeAgent data

The Easysoft ODBC-FreeAgent Driver lets you use SQL to work with FreeAgent data. Your application might build the SQL for you or you might have to specify the SQL statements yourself.

SELECT statements

Use either a [FreeAgent table](#) or the [API view](#) in your queries. For example, both these statements fetch the comments for a particular bill:

```
SELECT
  *
FROM
  Bank_Accounts
WHERE
  Id = '1580844'
```

=Or-

```
SELECT
  *
FROM
  API
WHERE
  URL = '/v2/bank_accounts/1580844'
  AND Method = 'GET'
```

Example select queries

```
SELECT
  *
FROM
  Bills
WHERE
  Status = 'Open'
```

```
SELECT
  *
FROM
  Credit_Notes
WHERE
  Status <> 'Refunded'
```

```
SELECT
  *
FROM
  Estimates
WHERE
  Estimate_Type = 'Quote'
```

```
SELECT
```

20 INSERT statements

```
*  
FROM  
    Sales_Tax_Periods  
WHERE  
    Is_Locked = FALSE
```

INSERT statements

When inserting a record that has one or more line items, specify the line items with a [JSON array](#). For example, this line item is for a recurring expense

```
[  
  {  
    "item_type": "Days",  
    "quantity": "5",  
    "price": "1249.99",  
    "description": "CON001 : Consultancy"  
  },  
  {  
    "item_type": "Stock",  
    "quantity": "7",  
    "price": "199.99",  
    "description": "WD 1TB 3.5 : Western Digital 1TB 3.5 hard disk drive",  
    "stock_item": "https://api.freeagent.com/v2/stock_items/236156"  
  }  
]
```

In the INSERT statement, specify the JSON as a single line. For example:

```
INSERT INTO  
    Invoices (  
        Contact,  
        Dated_On,  
        Due_On,  
        Currency,  
        Exchange_Rate,  
        Payment_Terms_In_Days,  
        Net_Value,  
        Invoice_Items  
    )  
VALUES  
    (  
        'https://api.freeagent.com/v2/contacts/18494140',  
        '2024-11-27',  
        '2024-11-27',  
        'USD',  
        '0.7263561',  
        '30',  
        '7649.88',  
  
        '[{"item_type": "Days", "quantity": "5", "price": "1249.99", "description": "CON001 :
```

```
Consultancy"}, {"item_type": "Stock", "quantity": "7", "price": "199.99", "description": "W  
D 1TB 3.5 : Western Digital 1TB 3.5 hard disk  
drive", "stock_item": "https://api.freeagent.com/v2/stock_items/236156"}]'  
)
```

Example inserts

- [Bill](#)
- [Contact](#)
- [Credit note](#)
- [Estimate](#)
- [Expense](#)
- [Journal](#)

Bill

Create a new bill:

```
INSERT INTO
    Bills (Contact, Reference, Dated_On, Due_On, Bill_Items)
VALUES
    (
        'https://api.freeagent.com/v2/contacts/18541472',
        'YEB002',
        '2024-11-28',
        '2024-12-28',

        '[{"category": "https://api.freeagent.com/v2/categories/291", "description": "YEB Line
        2 standing charge", "sales_tax_rate": "20", "total_value_ex_tax": 49.99}]'
```

The JSON for the line items is:

```
[
  {
    "category": "https://api.freeagent.com/v2/categories/291",
    "description": "YEB Line 2 standing charge",
    "sales_tax_rate": "20",
    "total_value_ex_tax": 49.99
  }
]
```

Contact

Create a new contact:

```
INSERT INTO
    Contacts (
        First_Name,
        Last_Name,
        Email,
        Billing_Email,
        Phone_Number,
        Mobile,
        Address1,
        Address2,
        Address3,
        Town,
```

```
        Region,  
        Postcode,  
        Country,  
        Uses_Contact_Invoice_Sequence,  
        Contact_Name_On_Invoices,  
        Charge_Sales_Tax,  
        Sales_Tax_Registration_Number,  
        [Status],  
        Default_Payment_Terms_In_Days,  
        Locale  
    )  
VALUES  
    (  
        'Thomas, ' Axen ', ' ta@example.com ', ' bills@example.com ', ' (123) 555  
-0101 ', ' (321) 555 -0101 ', ' 123 Third Street ', '', '', ' Los Angeles ', ' CA  
, ' 99999 ', USA',  
        'false',  
        'true',  
        'Always',  
        'US123456789',  
        'Active',  
        '30',  
        'en'  
    )
```

Credit note

Create a new credit note:

```
INSERT INTO
  Credit_Notes (Contact, Dated_On, Currency, Credit_Note_Items)
VALUES
  (
    'https://api.freeagent.com/v2/contacts/18494140',
    '2024-11-27',
    'GBP',
    '[{"item_type":"Days","quantity":"1","price":"-999.99","description":"Consultancy Days"}]'
  )
```

The JSON for the line items is:

```
[
  {
    "item_type": "Days",
    "quantity": "1",
    "price": "-999.99",
    "description": "Consultancy Days"
  }
]
```


Estimate

Create a new estimate:

```
INSERT INTO
  Estimates (
    Contact,
    Dated_On,
    [Status],
    Estimate_Type,
    Currency,
    Reference,
    Estimate_Items
  )
VALUES
  (
    'https://api.freeagent.com/v2/contacts/18494140',
    '2024-11-27',
    'Draft',
    'Quote',
    'USD',
    'Customer Ref 2',

    '[{"item_type": "Days", "quantity": "2", "price": "999.99", "description": "Consultancy Days"}]'
  )
```

The JSON for the line items is:

```
[
  {
    "item_type": "Days",
    "quantity": "2",
    "price": "999.99",
    "description": "Consultancy Days"
  }
]
```

Expense

Submit a new expense:

```
INSERT INTO
  Expenses (
    User,
    Category,
    Dated_On,
    Currency,
    Gross_Value,
    Sales_Tax_Rate,
    Sales_Tax_Status,
    [Description]
  )
VALUES
  (
    'https://api.freeagent.com/v2/users/1861284',
    'https://api.freeagent.com/v2/categories/287',
    '2024-12-03',
    'GBP',
    '-200',
    '20',
    'TAXABLE',
    'Overnight stay'
  )
```

Journal

Create a new journal:

```
INSERT INTO
  Journal_Sets (Dated_On, [Description], Journal_Entries)
VALUES
  (
    '2024-12-03',
    'Sample Journal Created',

    '[{"category": "https://api.freeagent.com/v2/categories/363", "description": "Sample
journal line
1", "debit_value": "10"}, {"category": "https://api.freeagent.com/v2/categories/001", "d
escription": "Sample journal line 2", "debit_value": "-10"}]'
```

The JSON data for the line items is:

```
[
  {
    "category": "https://api.freeagent.com/v2/categories/363",
    "description": "Sample journal line 1",
    "debit_value": "10"
  },
  {
    "category": "https://api.freeagent.com/v2/categories/001",
    "description": "Sample journal line 2",
    "debit_value": "-10"
  }
]
```

UPDATE statements

To update records with JSON columns (for example, line items columns), you first need to retrieve the existing JSON. Then change the existing values, or add new JSON to the existing JSON. For example:

```
SELECT Estimate_Items FROM Estimates WHERE Id = '1580844'
```

returns the following (formatted for readability):

```
{
  "item_type": "Days",
  "quantity": "4",
  "price": "999.99",
  "description": "Consultancy Days"
},
```

Add a new line item to the JSON:

```
{
  "item_type": "Days",
  "quantity": "4",
  "price": "999.99",
  "description": "Consultancy Days"
},
{
  "item_type": "Hours",
  "quantity": "32",
  "price": "172.22",
  "description": "Developer Hours"
}
```

and include the revised JSON in an UPDATE statement. Enclose the JSON in square brackets. For example:

```
UPDATE Estimates
SET
  Estimate_Items =
  '[{"item_type":"Days","quantity":"4","price":"999.99","description":"Consultancy Days"}, {"item_type":"Hours","quantity":"32","price":"172.22","description":"Developer Hours"}]'
WHERE
  Id = '5771094'
```

You can also use the API view to make updates to your FreeAgent data. Use PUT as the method in your SELECT statement. For example:

```
SELECT
  *
FROM
  API
WHERE
  Url = '/v2/invoices/default_additional_text'
  AND Method = 'PUT'
  AND RequestBody = '{"default_additional_text":"Please pay promptly."}'
```

Example updates

- [Bank transaction explanation](#)
- [Bills](#)
- [Contact](#)
- [Credit note](#)
- [Expense](#)
- [Price list](#)
- [Users](#)

Bank transaction explanation

Change the description of a transaction:

```
UPDATE Bank_Transaction_Explanations
SET
    Description = 'New FEE description text.'
WHERE
    Id = '532804092'
```

Bills

Update a bill's comment:

```
UPDATE Bills
SET
    Comments = 'Standing charge for second line.'
WHERE
    Id = '31467166'
```

Contact

Update a contact's contact details:

```
UPDATE Contacts
SET
    Mobile = '(321)555-0101'
WHERE
    Email = 'ta@example.com'
DELETE FROM Contacts
WHERE
    Id = '18482080'
```

Credit note

Add credit note line items:

```
UPDATE Credit_Notes
SET
    Credit_Note_Items = '[{"item_type":"Days","quantity":"4","price":"-999.99","description":"Consultancy Days"}, {"item_type":"Hours","quantity":"32","price":"-172.22","description":"Developer Hours"}]'
WHERE
    Id = '73934615'
```

The JSON data for the line items is:

```
[
  {
    "item_type": "Days",
    "quantity": "4",
```

30 DELETE statements

```
"price": "-999.99",
"description": "Consultancy Days"
},
{
  "item_type": "Hours",
  "quantity": "32",
  "price": "-172.22",
  "description": "Developer Hours"
}
]
```

Expense

Change the description of an expense:

```
UPDATE Expenses
SET
  Description = 'Hotel Stay'
WHERE
  Id = '53063365'
```

Price list

Update a price:

```
UPDATE Price_List_Items
SET
  Price = 10.99
WHERE
  Code = 'CS001'
```

Users

Update a name:

```
UPDATE Users
SET
  Last_Name = 'Jones'
WHERE
  Id = '1853395'
```

DELETE statements

The Easysoft ODBC-FreeAgent Driver provides two ways to delete records. Either specify a [table](#) in your DELETE statement:

```
DELETE FROM Bank_Accounts
WHERE
  AccountId = '1558819'
```

or use the API view instead:

```
SELECT
  *
FROM
  API
WHERE
  Url = 'bank_accounts/1558819'
  AND Method = 'DELETE'
```

API view

The API view lets you use SQL to make FreeAgent API calls. The view has these columns:

Column	Description	
URL	A FreeAgent API endpoint.	
Method	GET, PUT, POST, or DELETE.	
Code	HTTP status code.	
	Code	Description
	200	OK
	201	Created
	400	Bad request
	401	Unauthorized (Invalid AuthToken)
	404	Error
	405	Method Not Allowed (Method you have called is not supported for the invoked API)
	429	Rate Limit Exceeded (API usage limit exceeded)
500	Internal Error	
RequestType	If NULL, JSON is expected in RequestBody.	
RequestBody	Data sent to the FreeAgent API.	
ResponseType	The type of data in the response. For example, application/json;charset=UTF-8.	
ResponseBody	Data returned from the FreeAgent API.	

Use SELECT statements with the API view. To select data set Method to GET. To insert data set Method to POST. To insert data set Method to PUT. To delete data set Method to DELETE.

Use a WHERE clause to specify the URL, Method, and, if updating or inserting data, RequestBody. For example:


```

-- Fetch the additional text for an invoice
SELECT
    *
FROM
    API
WHERE
    Url = '/v2/invoices/default_additional_text'
    AND Method = 'GET'

-- Remove a bank account
SELECT
    *
FROM
    API
WHERE
    Url = 'bank_accounts/1558819'
    AND Method = 'DELETE'

-- Add a bank transaction
SELECT
    *
FROM
    API
WHERE
    Url = '/v2/bank_transactions/statement?bank_account=1555435'
    AND Method = 'POST'
    AND RequestBody = '[{"statement":[{"dated_on":"2024-11-
26","description":"CREDIT line test","amount":"298","fitid":"031AE5B1-FC68-4889-
935E-327897E31B67","transaction_type":"CREDIT"}, {"dated_on":"2024-11-
26","description":"DEBIT line test","amount":"130","fitid":"93845D69-7CB3-491E-
B16B-2D186F0A0241","transaction_type":"DEBIT"}]}'

-- Update an invoice status
SELECT
    *
FROM
    API
WHERE
    Url = '/v2/invoices/73959649/transitions/mark_as_sent'
    AND Method = 'PUT'

```

For more information, consult the FreeAgent API documentation.

JSON columns

Columns that can contain multiple values are in JSON format. For example, a bill's line items (Bill table's `Line_Items` column):

To update records with JSON columns (for example, line items columns), you first need to retrieve the existing JSON. Then change the existing values, or add new JSON to the existing JSON. For example:

```
SELECT Estimate_Items FROM Estimates WHERE Id = '1580844'
```

returns the following (formatted for readability):

```
{
  "item_type": "Days",
  "quantity": "4",
  "price": "999.99",
  "description": "Consultancy Days"
},
```

Add a new line item to the JSON:

```
{
  "item_type": "Days",
  "quantity": "4",
  "price": "-999.99",
  "description": "Consultancy Days"
},
{
  "item_type": "Hours",
  "quantity": "32",
  "price": "-172.22",
  "description": "Developer Hours"
}
```

and include the revised JSON in an UPDATE statement. Enclose the JSON in square brackets. For example:

```
UPDATE Credit_Note_Items
SET
  Estimate_Items = '[{"item_type":"Days","quantity":"4","price":"-999.99","description":"Consultancy Days"}, {"item_type":"Hours","quantity":"32","price":"-172.22","description":"Developer Hours"}]'
WHERE
  Id = '1580844'
```

In the FreeAgent API, JSON has this format:

- Data is in name/value pairs.
- Data is separated by commas.
- Curly braces ({}) hold objects.
- Square brackets ([]) hold arrays.

All the data names in the FreeAgent API are in lower case. JSON is case sensitive.

In the API we connect to, JSON values must be one of the following data types:

- Array
- Boolean
- Date
- Datetime
- Decimal

- Object
- String
- Timestamp
- URI

In some of the JSON returned, you may get something like:

```
"tags" : [ ]
```

This denotes an empty array.

String data needs to be escaped:

- Backslash becomes \\
- Backspace becomes \b
- Form feed becomes \f
- Newline becomes \n
- Carriage return becomes \r
- Tab becomes \t
- Double quote becomes \"

Client applications

How to work with FreeAgent data in some example applications and programming languages:

- LibreOffice
- Microsoft Access
- Microsoft Excel
- Microsoft Power BI
- SQL Server
- Oracle
- Go
- Node.js
- Perl
- PHP
- Python
- R

LibreOffice

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as LibreOffice.
2. [Configure an ODBC data source](#).
3. Choose **File > New > Database**.
4. Choose **Connect to an existing database**.
5. Choose **ODBC** in the list, and then choose **Next**.
6. Choose **Browse**, double-click your data source, and then choose **Next**.
7. If your database requires a database user name, enter it in the **User name** box. If this user needs to supply a password choose the **Password required** check box.
8. Choose **Finish**.
9. Save the database when prompted.

The database opens in a new Base window. From here you can access your data.

10. In the left pane of the database window, choose the **Tables** icon to display a hierarchy of tables. Enter the database password if prompted, and then choose **OK**.
11. To retrieve the data in a table, in the **Tables** pane, double-click a table.
12. Choose the **Queries** icon to create a query.

Use any of the methods listed in the **Tasks** pane to create a query.

Microsoft Access

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Access.
2. [Configure an ODBC data source](#).
3. Choose one of the following ways to work with your FreeAgent data in Access.

Linking a table

1. Open your Microsoft Access database.
2. Choose **External Data**.
3. In the **New Data Source** list, choose **From Other Sources > ODBC Database**.
4. In the **Get External Data** screen, choose **Link to the data source by creating a linked table**, and choose **OK**.
5. In the **Select Data Source** dialog box, choose the **Machine Data Source** tab.
6. Choose your Easysoft ODBC-FreeAgent Driver ODBC data source from the **Machine Data Source** list, and then choose **OK**.
7. In the **Link Tables** dialog box, choose the tables that you want to link to, and then choose **OK**.

Importing a table

1. Open your Microsoft Access database.
2. Choose **External Data**.
3. In the **New Data Source** list, choose **From Other Sources > ODBC Database**.
4. In the **Get External Data** screen, choose **Import the source data into a new table in the current database**, and choose **OK**.
5. In the **Select Data Source** dialog box, choose the **Machine Data Source** tab.
6. Choose your Easysoft ODBC-FreeAgent Driver ODBC data source from the **Machine Data Source** list, and then choose **OK**.
7. In the **Import Objects** dialog box, choose the tables you want to import, and then choose **OK**.

Microsoft Excel

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Excel.
2. [Configure an ODBC data source](#).
3. Choose one of the following ways to work with your FreeAgent data in Excel.

Data Connection Wizard

1. Choose **Data > Get Data > From Other Sources > From ODBC**.
2. Choose your Easysoft ODBC-FreeAgent Driver data source from the list, and then choose **OK**.
3. Enter the user name and password for your data store if applicable, otherwise enter any text string to get past this stage. Choose **Next**.
4. Choose the table that contains the data you want to retrieve, and then choose **Load**.

Microsoft Query

1. Choose **Data > Get Data > From Other Sources > From Microsoft Query**.
2. In the **Choose Data Source** dialog box, choose your FreeAgent data source from the list, and then choose **OK**.
3. In the **Query Wizard**, choose the columns that contain the data you want to retrieve, and then click **Next**.
4. If you want to return a subset of the data, use the **Filter Data** screen to filter the results of your query (this is the equivalent of a SQL WHERE clause), and then choose **Next**.
5. If you want to change the sort order of your data, use the **Sort Order** screen to sort the results of your query (this is the equivalent of a SQL ORDER BY clause), and then choose **Next**. Choose **Finish** to return your FreeAgent data to Excel.

PowerPivot

1. On the **PowerPivot** tab, choose **Manage**.
2. In the **PowerPivot** window, choose **Get External Data > From Other Sources**.
3. In the **Connect to a Data Source** list, choose **Others (OLEDB/ODBC)**
4. In the **Specify a Connection** screen, enter a name for your connection in the space provided. Then choose **Build**.
5. In the **Data Link Properties** box, choose your Easysoft ODBC-FreeAgent Driver data source from the list, and then choose **OK**.
6. Choose **Next**.
7. Choose how to import your FreeAgent data and then choose **Finish**.
8. Choose **Close** to return the data to Excel.

Microsoft Power BI

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Power BI Desktop.
2. [Configure an ODBC data source](#).
3. In Power BI Desktop, choose **Get data from another source**.
4. In the **Get Data** dialog box, choose **ODBC**, and then choose **Connect**.
5. In the **From ODBC** dialog box, choose your FreeAgent data source, and then choose **OK**.
6. Enter your database user name and password when prompted.

If you make a mistake when entering the user name and password, cancel the connection process. Then in Power BI Desktop **Options and Settings**, edit the data source. Specify the correct user name or password in the data source credentials dialog box. Otherwise, Power BI Desktop will continue to use the cached incorrect credentials.

Note If you do not normally need to enter a user name and password, enter some dummy strings in the spaces provided.

7. In the **Navigator** dialog box, choose the tables you want to analyse in Power BI Desktop, and then choose **Load**.

Your FreeAgent data is now available to use in Power BI visualisations.

Microsoft SQL Server

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as SQL Server.
2. [Configure an ODBC data source](#).
3. In Microsoft SQL Server Management Studio, connect to the SQL Server instance you want to create the linked server against.

You need to log on with an account that is a member of the SQL Server sysadmin fixed server role to create a linked server.

4. Right-click **Server Objects**. From the pop-up menu choose **New > Linked Server**.
5. In the **Linked server** box, enter "FreeAgent".
6. From the **Provider** list, choose **Microsoft OLE DB Provider for ODBC drivers**.
7. In the **Data source** box, enter the name of your FreeAgent data source, and then choose **OK**.

SQL Server verifies the linked server by testing the connection.

- If you get the error "Specified driver could not be loaded due to system error 126: The specified module could not be found," choose **Yes** when prompted whether to keep the linked server. You need to restart your SQL Server instance before you can use the linked server. If SQL Server was already running when you installed the Easysoft ODBC-FreeAgent Driver, it will not have the latest version of the System Path environment variable. The Easysoft ODBC-FreeAgent Driver Setup program adds entries for the driver to the System Path. Restarting the instance makes these changes available to SQL Server, allowing it to load the Easysoft ODBC-FreeAgent Driver.
 - If you made a mistake when specifying the Easysoft ODBC-FreeAgent Driver, you get the error "Data source name not found and no default driver specified." If you get this error, choose **No** when prompted whether to keep the linked server and edit the value in the **Data source** box.
8. You can query your Easysoft ODBC-FreeAgent Driver data either by using a:
 - Four part table name in a distributed query.

A four part table name has the format:

```
server_name.[database_name].[schema_name].table_name
```

For data stores where there is no database or schema, Easysoft ODBC drivers return a "dummy" value for both identifiers, because some ODBC applications expect there to be a database and a schema. To find out the identifier names, run:

```
EXEC sp_tables_ex @table_server = 'FreeAgent'
```

Include these identifiers in your SQL statements. For example:

```
SELECT * FROM [FreeAgent].FREEAGENT.DBO.Bills
```

The capitalisation of the table name must be the same as it is in the result set returned by `sp_tables_ex`:

- Pass-through query in an OPENQUERY function. For example:

```
SELECT * FROM OPENQUERY([FreeAgent], 'SELECT * FROM Bills')
```

```
EXEC ('INSERT INTO Bills (Contact, Reference, Dated_On, Due_On, Bill_Items)
VALUES (''https://api.freeagent.com/v2/contacts/18727314'', ''YEB021'',
''2025-01-16'', ''2025-01-16'',
```

```
''[{"category\":"https://api.freeagent.com/v2/categories/291\","description\":"YEB-line-2-standing-charge\","sales_tax_rate\":"20\","total_value_ex_tax\":"6.99}]]''))  
AT FreeAgent
```

```
UPDATE OPENQUERY ([FreeAgent], 'SELECT Contact FROM Bills WHERE Id =  
'31962267''') SET Contact='Standing charges for second line.'  
DELETE OPENQUERY (FreeAgent, 'SELECT Contact FROM Bills WHERE Id =  
'31962267''')
```

SQL Server sends pass-through queries as uninterpreted query strings to the FreeAgent. This means that SQL Server does not apply any kind of logic to the query or try to estimate what that query will do.

Oracle

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Oracle.
2. [Configure an ODBC data source](#).
3. Follow the instructions for your Oracle platform.

Connecting FreeAgent to Oracle on Windows

1. Create a DG4ODBC init file on your Oracle machine. To do this, change to the %ORACLE_HOME%\hs\admin directory. Create a copy of the file initdg4odbc.ora. Name the new file initFreeAgent.ora.

Note In these instructions, replace %ORACLE_HOME% with the location of your Oracle HOME directory. For example, C:\oracle\app\oracle\product\11.2.0\server.

2. Ensure these parameters and values are present in your init file:

```
HS_FDS_CONNECT_INFO = "FreeAgent"
```

Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data source.

3. Comment out the line that enables DG4ODBC tracing. For example:

```
#HS_FDS_TRACE_LEVEL = <trace_level>
```

4. Add an entry to %ORACLE_HOME%\network\admin\listener.ora that creates a SID_NAME for DG4ODBC. For example:

```
SID_LIST_LISTENER =
(SID_LIST =
(SID_DESC=
(SID_NAME=FreeAgent)
(ORACLE_HOME=%ORACLE_HOME%)
(PROGRAM=dg4odbc)
)
)
```

5. Add a DG4ODBC entry to %ORACLE_HOME%\network\admin\tnsnames.ora that specifies the SID_NAME created in the previous step. For example:

```
FreeAgent =
(DESCRIPTION =
(AADDRESS = (PROTOCOL = TCP)(HOST = oracle_host)(PORT = 1521))
(CONNECT_DATA =
(SID = FreeAgent)
)
(HS = OK)
)
```

Replace oracle_host with the host name of your Oracle machine.

6. Start (or restart) the Oracle Listener:

```
cd %ORACLE_HOME%\bin
lsnrctl stop
```

```
lsnrctl start
```

7. Connect to your Oracle database in SQL*Plus.
8. In SQL*Plus, create a database link for FreeAgent. For example:

```
CREATE PUBLIC DATABASE LINK FreeAgentLink
  CONNECT TO "dbuser" IDENTIFIED BY "dbpassword"
  USING 'FreeAgent';
```

Replace dbuser and dbpassword with your backend user name and password, if applicable.

9. Try querying and updating your FreeAgent data. For example:

```
SELECT "Contact" FROM "Bills"@FreeAgentLink;

DECLARE
  num_rows integer;
BEGIN
num_rows:=DBMS_HS_PASSTHROUGH.EXECUTE_IMMEDIATE@FreeAgentLink
('INSERT INTO Bills (Contact, Reference, Dated_On, Due_On, Bill_Items) VALUES
(''https://api.freeagent.com/v2/contacts/18727314'', ''YEB021'', ''2025-01-16'',
''2025-01-16'',
''[{\"category\": \"https://api.freeagent.com/v2/categories/291\", \"description\":
\"YEB-line-2-standing-
charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]''));
END;
/

DECLARE
  num_rows integer;
BEGIN
num_rows:=DBMS_HS_PASSTHROUGH.EXECUTE_IMMEDIATE@FreeAgentLink
('UPDATE "Bills" SET "Contact" = ''Standing charges for second line.'' WHERE "Id"
= ''31962267''');
END;
/

DECLARE
  num_rows integer;
BEGIN
num_rows:=DBMS_HS_PASSTHROUGH.EXECUTE_IMMEDIATE@FreeAgentLink
('DELETE from "Bills" WHERE Id = ''31962267''');
END;
/
```

Notes

- If you have problems connecting to FreeAgent from Oracle, enable DG4ODBC tracing and check the trace files written to the %ORACLE_HOME%\hs\trace directory. To enable DG4ODBC tracing, add the line HS_FDS_TRACE_LEVEL = DEBUG to initFreeAgent.ora and then start or restart the Oracle listener. If the trace directory does not exist, create it.
- If you enable ODBC Driver Manager tracing, but do not get a log file in the location you specify, try looking in the top-level folder (for example, C:\SQL.log). Alternatively, in **ODBC Data Source**

Administrator, change the trace file location to the Windows TEMP directory.

Go

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Go.
2. [Configure an ODBC data source.](#)
3. Install the `odbc` package for Go:

```
go mod init test
go get github.com/alexbrainman/odbc
```

4. Create and then use Go to run this script, which retrieves some FreeAgent data:

```
package main

import (
    "database/sql"
    _ "github.com/alexbrainman/odbc2"
    "log"
)

func main() {
    // Replace the DSN value with the name of your ODBC data source.
    db, err := sql.Open("odbc",
        "DSN=FreeAgent")
    if err != nil {
        log.Fatal(err)
    }

    var (
        name string
    )

    rows, err := db.Query("SELECT Contact FROM Bills")
    if err != nil {
        log.Fatal(err)
    }
    defer rows.Close()
    for rows.Next() {
        err := rows.Scan(&name)
        if err != nil {
            log.Fatal(err)
        }
        log.Println(name)
    }
    err = rows.Err()
    if err != nil {
        log.Fatal(err)
    }

    defer db.Close()
}
```

Node.js

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Node.js.
2. [Configure an ODBC data source](#).
3. Install the odbc module for Node.js:

```
npm install odbc
```

4. Create and then use Node.js to run this script, which retrieves some FreeAgent data:

```
const odbc = require('odbc');
// Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver
// data source.
const connection = odbc.connect('DSN=FreeAgent', (error, connection) => {
  connection.query('SELECT Contact FROM Bills', (error, result) => {
    if (error) { console.error(error) }
    console.log(result);
  });
});
```

5. This script retrieves the tables and views in your Easysoft ODBC-FreeAgent Driver data source:

```
const odbc = require('odbc');
const connection = odbc.connect('DSN=FreeAgent', (error, connection) => {
  connection.tables(null, null, null, null, (error, result) => {
    if (error) { return; }
    const util = require('util');
    console.log(util.inspect(result, {maxLength: null, depth:null}))
  });
});
```

6. This script retrieves the names of the columns in these tables and views:

```
const odbc = require('odbc');
const connection = odbc.connect('DSN=FreeAgent', (error, connection) => {
  connection.columns(null, null, null, null, (error, result) => {
    if (error) { return; }
    const util = require('util');
    console.log(util.inspect(result, {maxLength: null, depth:null}))
  });
});
```

7. These scripts insert, update, and then delete some FreeAgent data:

```
const odbc = require("odbc");
const connection = odbc.connect("DSN=FreeAgent", (error, connection) => {
  connection.query("INSERT INTO
  Bills (
    Contact,
    Reference,
    Dated_On,
    Due_On,
    Bill_Items
```



```
)
VALUES
(
  'https://api.freeagent.com/v2/contacts/18727314',
  'YEB021',
  '2025-01-16',
  '2025-01-16',

  '[{"category":"https://api.freeagent.com/v2/categories/291","description":"YEB-line-2-standing-charge","sales_tax_rate":"20","total_value_ex_tax":6.99}]'
)", (error, result) => {
  if (error) { console.error(error) }
  console.log(result);
});
});

const odbc = require("odbc");
const connection = odbc.connect("DSN=FreeAgent", (error, connection) => {
  connection.query("UPDATE Bills SET Contact = 'Standing charges for second line.' WHERE Id = '31962267'", (error, result) => {
    if (error) { console.error(error) }
    console.log(result);
  });
});

const odbc = require("odbc");
const connection = odbc.connect("DSN=FreeAgent", (error, connection) => {
  connection.query("DELETE FROM Bills WHERE Id = '31962267'", (error, result)
=> {
  if (error) { console.error(error) }
  console.log(result);
});
});
```

Perl

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Perl.
2. [Configure an ODBC data source](#).
3. Check whether your Perl distribution supports ODBC:

```
perl -e 'use DBD::ODBC;'
```

4. Do one of the following:
 - If you get no output, your Perl distribution supports ODBC. Skip to the next step.
 - If you get:

```
Can't locate DBD/ODBC.pm
```

you need to [install DBD::ODBC](#) before you can use the Easysoft ODBC-FreeAgent Driver to connect to FreeAgent.

5. Create and then use Perl to run this script, which retrieves some FreeAgent data:

```
use strict;
use DBI;
# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sql = "SELECT Contact FROM Bills";

my $sth = $dbh->prepare($sql)
    or die "Can't prepare statement: $DBI::errstr";

$sth->execute();

my($Col);

# Fetch and display the result set values.
while(($Col) = $sth->fetchrow()){
    print("$Col\n");
}

$dbh->disconnect if ($dbh);
```

6. This script retrieves the tables and views in your Easysoft ODBC-FreeAgent Driver data source:

```
use strict;
use DBI;
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sth = $dbh->table_info()
    or die "Can't prepare statement: $DBI::errstr";

my @row;

while (@row = $sth->fetchrow_array) {
```

```

    print join(", ", @row), "\n";
}

$dbh->disconnect if ($dbh);

```

7. This script retrieves the names of the columns in these tables and views:

```

use strict;
use DBI;
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sth = $dbh->column_info('', '', '', '')
    or die "Can't prepare statement: $DBI::errstr";

my @row;
while (@row = $sth->fetchrow_array) {
    print join(", ", @row), "\n";
}

$dbh->disconnect if ($dbh);

```

8. These scripts insert, update, and then delete some FreeAgent data:

```

use strict;
use DBI;
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sth = $dbh->prepare(q/INSERT INTO Bills (Contact, Reference, Dated_On,
Due_On, Bill_Items) VALUES (?, ?, ?, ?, ?)/)
    or die "Can't prepare statement: $DBI::errstr";

$sth->execute('https://api.freeagent.com/v2/contacts/18727314', 'YEB021', '2025-
01-16', '2025-01-16',
'[{\"category\": \"https://api.freeagent.com/v2/categories/291\", \"description\": \"
YEB-line-2-standing-
charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]');

$dbh->disconnect if ($dbh);

use strict;
use DBI;
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sth = $dbh->prepare('UPDATE Bills SET Contact = \'Standing charges for second
line.\' WHERE Id = ?')
    or die "Can't prepare statement: $DBI::errstr";

$sth->execute('31962267');

$dbh->disconnect if ($dbh);

use strict;

```

```
use DBI;
my $dbh = DBI-> connect('dbi:ODBC:FreeAgent');

my $sth = $dbh->prepare('DELETE FROM Bills WHERE Id = ?')
    or die "Can't prepare statement: $DBI::errstr";

$sth->execute('31962267');

$dbh->disconnect if ($dbh);
```

Further information

- [Perl DBI DBD::ODBC tutorial: Drivers, data sources, and connection](#)

PHP

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as PHP.
2. [Configure an ODBC data source](#).
3. Check whether your PHP distribution supports ODBC. In `php.ini`, make sure there is no comment character (`;`) before the `extension_dir` and `extension=odbc` settings (`;extension_dir=directory` becomes `extension_dir=directory` and `;extension=odbc` becomes `extension=odbc`).
4. Create and then use PHP to run this script, which retrieves some FreeAgent data:

```
<?php
// Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
$con = odbc_connect("FreeAgent", "", "");

$stmt = odbc_exec($con, "SELECT * FROM Bills");

while ($row = odbc_fetch_array($stmt)) {
    echo "Contact = ", $row["Contact"], "\n";
}
odbc_close($con);
?>
```

5. This script retrieves the tables and views in your Easysoft ODBC-FreeAgent Driver data source:

```
<?php
$con = odbc_connect("FreeAgent", '', '');
$tables = odbc_tables($con);
while (($row = odbc_fetch_array($tables))) {
    print_r($row);
}
odbc_close($con);
?>
```

6. This script retrieves the names of the columns in these tables and views:

```
<?php
$con = odbc_connect('FreeAgent', '', '');
$columns = odbc_columns($con);
while (($row = odbc_fetch_array($columns))) {
    print_r($row);
}
odbc_close($con);
?>
```

7. These scripts insert, update, and then delete some FreeAgent data:

```
<?php
$conx = odbc_connect("FreeAgent", "", "");

$stmt = odbc_prepare($conx, "INSERT INTO Bills (Contact, Reference, Dated_On,
Due_On, Bill_Items) VALUES (?, ?, ?, ?, ?)");
```

```
$success = odbc_execute($stmt,
array('https://api.freeagent.com/v2/contacts/18727314', 'YEB021', '2025-01-16',
'2025-01-16',
' [{"category\":"https://api.freeagent.com/v2/categories/291\","description\":"
"YEB-line-2-standing-
charge\","sales_tax_rate\":"20","total_value_ex_tax":6.99}]');

odbc_close($cnx);
?>

<?php
$cnx = odbc_connect("FreeAgent", "", "");

$stmt = odbc_prepare($cnx, "UPDATE Bills SET Contact = 'Standing charges for
second line.' WHERE Id = ?");

$success = odbc_execute($stmt, array('31962267'));

odbc_close($cnx);
?>

<?php
$cnx = odbc_connect("FreeAgent", "", "");

$stmt = odbc_prepare($cnx, "DELETE FROM Bills WHERE Id = ?");

$success = odbc_execute($stmt, array('31962267'));

odbc_close($cnx);
?>
```

Further information

- [Easysoft PHP tutorials and code samples](#)

Python

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as Python.
2. [Configure an ODBC data source](#).
3. Check whether your Python distribution supports ODBC.

```
pip list
```

If you don't have pip installed:

```
curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
python get-pip.py
```

4. Do one of the following:
 - If the output contains pyodbc, your Python distribution supports ODBC. Skip to the next step.
 - If the output does not contain pyodbc, use pip to install this module:

```
pip install pyodbc
```

5. Create and then use Python to run this script, which retrieves some FreeAgent data:

```
import pyodbc

# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
sql = "SELECT Contact FROM Bills"
cursor.execute(sql)
rows = cursor.fetchall()
for row in rows:
    print(row.Contact)
exit()
```

6. This script retrieves the tables and views in your Easysoft ODBC-FreeAgent Driver data source:

```
import pyodbc

# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
cursor.tables()
rows = cursor.fetchall()
for row in rows:
    print(row.table_name)
exit()
```

7. This script retrieves the names of the columns in these tables and views:

```
import pyodbc

# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
```

```

source.
cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
cursor.columns()
rows = cursor.fetchall()
for row in rows:
    print(row.table_name, row.column_name)
exit()

```

8. These scripts insert, update, and then delete some FreeAgent data:

```

import pyodbc

cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
sql = "INSERT INTO Bills (Contact, Reference, Dated_On, Due_On, Bill_Items)
VALUES (?, ?, ?, ?, ?)"
cursor.execute(sql, 'https://api.freeagent.com/v2/contacts/18727314', 'YEB021',
'2025-01-16', '2025-01-16',
' [{"category": "https://api.freeagent.com/v2/categories/291", "description": "YEB-line-2-standing-charge", "sales_tax_rate": "20", "total_value_ex_tax": 6.99} ]')
cursor.commit()
exit()

```

```

import pyodbc

cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
sql = "UPDATE Bills SET Contact = Standing charges for second line.' WHERE Id = ?"
cursor.execute(sql, '31962267')
cursor.commit()
exit()

```

```

import pyodbc

cnxn = pyodbc.connect("DSN=FreeAgent")
cursor = cnxn.cursor()
sql = "DELETE FROM Bills WHERE Id = ?"
cursor.execute(sql, '31962267')
cursor.commit()
exit()

```

Further information

- [Easysoft Python tutorials and code samples](#)

R

1. [Install the Easysoft ODBC-FreeAgent Driver](#) on same computer as R.
2. [Configure an ODBC data source](#).
3. In R Console, check whether your R distribution supports ODBC.

```
library("RODBC")
```

4. Do one of the following:
 - If you get no output, you have the ODBC library for R. Skip to the next step.
 - If you get an "there is no package" error, install the ODBC library for R:

```
install.packages("RODBC")
```

5. Create and then use R to run this script, which retrieves some FreeAgent data:

```
library("RODBC")
# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
ch <- odbcConnect("FreeAgent")
sqlQuery(ch, paste("SELECT Contact FROM Bills"))
odbcClose(ch)
quit()
```

6. This script retrieves the tables and views in your Easysoft ODBC-FreeAgent Driver data source:

```
library("RODBC")
# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
ch <- odbcConnect("FreeAgent")
sqlTables(ch)
odbcClose(ch)
quit()
```

7. This script retrieves the names of the columns in the specified table or view:

```
library("RODBC")
# Replace FreeAgent with the name of your Easysoft ODBC-FreeAgent Driver data
source.
ch <- odbcConnect("FreeAgent")
sqlColumns(ch, sqtable="Bills")
odbcClose(ch)
quit()
```

8. These scripts insert, update, and then delete some FreeAgent data:

```
library("RODBC")
ch <- odbcConnect("FreeAgent")
sqlQuery(ch, paste("INSERT INTO Bills (Contact, Reference, Dated_On, Due_On,
Bill_Items) VALUES ('https://api.freeagent.com/v2/contacts/18727314', 'YEB021',
'2025-01-16', '2025-01-16',
'[{\"category\": \"https://api.freeagent.com/v2/categories/291\", \"description\": \"
YEB-line-2-standing-
```

```
charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]]')"))
odbcClose(ch)
quit()

library("RODBC")
ch <- odbcConnect("FreeAgent")
sqlQuery(ch, paste("UPDATE Bills SET Contact = 'Standing charges for second
line.' WHERE Id = '31962267'"))
odbcClose(ch)
quit()

library("RODBC")
ch <- odbcConnect("FreeAgent")
sqlQuery(ch, paste("DELETE FROM Bills WHERE Id = '31962267'"))
odbcClose(ch)
quit()
```

About the Easysoft ODBC-FreeAgent Driver

The Easysoft ODBC-FreeAgent Driver provides real-time access to FreeAgent data from any application that supports ODBC.

- [ODBC API and scalar functions](#)
- [Data type mapping](#)
- [SQL support](#)

ODBC API and scalar functions

API functions

Use this table to find out what ODBC API functions the Easysoft ODBC-FreeAgent Driver supports:

Function	Status
SQLAllocConnect	Supported
SQLAllocEnv	Supported
SQLAllocHandle	Supported
SQLAllocStmt	Supported
SQLBindCol	Supported
SQLBindParameter	Supported
SQLBrowseConnect	Not supported
SQLBulkOperations	Supported
SQLCancel	Supported
SQLCloseCursor	Supported
SQLColAttribute	Supported
SQLColAttributes	Supported
SQLColumnPrivileges	Not Supported
SQLColumns	Supported
SQLConnect	Supported
SQLCopyDesc	Supported
SQLDataSources	Supported
SQLDescribeCol	Supported
SQLDescribeParam	Supported
SQLDisconnect	Supported
SQLDriverConnect	Supported
SQLDrivers	Supported
SQLEndTran	Supported
SQLError	Supported
SQLExecDirect	Supported
SQLExecute	Supported
SQLExtendedFetch	Supported
SQLFetch	Supported
SQLFetchScroll	Supported
SQLForeignKeys	Supported
SQLFreeConnect	Supported

Function	Status
SQLFreeEnv	Supported
SQLFreeHandle	Supported
SQLFreeStmt	Supported
SQLGetConnectAtt	Supported
SQLGetConnectOption	Supported
SQLGetCursorName	Supported
SQLGetData	Supported
SQLGetDescField	Supported
SQLGetDescRec	Supported
SQLGetDiagField	Supported
SQLGetDiagRec	Supported
SQLGetEnvAttr	Supported
SQLGetFunctions	Supported
SQLGetInfo	Supported
SQLGetStmtAttr	Supported
SQLGetStmtOption	Supported
SQLGetTypeInfo	Supported
SQLMoreResults	Supported
SQLNativeSql	Supported
SQLNumParams	Supported
SQLNumResultCols	Supported
SQLParamData	Supported
SQLParamOptions	Supported
SQLPrepare	Supported
SQLPrimaryKeys	Supported
SQLProcedureColumns	Supported
SQLProcedures	Supported
SQLPutData	Supported
SQLRowCount	Supported
SQLSetConnectAttr	Supported
SQLSetConnectOption	Supported
SQLSetCursorName	Supported
SQLSetDescField	Supported
SQLSetDescRec	Supported
SQLSetEnvAttr	Supported

Function	Status
SQLSetParam	Supported
SQLSetPos	Supported
SQLSetScrollOptions	Supported
SQLSetStmtOption	Supported
SQLSetStmtOption	Supported
SQLSetStmtAttr	Supported
SQLStatistics	Supported
SQLTablePrivileges	Not supported
SQLTables	Supported
SQLTransact	Supported

Scalar functions

The Easysoft ODBC-FreeAgent Driver supports a number of scalar functions:

- [String functions](#)
- [Numeric functions](#)
- [Time, date, and interval functions](#)
- [System functions](#)
- [Conversion functions](#)

Use either the SQL-92 or ODBC syntax with scalar functions. For example:

```

SELECT
  Invoice_Id,
  Customer_Name,
  EXTRACT(YEAR FROM Due_Date) as "Year"
FROM
  Invoice

SELECT
  Invoice_Id,
  Customer_Name,
  {fn EXTRACT(YEAR FROM Due_Date)} as "Year"
FROM
  Invoice

```

String functions

The Easysoft ODBC-FreeAgent Driver supports these [string](#) functions:

- [ASCII\(*string_exp*\)](#)
- [BIT_LENGTH\(*string_exp*\)](#)
- [CHAR\(*code*\)](#)
- [CHAR_LENGTH\(*string_exp*\)](#)
- [CHARACTER_LENGTH](#)
- [CONCAT\(*string_exp1*, *string_exp2*\)](#)
- [DIFFERENCE\(*string_exp1*, *string_exp2*\)](#)

- INSERT(*string_exp1*, *start*, *length*, *string_exp2*)
- LCASE(*string_exp*)
- LEFT(*string_exp*, *count*)
- LENGTH(*string_exp*)
- LOCATE(*string_exp1*, *string_exp2*[*start*])
- LTRIM(*string_exp*)
- OCTET_LENGTH(*string_exp*)
- POSITION(*char_exp* IN *char_exp*)
- REPEAT(*string_exp*, *count*)
- REPLACE(*string_exp1*, *string_exp2*, *string_exp3*)
- RIGHT(*string_exp*, *count*)
- RTRIM(*string_exp*)
- SOUNDEX(*string_exp*)
- SPACE(*count*)
- SUBSTRING(*string_exp*, *start*, *length*)
- TRIM
- UCASE(*string_exp*)

Numeric functions

The Easysoft ODBC-FreeAgent Driver supports these [numeric](#) functions:

- ABS(*numeric_exp*)
- ACOS(*float_exp*)
- ASIN(*float_exp*)
- ATAN(*float_exp*)
- ATAN2(*float_exp1*, *float_exp2*)
- CEILING(*numeric_exp*)
- COS(*float_exp*)
- COT(*float_exp*)
- DEGREES(*numeric_exp*)
- EXP(*float_exp*)
- FLOOR(*numeric_exp*)
- LOG(*float_exp*)
- LOG10(*float_exp*)
- MOD(*integer_exp1*, *integer_exp2*)
- PI()
- POWER(*numeric_exp*, *integer_exp*)
- RADIANS(*numeric_exp*)
- RAND([*integer_exp*])
- ROUND(*numeric_exp*, *integer_exp*)
- SIGN(*numeric_exp*)
- SIN(*float_exp*)
- SQRT(*float_exp*)
- TAN(*float_exp*)
- TRUNCATE(*numeric_exp*, *integer_exp*)

Time, date, and interval functions

The Easysoft ODBC-FreeAgent Driver supports these [time, date, and interval](#) functions:

- CURRENT_DATE()
- CURRENT_TIME[*(time-precision)*]
- CURRENT_TIMESTAMP[*(timestamp-precision)*]

- CURDATE()
- CURTIME()
- DAYNAME(*date_exp*)
- DAYOFMONTH(*date_exp*)
- DAYOFWEEK(*date_exp*)
- DAYOFYEAR(*date_exp*)
- EXTRACT(*extract-field FROM extract-sourc*)
- HOUR(*time_exp*)
- MINUTE(*time_exp*)
- MONTH(*date_exp*)
- MONTHNAME(*date_exp*)
- NOW()
- QUARTER(*date_exp*)
- SECOND(*time_exp*)
- TIMESTAMPADD(*interval, integer_exp, timestamp_exp*)
- TIMESTAMPDIFF(*interval, timestamp_exp1, timestamp_exp2*)
- WEEK(*date_exp*)
- YEAR(*date_exp*)

System functions

The Easysoft ODBC-FreeAgent Driver supports these [system](#) functions:

- DATABASE()
- IFNULL(*exp, value*)
- USER()

Conversion functions

The Easysoft ODBC-FreeAgent Driver supports both the [SQL-92 CAST](#) function and the [ODBC CONVERT](#) function for conversion between compatible data types.

Data type mapping

The Easysoft ODBC-FreeAgent Driver maps FreeAgent data types to ODBC data types in this way:

URI

FreeAgent data type	ODBC data type
Array	SQL_WLONGVARCHAR
Boolean	SQL_BIT
Date	SQL_TYPE_DATE
Decimal	SQL_DOUBLE
Integer	SQL_INTEGER
Object	SQL_WLONGVARCHAR
Parameter	SQL_TYPE_TIMESTAMP SQL_TYPE_DATE SQL_WVARCHAR
String	SQL_WVARCHAR SQL_WLONGVARCHAR SQL_TYPE_DATE SQL_TYPE_TIMESTAMP SQL_INTEGER SQL_DOUBLE
Timestamp	SQL_TYPE_TIMESTAMP
URI	SQL_WVARCHAR

Finding out more about data types on Windows

If you need more information about a data types, for example, the precision and scale, use Microsoft's ODBC Test to do this.

1. Download the version of ODBC Test that matches your application's architecture from:

<https://www.easysoft.com/ftp/pub/utils/windows/odbc-test/>

2. Copy both files to a folder on the machine where Easysoft ODBC-FreeAgent Driver is installed.

3. Double-click **odbcte32.exe**.

4. Select **Con > Full Connect**.

5. Choose your Easysoft ODBC-FreeAgent Driver data source from the list.

6. Choose **Catalog > SQLGetTypeInfo**.

7. Either choose **SQL_ALL_TYPES=0 (1.0)** or a specific data type from the **Data Type** list.

8. Choose **Results > Get Data All**.

SQL support

The Easysoft ODBC-FreeAgent Driver supports these SQL statements, clauses, and operators:

- SELECT
- SELECT DISTINCT
- WHERE
- ORDER BY
- AND
- OR
- NOT
- INSERT INTO
- NULL
- UPDATE
- DELETE
- TOP
- MIN
- MAX
- COUNT
- SUM
- AVG
- LIKE
- WILDCARDS
- IN
- BETWEEN
- ALIASES
- JOINS
- UNION
- GROUP BY
- HAVING
- EXISTS
- CASE

Example queries

- To fetch all records from a table, use the asterisk symbol (*) in your queries. For example:

```
SELECT * FROM Invoices
```

- To only fetch records whose values are different, use DISTINCT. For example:

```
-- Which different customers do we invoice?  
SELECT DISTINCT Contact_Name AS Different_Contact_Name FROM Invoices  
-- How many different customers do we invoice?  
SELECT COUNT(DISTINCT Contact_Name) AS Different_Contact_Total FROM Invoices
```

- To filter records, use WHERE. For example:

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoice
WHERE
  Currency = 'USD'
```

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  Currency = 'USD'
  OR Currency = 'EUR'
```

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  Currency = 'USD'
  AND Total_Value < 1000
```

You can also supply a WHERE clause value as a parameter. For example, to do this in [Python](#):

```
cursor.execute("SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  Currency = ?", ['USD'])
```

- To fetch records that don't match the WHERE clause pattern use NOT. For example:

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  NOT Currency = 'USD'
```

- To sort the result set in either ascending or descending order, use ORDER BY. For example:

```
SELECT
  Id,
  Contact_Name,
  Net_Value
FROM
  Invoices
ORDER BY
  Net_Value ASC

SELECT
  *
FROM
  Contacts
ORDER BY
  (
    CASE
      WHEN Last_Name IS NULL THEN Organisation_Name
      ELSE Last_Name
    END
  );
```

- To group a result set into summary rows, use GROUP BY. For example:

```
SELECT
    COUNT(Id) As "Number",
    Currency
FROM
    Invoices
GROUP BY
    Currency
```

```
SELECT
    COUNT(Id) As "Number",
    Currency
FROM
    Invoices
GROUP BY
    Currency
HAVING
    COUNT(Id) > 10;
```

- To do calculations based on result set values, use the SQL aggregate functions MIN(), MAX(), COUNT(), SUM(), and AVG(). For example:

```
SELECT Max(Total_Value) FROM Invoices
SELECT Sum(Total_Value) FROM Invoices
```

In addition, you can use these [scalar functions](#).

- To convert between compatible data types, use CAST or CONVERT. For example:

```
SELECT CAST(Total_Value AS Char(100))FROM Invoices
SELECT {fn CONVERT(Total_Value, SQL_CHAR)} FROM Invoices
```

- To fetch records that contain column values between a given range, use BETWEEN For example:

```
SELECT Id, Contact_Name FROM Invoices WHERE Total_Value BETWEEN 10 AND 20
```

- To combine the result set of two or more SELECT statements, use UNION. For example:

```

SELECT
    Group_Description,
    Description,
    Id,
    Url,
    Nominal_Code,
    Allowable_For_Tax,
    Tax_Reporting_Name,
    Auto_Sales_Tax_Rate
FROM
    Categories_Admin_Expenses
UNION ALL
SELECT
    Group_Description,
    Description,
    Id,
    Url,
    Nominal_Code,
    Allowable_For_Tax,
    Tax_Reporting_Name,
    Auto_Sales_Tax_Rate
FROM
    Categories_Cost_Of_Sales
UNION ALL
SELECT
    REPLACE (Url, Url, 'General') AS Group_Description,
    Description,
    Id,
    Url,
    Nominal_Code,
    CAST(NULL AS bit) AS Allowable_For_Tax,
    Tax_Reporting_Name,
    CAST(NULL AS double) AS Auto_Sales_Tax_Rate
FROM
    Categories_General
UNION ALL
SELECT
    Group_Description,
    Description,
    Id,
    Url,
    Nominal_Code,
    CAST(NULL AS bit) AS Allowable_For_Tax,
    REPLACE (Url, Url, 'N/A') AS Tax_Reporting_Name,
    Auto_Sales_Tax_Rate
FROM
    Categories_Income

```

- To combine rows from two or more tables, use JOIN. For example:

```
SELECT
  a.Name,
  bt.*
FROM
  Bank_accounts a
  LEFT JOIN Bank_Transactions bt ON bt.Bank_Account = a.URL
```

- To fetch records that contain column values matching a search pattern, use LIKE. For example:

```
SELECT Id FROM Invoices WHERE Contact_Name LIKE 'E%'
SELECT Id FROM Invoices WHERE Contact_Name LIKE '_asysoft'
```

- To search for columns without a value (NULL) or with a value (non NULL), use either IS NULL or IS NOT NULL. For example:

```
SELECT Id, Contact_Name, Total_Value FROM Invoices WHERE Include_Estimates IS
NULL
```


- To specify multiple values in a WHERE clause, you can use IN as an alternative to OR. For example:

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  Currency = 'USD'
  OR Currency = 'EUR'
  OR Currency = 'GBP'
```

can be replaced with:

```
SELECT
  Id,
  Contact_Name,
  Total_Value
FROM
  Invoices
WHERE
  Currency IN ('USD', 'EUR', 'GBP');
```

- To set the maximum number of records to return, use TOP. For example:

```
SELECT TOP 10 Id, Contact_Name FROM Invoices
```

- To test for the existence of records in a subquery, use EXISTS. For example:

```
SELECT
  Contact_Name
FROM
  Invoices
WHERE
  EXISTS (
    SELECT
      First_Name,
      Last_Name
    FROM
      Contacts
    WHERE
      Invoices.Contact_Id = Contacts.Id
      AND Currency = 'USD'
  )
```

Example inserts, updates, and deletes

- To insert a FreeAgent record, use INSERT INTO. For example:

```

INSERT INTO
  Bills (
    Contact,
    Reference,
    Dated_On,
    Due_On,
    Bill_Items
  )
VALUES
  (
    'https://api.freeagent.com/v2/contacts/18727314',
    'YEB021',
    '2025-01-16',
    '2025-01-16',

    '[{"category\":\"https://api.freeagent.com/v2/categories/291\", \"description\": \"YEB-line-2-standing-charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]'
  )

```

- Here's a SQL Server linked server example:

```

EXEC ('INSERT INTO Bills (Contact, Reference, Dated_On, Due_On, Bill_Items)
VALUES (''https://api.freeagent.com/v2/contacts/18727314'' , ''YEB021'' , ''2025-01-16'' , ''2025-01-16'' ,
''[{"category\":\"https://api.freeagent.com/v2/categories/291\", \"description\": \"YEB-line-2-standing-charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]'' )')

```

- Here's an Oracle linked table example:

```

DECLARE
  num_rows integer;
BEGIN
num_rows:=DBMS_HS_PASSTHROUGH.EXECUTE_IMMEDIATE@FreeAgentLink
('INSERT INTO Bills (Contact, Reference, Dated_On, Due_On, Bill_Items) VALUES
('https://api.freeagent.com/v2/contacts/18727314', 'YEB021', '2025-01-16',
'2025-01-16',
'[{\"category\": \"https://api.freeagent.com/v2/categories/291\", \"description\":
\"YEB-line-2-standing-
charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]')');
END;
/

```

- The Easysoft ODBC-FreeAgent Driver also supports parameterized inserts. Here's an example of doing this in [PHP](#):

```

$stmt = odbc_prepare($cnx, "INSERT INTO Bills (Contact, Reference, Dated_On,
Due_On, Bill_Items) VALUES (?, ?, ?, ?, ?)");

$success = odbc_execute($stmt,
array('https://api.freeagent.com/v2/contacts/18727314', 'YEB021', '2025-01-16',
'2025-01-16',
'[{\"category\": \"https://api.freeagent.com/v2/categories/291\", \"description\": \"
YEB-line-2-standing-
charge\", \"sales_tax_rate\": \"20\", \"total_value_ex_tax\": 6.99}]') );

```

- To update a FreeAgent record, use UPDATE. For example:

```

UPDATE Bills
SET
  Contact = 'Standing charges for second line.'
WHERE
  Account_Id = '31962267'

```

The Easysoft ODBC-FreeAgent Driver also supports parameterized updates. Here's an example of doing this in [Perl](#):

```

my $sth = $dbh->prepare('UPDATE Bills SET Contact = \'Standing charges for second
line.\' WHERE Id = ?')
  or die "Can't prepare statement: $DBI::errstr";

$sth->execute('31962267');

```

- To delete a FreeAgent record, use DELETE. For example:

```
-- Delete (mark inactive) a bank account  
DELETE FROM Bills WHERE Id = '31962267'
```

The Easysoft ODBC-FreeAgent Driver also supports parameterized deletes. Here's an example of doing this in [Python](#):

```
sql = "DELETE FROM Bills WHERE Id = ?"  
cursor.execute(sql, '31962267')
```

Tables

The Easysoft ODBC-FreeAgent Driver presents FreeAgent resources as a set of tables and views. This allows you to work with FreeAgent data by using SQL that you either enter yourself or your application builds for you.

Note that some table and view columns may not be applicable to your edition of FreeAgent.

The tables are:

- [Bank_Accounts](#)
- [Bank_Feeds](#)
- [Bank_Transaction_Explanations](#)
- [Bank_Transaction_Explanations_Attachment](#)
- [Bills](#)
- [Capital_Asset_Types](#)
- [Categories_Admin_Expenses](#)
- [Categories_Cost_Of_Sales](#)
- [Categories_General](#)
- [Categories_Income](#)
- [Contacts](#)
- [Credit_Note_Reconciliations](#)
- [Credit_Notes](#)
- [Estimates](#)
- [Expenses](#)
- [Final_Accounts_Reports](#)
- [Hire_Purchases](#)
- [Invoices](#)
- [Journal_Sets](#)
- [Notes](#)
- [Price_List_Items](#)
- [Projects](#)
- [Properties](#)
- [Recurring_Invoices](#)
- [Sales_Tax_Periods](#)
- [Tasks](#)
- [Timeslips](#)
- [Users](#)

The views are:

- API
- Balance_Sheet
- Balance_Sheet_Capital_Assets
- Balance_Sheet_Current_Assets
- Balance_Sheet_Current_Liabilities
- Balance_Sheet_Opening_Balances
- Balance_Sheet_Owners_Equity
- Bank_Accounts_Marked_For_Review_Category_Group_Counts
- Bank_Transactions
- Bank_Transactions_Explanations
- Bill_Items
- Capital_Assets
- Capital_Assets_History
- Cashflow
- Cashflow_Incoming
- Cashflow_Outgoing
- Cis_Bands
- Company
- Company_Annual_Accounting_Periods
- Company_Business_Categories
- Company_Locked_Attributes
- Company_Sales_Tax_Rates
- Company_Tax_Timeline
- Corporation_Tax>Returns
- Credit_Note_Items
- Email_Addresses
- Invoice_Items
- Journal_Sets_Bank_Accounts
- Journal_Sets_Journal_Entries
- Journal_Sets_Stock_Items
- Opening_Balance_Summary
- Payroll_Payslips
- Payroll_Periods
- Payroll_Profiles
- Profit_And_Loss
- Profit_And_Loss_Less
- Recurring_Invoice_Invoice_Items
- Stock_Items
- Transactions
- Trial_Balance_Summary
- Vat_Return_Payments
- Vat>Returns

Bank_Accounts table

Column	Type
Id	String
Url	URI
Type	String
View	String
Email	String
Account_Number	String
Current_Balance	Decimal
Unexplained_Transaction_Count	Integer
Name	String
Opening_Balance	Decimal
Manually_Added_Transaction_Count	Integer
Updated_At	Timestamp
Is_Personal	Boolean
Total_Count	Integer
Is_Primary	Boolean
Currency	String
Status	String
Marked_For_Review_Count	Integer
Latest_Activity_Date	String
Bank_Code	String
Created_At	Timestamp
Bank_Feed_Enabled	Boolean
Bank_Guess_Enabled	Boolean
Bank_Name	String
Sort_Code	String
Secondary_Sort_Code	String
Iban	String
Bic	String
Default_Property	String
Marked_For_Review_Category_Group_Counts	Array

Examples

```
SELECT
  Id,
```

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```
[Name],
Current_Balance,
Updated_At
FROM
  Bank_Accounts
WHERE
  Current_Balance < 10000

INSERT INTO
  Bank_Accounts (
    [Type],
    [Name],
    [Currency],
    [Is_Personal],
    [Is_Primary],
    [Status],
    [Bank_Name],
    [Opening_Balance],
    [Bank_Guess_Enabled],
    [Account_Number],
    [Sort_Code],
    [Secondary_Sort_Code],
    [Iban],
    [Bic]
  )
VALUES
  (
    'StandardBankAccount',
    'Barclays EUR',
    'EUR',
    'false',
    'false',
    'active',
    'Barclays Bank',
    '100000',
    'false',
    '223344557',
    '22-11-21',
    '22-11-22',
    'GB10 BUKB 11111223344557',
    'BUKBGB22'
  )
UPDATE Bank_Accounts
SET
  [Name] = 'Barclays EUR2'
WHERE
  [Name] = 'Barclays EUR'

DELETE FROM Bank_Accounts
WHERE
  [Name] = 'Barclays EUR2'
```


Bank_Feeds table

Column	Type
Id	String
Url	URI
Bank_Service_Name	String
State	String
Feed_Type	String
Created_At	Timestamp
Bank_Account_Id	String
Bank_Account	URI
Updated_At	Timestamp
Sca_Expires_At	Timestamp

Examples

```
SELECT
  *
FROM
  Bank_Feeds
WHERE
  Updated_At > '2024-11-20'
```

Bank_Transaction_Explanations table

Column	Type
Id	String
Url	URI
Bank_Account_Id	String
Bank_Account	URI
Bank_Transaction_Id	String
Bank_Transaction	URI
Category_Id	String
Category	String
Paid_Invoice_Id	String
Paid_Invoice	String
Guessed_Category	String
Gross_Value	Decimal
Dated_On	String
Description	String
Is_Locked	Boolean
Transaction_Description	String
Foreign_Currency_Value	Decimal
Has_Pending_Operation	Boolean
Transfer_Value	Decimal
Is_Deletable	Boolean
Type	String
Is_Money_Paid_To_User	Boolean
Is_Money_In	Boolean
Is_Money_Out	Boolean
Marked_For_Review	Boolean
Guess_Rule_Name	String
Updated_At	Timestamp
Detail	String
Sales_Tax_Status	String
Sales_Tax_Value	Decimal
Sales_Tax_Rate	Decimal
Linked_Transfer_Account	String
Linked_Transfer_Explanation	String
From_Date	Parameter

Column	Type
To_Date	Parameter
Updated_Since	Parameter
Transaction_Id	String
Uploaded_At	Timestamp
Second_Sales_Tax_Status	String
Second_Sales_Tax_Value	Decimal
Second_Sales_Tax_Rate	Decimal
Paid_Bill_Id	String
Paid_Bill	String
Locked_Attributes	Array
Attachment	Object

Examples

```

SELECT
  *
FROM
  Bank_Transactions
WHERE
  Id = '577790804'
SELECT
  *
FROM
  Bank_Transactions
WHERE
  Bank_Account = 'https://api.freeagent.com/v2/bank_accounts/1555435'

INSERT INTO
  Bank_Transaction_Explanations (
    bank_transaction,
    bank_account,
    dated_on,
    description,
    category,
    gross_value,
    sales_tax_status,
    sales_tax_rate
  )
VALUES
  (
    'https://api.freeagent.com/v2/bank_transactions/577790779',
    'https://api.freeagent.com/v2/bank_accounts/1555435',
    '2024-11-26',
    'FEE description.',
    'https://api.freeagent.com/v2/categories/291',
  )

```

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```
-471,  
'TAXABLE',  
20  
)
```

```
UPDATE Bank_Transaction_Explanations  
SET  
    Description = 'New FEE description text.'  
WHERE  
    Id = '532804092'  
DELETE FROM Bank_Transaction_Explanations  
WHERE  
    Id = '532762173'
```

Bank_Transaction_Explanations_Attachment table

Column	Type
Id	String
Url	URI
Bank_Account_Id	String
Bank_Account	String
Bank_Transaction_Id	String
Bank_Transaction	String
Category_Id	String
Category	String
Paid_Invoice_Id	String
Paid_Invoice	String
Guessed_Category	String
Gross_Value	Decimal
Dated_On	String
Description	String
Is_Locked	Boolean
Transaction_Description	String
Foreign_Currency_Value	Decimal
Has_Pending_Operation	Boolean
Transfer_Value	Decimal
Is_Deletable	Boolean
Type	String
Is_Money_Paid_To_User	Boolean
Is_Money_In	Boolean
Is_Money_Out	Boolean
Marked_For_Review	Boolean
Guess_Rule_Name	String
Updated_At	Timestamp
Detail	String
Sales_Tax_Status	String
Sales_Tax_Value	Decimal
Sales_Tax_Rate	Decimal
Linked_Transfer_Account	String
Linked_Transfer_Explanation	String
From_Date	Parameter

Column	Type
To_Date	Parameter
Updated_Since	Parameter
Transaction_Id	String
Uploaded_At	Timestamp
Second_Sales_Tax_Status	String
Second_Sales_Tax_Value	Decimal
Second_Sales_Tax_Rate	Decimal
Paid_Bill_Id	String
Paid_Bill	String
Locked_Attributes	Array
Attachment_Url_Id	URI
Attachment_Url	URI
Attachment_Content_Src	String
Attachment_Description	String
Attachment_Content_Src_Medium	String
Attachment_Content_Src_Small	String
Attachment_File_Name	String
Attachment_File_Size	Integer
Attachment_Expires_At	Timestamp
Attachment_Content_Type	String

Bills table

Column	Type
Id	String
Url	URI
Total_Value	Decimal
Status	String
Paid_Value	Decimal
Contact	String
Project	String
Created_At	Timestamp
Updated_At	Timestamp
Dated_On	String
Reference	String
Native_Due_Value	Decimal
Due_On	String
Net_Value	Decimal
Paid_On	String
Long_Status	String
Due_Value	Decimal
Currency	String
Input_Total_Values_Inc_Tax	Boolean
Sales_Tax_Value	Decimal
Is_Paid_By_Hire_Purchase	Boolean
Locked_Reason	String
Contact_Name	String
Comments	String
Second_Sales_Tax_Value	Decimal
Recurring	String
View	String
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Locked_Attributes	Array
Bill_Items	Array

Examples

```
SELECT
  *
FROM
  Bills
WHERE
  Status = 'Open'

INSERT INTO
  Bills (Contact, Reference, Dated_On, Due_On, Bill_Items)
VALUES
  (
    'https://api.freeagent.com/v2/contacts/18541472',
    'YEB002',
    '2024-11-28',
    '2024-12-28',
    '[{"category":"https://api.freeagent.com/v2/categories/291","description":"YEB Line
2 standing charge","sales_tax_rate":"20","total_value_ex_tax":49.99}]'
  )

UPDATE Bills
SET
  Comments = 'Standing charge for second line.'
WHERE
  Id = '31467166'

DELETE FROM Bills
WHERE
  Id = '31467166'
```


Capital_Asset_Types table

Column	Type
Id	String
Url	URI
Name	String
Created_At	Timestamp
System_Default	Boolean
Updated_At	Timestamp

Examples

```
SELECT
  *
FROM
  Capital_Asset_Types
WHERE
  System_Default = False

INSERT INTO
  Capital_Asset_Types ([Name])
VALUES
  ('Trucks.')
```

```
DELETE FROM Capital_Asset_Types
WHERE
  Id = '5234506'
```

Categories_Admin_Expenses table

Column	Type
Nominal_Code	String
Id	String
Url	URI
Description	String
Auto_Sales_Tax_Rate	Decimal
Group_Description	String
Allowable_For_Tax	Boolean
Tax_Reporting_Name	String
Category_Group	String

Examples

```
SELECT
  Group_Description,
  [Description],
  Id,
  [Url],
  Nominal_Code,
  Allowable_For_Tax,
  Tax_Reporting_Name,
  Auto_Sales_Tax_Rate
FROM
  Categories_Admin_Expenses
```

Categories_Cost_Of_Sales table

Column	Type
Nominal_Code	String
Id	String
Url	URI
Allowable_For_Tax	Boolean
Description	String
Group_Description	String
Tax_Reporting_Name	String
Auto_Sales_Tax_Rate	Decimal
Category_Group	String

Examples

```
SELECT
  Group_Description,
  [Description],
  Id,
  [Url],
  Nominal_Code,
  Allowable_For_Tax,
  Tax_Reporting_Name,
  Auto_Sales_Tax_Rate
FROM
  Categories_Cost_Of_Sales
```

Categories_General table

Column	Type
Nominal_Code	String
Id	String
Url	URI
Description	String
Tax_Reporting_Name	String
Category_Group	String

Examples

```
SELECT
    REPLACE (Url, Url, 'General') AS Group_Description,
    [Description],
    Id,
    [Ur1],
    Nominal_Code,
    CAST(NULL AS bit) AS Allowable_For_Tax,
    Tax_Reporting_Name,
    CAST(NULL as double) AS Auto_Sales_Tax_Rate
FROM
    Categories_General
```

Categories_Income table

Column	Type
Nominal_Code	String
Id	String
Url	URI
Description	String
Group_Description	String
Auto_Sales_Tax_Rate	Decimal
Category_Group	String

Examples

```
SELECT
    Group_Description,
    [Description],
    Id,
    [Url],
    Nominal_Code,
    CAST(NULL AS bit) AS Allowable_For_Tax,
    REPLACE (Url, Url, 'N/A') AS Tax_Reporting_Name,
    Auto_Sales_Tax_Rate
FROM
    Categories_Income
```

Contacts table

Column	Type
Id	String
Url	URI
Active_Projects_Count	Integer
First_Name	String
Last_Name	String
Address1	String
Address2	String
Address3	String
Town	String
Region	String
Country	String
Postcode	String
Phone_Number	String
Organisation_Name	String
Email	String
Billing_Email	String
Default_Payment_Terms_In_Days	Integer
Sales_Tax_Registration_Number	String
Mobile	String
Contact_Name_On_Invoices	Boolean
Created_At	Timestamp
Status	String
Updated_At	Timestamp
Uses_Contact_Level_Email_Settings	Boolean
Charge_Sales_Tax	String
Locale	String
Account_Balance	Decimal
Uses_Contact_Invoice_Sequence	Boolean
Emails_Thank_You_Notes	Boolean
Emails_Invoices_Automatically	Boolean
Emails_Payment_Reminders	Boolean

Examples

```
SELECT
```

```
    Id
FROM
    Contacts
WHERE
    Email = 'ta@example.com'

INSERT INTO
    Contacts (
        First_Name,
        Last_Name,
        Email,
        Billing_Email,
        Phone_Number,
        Mobile,
        Address1,
        Address2,
        Address3,
        Town,
        Region,
        Postcode,
        Country,
        Uses_Contact_Invoice_Sequence,
        Contact_Name_On_Invoices,
        Charge_Sales_Tax,
        Sales_Tax_Registration_Number,
        [Status],
        Default_Payment_Terms_In_Days,
        Locale
    )
VALUES
    (
        'Thomas, ' Axen ', ' ta@example.com ', ' bills@example.com ', ' (123) 555
-0101 ', ' (321) 555 -0101 ', ' 123 Third Street ', '', '', ' Los Angeles ', ' CA
', ' 99999 ', USA',
        'false',
        'true',
        'Always',
        'US123456789',
        'Active',
        '30',
        'en'
    )

UPDATE Contacts
SET
    Mobile = '(321)555-0101'
WHERE
    Email = 'ta@example.com'

DELETE FROM Contacts
WHERE
    Id = '18482080'
```

Credit_Note_Reconciliations table

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Credit_Note_Id	String
Credit_Note	URI
Invoice_Id	String
Invoice	URI
Gross_Value	Decimal
Dated_On	String
Exchange_Rate	Decimal
Currency	String
Created_At	Timestamp
Updated_At	Timestamp

Examples

```
SELECT
  *
FROM
  Credit_Note_Reconciliations

INSERT INTO
  Credit_Note_Reconciliations (
    Dated_On,
    Currency,
    Exchange_Rate,
    Gross_Value,
    Invoice,
    Credit_Note
  )
VALUES
  (
    '2024-12-06',
    'USD',
    '1',
    '100',
    'https://api.freeagent.com/v2/invoices/73622204',
    'https://api.freeagent.com/v2/credit_notes/73959649'
  )
```



```
UPDATE Credit_Note_Reconciliations
SET
    Gross_Value = 200
WHERE
    Id = '357053'

DELETE FROM Credit_Note_Reconciliations
WHERE
    Id = '357053'
```

Credit_Notes table

Column	Type
Id	Integer
Url	URI
Contact_Id	String
Contact	URI
Due_Value	Decimal
Updated_At	Timestamp
Payment_Terms_In_Days	Integer
Due_On	String
Omit_Header	Boolean
Dated_On	String
Reference	String
Status	String
Currency	String
Total_Value	Decimal
Involves_Sales_Tax	Boolean
Exchange_Rate	Decimal
Net_Value	Decimal
Is_Interim_Uk_Vat	Boolean
Refunded_Value	Decimal
Long_Status	String
Created_At	Timestamp
Bank_Account_Id	String
Bank_Account	String
Contact_Name	String
Sales_Tax_Value	Decimal
Refunded_On	String
Comments	String
Second_Sales_Tax_Value	Decimal
Credit_Note_Items	Array

Examples

```
SELECT
  *
FROM
  Credit_Notes
```

```
WHERE
    Status <> 'Refunded'

INSERT INTO
    Credit_Notes (Contact, Dated_On, Currency, Credit_Note_Items)
VALUES
    (
        'https://api.freeagent.com/v2/contacts/18494140',
        '2024-11-27',
        'GBP',
        '[{"item_type":"Days","quantity":"1","price":"-
999.99","description":"Consultancy Days}]')

UPDATE Credit_Notes
SET
    Credit_Note_Items = '[{"item_type":"Days","quantity":"4","price":"-
999.99","description":"Consultancy
Days"}, {"item_type":"Hours","quantity":"32","price":"-
172.22","description":"Developer Hours}]'
WHERE
    Id = '73934615'

DELETE FROM Credit_Notes
WHERE
    Id = '73934615'
```

Estimates table

Column	Type
Id	String
Url	URI
Contact_Id	String
Contact	URI
Project_Id	String
Project	URI
Dated_On	String
Status	String
Estimate_Type	String
Created_At	Timestamp
Include_Sales_Tax_On_Total_Value	Boolean
Total_Value	Decimal
Currency	String
Reference	String
Involves_Sales_Tax	Boolean
Net_Value	Decimal
Is_Interim_Uk_Vat	Boolean
Contact_Name	String
Updated_At	Timestamp
Second_Sales_Tax_Value	Decimal
Sales_Tax_Value	Decimal
Notes	String
Estimate_Items	Array

Examples

```
SELECT
  *
FROM
  Estimates
WHERE
  Estimate_Type = 'Quote'

INSERT INTO
  Estimates (
    Contact,
    Dated_On,
    [Status],
```

```
    Estimate_Type,  
    Currency,  
    Reference,  
    Estimate_Items  
  )  
VALUES  
  (  
    'https://api.freeagent.com/v2/contacts/18494140',  
    '2024-11-27',  
    'Draft',  
    'Quote',  
    'USD',  
    'Customer Ref 2',  
  
    '[{"item_type":"Days","quantity":"2","price":"999.99","description":"Consultancy  
Days"}]'  
  )  
  
UPDATE Estimates  
SET  
    Estimate_Items =  
    '[{"item_type":"Days","quantity":"4","price":"999.99","description":"Consultancy  
Days"}, {"item_type":"Hours","quantity":"32","price":"172.22","description":"Develop  
er Hours"}]'  
WHERE  
    Id = '5771094'  
  
DELETE FROM Estimates  
WHERE  
    Id = '5771094'
```

Expenses table

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Sales_Tax_Status	String
Attachment_File_Size	Integer
Attachment_Content_Src_Medium	String
Attachment_Url	URI
Attachment_Content_Src	String
Attachment_Content_Type	String
Attachment_Content_Src_Small	String
Attachment_Expires_At	String
Attachment_File_Name	String
User_Id	Integer
User	URI
Currency	String
Category_Id	Integer
Category	URI or String
Locked_Attributes	Array
Sales_Tax_Rate	Decimal
Dated_On	String
Gross_Value	Decimal
Updated_At	Timestamp
Native_Gross_Value	Decimal
Sales_Tax_Value	Decimal
Native_Sales_Tax_Value	Decimal
Description	String
Created_At	Timestamp
Locked_Reason	String
Second_Sales_Tax_Rate	Decimal
Second_Sales_Tax_Value	Decimal
Second_Sales_Tax_Status	String

Examples

```
SELECT
    *
FROM
    Expenses

INSERT INTO
    Expenses (
        User,
        Category,
        Dated_On,
        Currency,
        Gross_Value,
        Sales_Tax_Rate,
        Sales_Tax_Status,
        [Description]
    )
VALUES
    (
        'https://api.freeagent.com/v2/users/1861284',
        'https://api.freeagent.com/v2/categories/287',
        '2024-12-03',
        'GBP',
        '-200',
        '20',
        'TAXABLE',
        'Overnight stay'
    )

UPDATE Expenses
SET
    Description = 'Hotel Stay'
WHERE
    Id = '53063365'

DELETE FROM Expenses
WHERE
    Id = '53063365'
```

Final_Accounts_Reports table

Column	Type
Id	String
Url	URI
Period_Ends_On	String
Period_Starts_On	String
Filing_Due_On	String
Filing_Status	String

Examples

```
SELECT
  *
FROM
  Final_Accounts_Reports
```


Hire_Purchases table

Column	Type
Id	String
Url	URI
Description	URI
Bill	URI
Liabilities_Over_One_Year_Category	URI
Liabilities_Under_One_Year_Category	URI

Examples

```
SELECT
  *
FROM
  Hire_Purchases
```

Invoices table

Column	Type
Id	String
Url	URI
Exchange_Rate	Decimal
Contact_Id	String
Contact	URI
Total_Value	Decimal
Omit_Header	Boolean
Updated_At	Timestamp
Dated_On	String
Currency	String
Due_On	String
Refunded_Value	String
Contact_Name	String
Is_Interim_Uk_Vat	Boolean
Reference	String
Net_Value	Decimal
Involves_Sales_Tax	Boolean
Payment_Terms_In_Days	Integer
Due_Value	Decimal
Status	String
Long_Status	String
Created_At	Timestamp
Bank_Account_Id	String
Bank_Account	String
Paid_Value	Decimal
Always_Show_Bic_And_Iban	Boolean
Paid_On	String
Payment_Methods_Paypal	Boolean
Payment_Methods_Stripe	Boolean
Send_Reminder_Emails	Boolean
Send_New_Invoice_Emails	Boolean
Send_Thank_You_Emails	Boolean
Sales_Tax_Value	Decimal
Second_Sales_Tax_Value	Decimal

Column	Type
Client_Contact_Name	String
Project	URI
Po_Reference	String
Discount_Percent	Decimal
Discount_Value	Decimal
Comments	String
Show_Project_Name	Boolean
Written_Off_Date	String
Include_Timeslips	String
Include_Expenses	String
Include_Estimates	String
Recurring_Invoice	String
Invoice_Items	Array
Payment_Methods	Object

Examples

```

INSERT INTO
  Invoices (
    Contact,
    Dated_On,
    Due_On,
    Currency,
    Exchange_Rate,
    Payment_Terms_In_Days,
    Net_Value,
    Invoice_Items
  )
VALUES
  (
    'https://api.freeagent.com/v2/contacts/18494140',
    '2024-11-27',
    '2024-11-27',
    'USD',
    '0.7263561',
    '30',
    '7649.88',

    '[{"item_type":"Days","quantity":"5","price":"1249.99","description":"CON001 :
    Consultancy"}, {"item_type":"Stock","quantity":"7","price":"199.99","description":"W
    D 1TB 3.5 : Western Digital 1TB 3.5 hard disk
    drive","stock_item":"https://api.freeagent.com/v2/stock_items/236156"}]'
  )

```

Journal_Sets table

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Tag	Parameter
Updated_At	Timestamp
Dated_On	String
Description	String
Journal_Entries	Array
Bank_Accounts	Array
Stock_Items	Array

Examples

```
SELECT
  *
FROM
  Journal_Sets
WHERE
  Id = '5754992'

INSERT INTO
  Journal_Sets (Dated_On, [Description], Journal_Entries)
VALUES
  (
    '2024-12-03',
    'Sample Journal Created',
    '[{"category":"https://api.freeagent.com/v2/categories/363","description":"Sample journal line 1","debit_value":"10"}, {"category":"https://api.freeagent.com/v2/categories/001","description":"Sample journal line 2","debit_value":"-10"}]'
  )

UPDATE Journal_Sets
SET
  Journal_Entries = REPLACE (
    REPLACE (
      Journal_Entries,
      '""debit_value"":""10.0""',
      '""debit_value"":""10.99""'
    ),
  ),
```

```
        '""debit_value"":""-10.0""',  
        '""debit_value"":""-10.99""'  
    )  
WHERE  
    Id = '5762019'  
  
DELETE FROM Journal_Sets  
WHERE  
    Id = '5762019'
```

Notes table

Column	Type
Id	Integer
Url	URI
Project	String
Contact	String
Note	String
Parent_Id	Integer
Parent_Url	URI
Author	String
Created_At	Timestamp
Updated_At	Timestamp

Examples

```
SELECT
  *
FROM
  Notes
WHERE
  Contact = 'https://api.freeagent.com/v2/contacts/18494140'
INSERT INTO
  Notes (Note, Contact)
VALUES
  (
    'A new note',
    'https://api.freeagent.com/v2/contacts/18494140'
  )

UPDATE Notes
SET
  Name = 'Thomas Axen'
WHERE
  Id = '906732'

DELETE FROM Notes
WHERE
  Id = '906732'
```

Price_List_Items table

Column	Type
Id	Integer
Url	URI
Sales_Tax_Rate	String
Item_Type	String
Created_At	Timestamp
Code	String
Quantity	Decimal
Price	Decimal
Description	String
Second_Sales_Tax_Rate	Decimal
Vat_Status	String
Category_Id	String
Category	URI
Updated_At	Timestamp
Stock_Item_Id	String
Stock_Item	URI

Examples

```
SELECT
  *
FROM
  Price_List_Items
WHERE
  Item_Type = 'Months'

INSERT INTO
  Price_List_Items (
    Code,
    Quantity,
    Item_Type,
    [Description],
    Price,
    Sales_Tax_Rate,
    Category
  )
VALUES
  (
    'CS001',
    '1',
    'Months',
```

112 Examples

```
'Monthly Cloud Storage',  
'9.99',  
'20',  
'https://api.freeagent.com/v2/categories/001'  
)
```

```
UPDATE Price_List_Items
```

```
SET
```

```
    Price = 10.99
```

```
WHERE
```

```
    Code = 'CS001'
```

```
DELETE FROM Price_List_Items
```

```
WHERE
```

```
    Code = 'CS001'
```


Projects table

Column	Type
Id	Integer
Url	URI
Currency	String
Name	String
Budget_Units	String
Contact_Id	String
Contact	URI
Contact_Name	String
Billing_Period	String
Status	String
Uses_Project_Invoice_Sequence	Boolean
Created_At	Timestamp
Contract_Po_Reference	String
Updated_At	Timestamp
Starts_On	String
Is_Ir35	Boolean
Ends_On	String
Include_Unbilled_Time_In_Profitability	Boolean
Budget	Integer
Hours_Per_Day	Decimal
Normal_Billing_Rate	Decimal
Is_Deletable	Boolean

Examples

```

SELECT
  *
FROM
  Projects
WHERE
  Status = 'Active'

INSERT INTO
  Projects (
    [Name],
    Contact,
    [Status],
    Currency,
    Budget_Units,

```

114 Examples

```
Budget,  
Starts_On,  
Is_Deletable  
)  
VALUES  
(  
    'Consultancy to add features.',  
    'https://api.freeagent.com/v2/contacts/18494140',  
    'Active',  
    'USD',  
    'Monetary',  
    '9999',  
    '2025-01-03',  
    'true'  
)  
  
UPDATE Projects  
SET  
    Name = 'New Features'  
WHERE  
    Id = '4088693'  
  
DELETE FROM Projects  
WHERE  
    Id = '4088697'
```

Properties table

Column	Type
Id	Integer
Url	URI
Address1	String
Address2	String
Address3	String
Town	String
Region	String
Postcode	String
Country	String

Examples

```
SELECT
  *
FROM
  Properties
```

Recurring_Invoices table

Column	Type
Id	Integer
Url	URI
Net_Value	Decimal
Recurring_End_Date	String
Next_Recurs_On	String
Contact_Id	String
Contact	String
Send_New_Invoice_Emails	Boolean
Comments	String
Contact_Name	String
Dated_On	String
Recurring_Status	String
Frequency	String
Reference	String
Created_At	Timestamp
Due_Value	Decimal
Profile_Id	String
Currency	String
Exchange_Rate	Decimal
Second_Sales_Tax_Value	Decimal
Total_Value	Decimal
Payment_Terms_In_Days	Integer
Sales_Tax_Value	Decimal
Omit_Header	Boolean
Always_Show_Bic_And_Iban	Boolean
Send_Reminder_Emails	Boolean
Updated_At	Timestamp
Send_Thank_You_Emails	Boolean
Bank_Account_Id	String
Bank_Account	String
Invoice_Items	Array
Payment_Methods	Array

Examples

```
SELECT
  *
FROM
  Recurring_Invoice_Invoice_Items
WHERE
  Id = '41506170'
```

Sales_Tax_Periods table

Column	Type
Id	Integer
Url	URI
Locked_Reason	String
Is_Locked	Boolean
Effective_Date	String
Sales_Tax_Name	String
Sales_Tax_Rate_1	Decimal
Sales_Tax_Rate_2	Decimal
Sales_Tax_Rate_3	Decimal
Sales_Tax_Registration_Number	String
Sales_Tax_Is_Value_Added	Boolean
Sales_Tax_Registration_Status	String
Second_Sales_Tax_Name	String
Second_Sales_Tax_Is_Compound	Boolean
Second_Sales_Tax_Rate_1	Decimal
Second_Sales_Tax_Rate_2	Decimal
Second_Sales_Tax_Rate_3	Decimal

Examples

```

SELECT
  *
FROM
  Sales_Tax_Periods
WHERE
  Is_Locked = FALSE

INSERT INTO
  Sales_Tax_Periods (
    Sales_Tax_Name,
    Sales_Tax_Rate_1,
    Sales_Tax_Is_Value_Added,
    Sales_Tax_Registration_Status,
    Effective_Date
  )
VALUES
  (
    'VAT Reduced',
    '15',
    'true',
    '1234567890',

```

```
'2026-01-01'
```

```
)
```

```
UPDATE Sales_Tax_Periods
```

```
SET
```

```
    Sales_Tax_Rate_1 = '16'
```

```
WHERE
```

```
    Id = '75824'
```

```
DELETE FROM Sales_Tax_Periods
```

```
WHERE
```

```
    Id = '75822'
```

Tasks table

Column	Type
Id	Integer
Url	URI
Updated_At	Timestamp
Project	String
Name	String
Currency	String
Is_Billable	Boolean
Status	String
Billing_Rate	Decimal
Billing_Period	String
Created_At	Timestamp
Is_Deletable	Boolean

Examples

```
SELECT
  *
FROM
  Tasks
WHERE
  Is_Deletable = False

INSERT INTO
  Tasks (
    [Name],
    Currency,
    Is_Billable,
    Billing_Period,
    Billing_Rate,
    Project,
    [Status],
    Is_Deletable
  )
VALUES
  (
    'Test task.',
    'GBP',
    'true',
    'hour',
    '249.95',
    'https://api.freeagent.com/v2/projects/4088689',
    'Active',
    'true'
```


)

```
UPDATE TASKS
```

```
SET
```

```
    Name = 'Test task 2.'
```

```
WHERE
```

```
    Id = '5399215'
```

```
DELETE FROM Tasks
```

```
WHERE
```

```
    Id = '5399215'
```

Timeslips table

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Created_At	Timestamp
User_Id	String
User	URI
Project_Id	String
Project	URI
Task	URI
Hours	Decimal
Dated_On	String
Updated_At	Timestamp
Comment	String

Examples

```
SELECT
  *
FROM
  Timeslips
WHERE
  Hours >= 6

INSERT INTO
  Timeslips (User, Project, Task, Dated_On, [Hours])
VALUES
  (
    'https://api.freeagent.com/v2/users/1853395',
    'https://api.freeagent.com/v2/projects/4088689',
    'https://api.freeagent.com/v2/tasks/5394290',
    '2024-12-03',
    '6'
  )

UPDATE Timeslips
SET
  Hours = 10
WHERE
  Id = '48653687'
```

```
DELETE FROM Timeslips  
WHERE  
    Id = '48653687'
```

Users table

Column	Type
Id	Integer
Url	URI
First_Name	String
Role	String
Last_Name	String
Created_At	Timestamp
Hidden	Boolean
Email	String
Opening_Mileage	Decimal
Permission_Level	Integer
Updated_At	Timestamp
Send_Invitation	Boolean

Examples

```
SELECT
  *
FROM
  Users
WHERE
  Permission_Level = 8

INSERT INTO
  Users (
    First_Name,
    Last_Name,
    Email,
    Role,
    Permission_Level
  )
VALUES
  (
    'Thomas',
    'Axen',
    'ta@example.com',
    'Employee',
    '8'
  )

UPDATE Users
SET
  Last_Name = 'Jones'
WHERE
```

```
Id = '1853395'
```

```
DELETE FROM Users  
WHERE  
    Id = '1853395'
```

API view

Column	Type
URL	String
Method	String
Code	Integer
Accept	String
RequestType	String
RequestBody	String
ResponseType	String
ResponseBody	String

Examples

```
SELECT
  *
FROM
  API
WHERE
  Url = '/v2/expenses/mileage_settings'
  AND Method = 'GET'

SELECT
  *
FROM
  API
WHERE
  Url = '/v2/capital_assets?include_history=true'
  AND Method = 'GET'

-- Change the status of an invoice.
SELECT
  *
FROM
  API
WHERE
  Url = '/v2/invoices/INVOICEID/transitions/MARKAS'
  AND Method = 'PUT'

-- Retrieve, update, and remove the additional text for an invoice.
SELECT
  *
FROM
  API
WHERE
  Url = '/v2/invoices/default_additional_text'
  AND Method = 'GET'
```

```
SELECT
  *
FROM
  API
WHERE
  Url = '/v2/invoices/default_additional_text'
  AND Method = 'PUT'
  AND RequestBody = '{"default_additional_text":"Please pay promptly."}'

SELECT
  *
FROM
  API
WHERE
  Url = '/v2/invoices/default_additional_text'
  AND Method = 'DELETE'

-- Retrieve journal lines.
SELECT * FROM Journal_Sets_Journal_Entries WHERE Id='5754992'
```

Balance_Sheet view

Column	Type
Accounting_Period_Start_Date	String
As_At_Date	String
Currency	String
Capital_Assets_Net_Book_Value	Integer
Capital_Assets_Accounts	Array
Current_Liabilities_Accounts	Array
Current_Assets_Accounts	Array
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Owners_Equity_Accounts	Array
Total_Owners_Equity	Integer

Balance_Sheet_Capital_Assets view

Column	Type
Accounting_Period_Start_Date	String
As_At_Date	String
Currency	String
Capital_Assets_Net_Book_Value	Integer
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Total_Owners_Equity	Integer
Capital_Assets_Name	String
Capital_Assets_Nominal_Code	String
Capital_Assets_Total_Debit_Value	Decimal

Balance_Sheet_Current_Assets view

Column	Type
Accounting_Period_Start_Date	String
As_At_Date	String
Currency	String
Capital_Assets_Net_Book_Value	Integer
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Total_Owners_Equity	Integer
Current_Assets_Name	String
Current_Assets_Nominal_Code	String
Current_Assets_Total_Debit_Value	Decimal

Balance_Sheet_Current_Liabilities view

Column	Type
Accounting_Period_Start_Date	String
As_At_Date	String
Currency	String
Capital_Assets_Net_Book_Value	Integer
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Total_Owners_Equity	Integer
Current_Liabilities_Name	String
Current_Liabilities_Nominal_Code	String
Current_Liabilities_Total_Debit_Value	Decimal

Balance_Sheet_Opening_Balances view

Column	Type
Currency	String
Capital_Assets_Net_Book_Value	Integer
Capital_Assets_Accounts	Array
Current_Liabilities_Accounts	Array
Current_Assets_Accounts	Array
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Owners_Equity_Accounts	Array
Total_Owners_Equity	Integer

Balance_Sheet_Owners_Equity view

Column	Type
Accounting_Period_Start_Date	String
As_At_Date	String
Currency	String
Capital_Assets_Net_Book_Value	Integer
Total_Assets	Integer
Net_Current_Assets	Integer
Owners_Equity_Retained_Profit	Integer
Total_Owners_Equity	Integer
Owners_Equity_Name	String
Owners_Equity_Nominal_Code	String
Owners_Equity_Total_Debit_Value	Decimal

Bank_Accounts_Marked_For_Review_Category_Group_Counts view

Column	Type
Id	String
Url	URI
Type	String
View	String
Email	String
Account_Number	String
Current_Balance	Decimal
Unexplained_Transaction_Count	Integer
Name	String
Opening_Balance	Decimal
Manually_Added_Transaction_Count	Integer
Updated_At	Timestamp
Is_Personal	Boolean
Total_Count	Integer
Is_Primary	Boolean
Currency	String
Status	String
Marked_For_Review_Count	Integer
Latest_Activity_Date	String
Bank_Code	String
Created_At	Timestamp
Bank_Feed_Enabled	Boolean
Bank_Guess_Enabled	Boolean
Bank_Name	String
Sort_Code	String
Secondary_Sort_Code	String
Iban	String
Bic	String
Default_Property	String
Marked_For_Review_Category_Group_Counts_Name	String
Marked_For_Review_Category_Group_Counts_Nominal_Code	String
Marked_For_Review_Category_Group_Counts_Count	Integer

Column	Type
Marked_For_Review_Category_Group_Counts_Sign	Integer

Bank_Transactions view

Column	Type
Id	String
Url	URI
Bank_Account_Id	String
Bank_Account	String
Transaction_Type	String
View	String
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Amount	Decimal
Dated_On	String
Is_Manual	Boolean
Matching_Transactions_Count	Integer
Description	String
Full_Description	String
Unexplained_Amount	Decimal
Created_At	Timestamp
Updated_At	Timestamp
Transaction_Id	String
Uploaded_At	Timestamp
Bank_Transaction_Explanations	Array

Bank_Transactions_Explanations view

Column	Type
Id	String
Url	URI
Bank_Account_Id	String
Bank_Account	String
View	String
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Amount	Decimal
Dated_On	String
Is_Manual	Boolean
Matching_Transactions_Count	Integer
Description	String
Full_Description	String
Unexplained_Amount	Decimal
Created_At	Timestamp
Updated_At	Timestamp
Transaction_Id	String
Uploaded_At	Timestamp
Bank_Transaction_Explanations_Dated_On	String
Bank_Transaction_Explanations_Bank_Account	String
Bank_Transaction_Explanations_Transaction_Description	String
Bank_Transaction_Explanations_Is_Money_Out	Boolean
Bank_Transaction_Explanations_Is_Deletable	Boolean
Bank_Transaction_Explanations_Transfer_Value	Decimal
Bank_Transaction_Explanations_Gross_Value	Decimal
Bank_Transaction_Explanations_Category	String
Bank_Transaction_Explanations_Url	URI
Bank_Transaction_Explanations_Description	String
Bank_Transaction_Explanations_Is_Locked	Boolean
Bank_Transaction_Explanations_Foreign_Currency_Value	Decimal
Bank_Transaction_Explanations_Type	String

Column	Type
Bank_Transaction_Explanations_Has_Pending_Operation	Boolean
Bank_Transaction_Explanations_Is_Money_In	Boolean
Bank_Transaction_Explanations_Sales_Tax_Value	Decimal
Bank_Transaction_Explanations_Is_Money_Paid_To_User	Boolean
Bank_Transaction_Explanations_Guess_Rule_Name	String
Bank_Transaction_Explanations_Guessed_Category	String
Bank_Transaction_Explanations_Bank_Transaction	String
Bank_Transaction_Explanations_Marked_For_Review	Boolean
Bank_Transaction_Explanations_Updated_At	Timestamp
Bank_Transaction_Explanations_Detail	String
Bank_Transaction_Explanations_Sales_Tax_Status	String
Bank_Transaction_Explanations_Sales_Tax_Rate	Decimal
Bank_Transaction_Explanations_Paid_Invoice	String

Bill_Items view

Column	Type
Id	String
Url	URI
Total_Value	Decimal
Status	String
Paid_Value	Decimal
Contact	String
Project	String
Created_At	Timestamp
Updated_At	Timestamp
Dated_On	String
Reference	String
Native_Due_Value	Decimal
Due_On	String
Net_Value	Decimal
Paid_On	String
Long_Status	String
Due_Value	Decimal
Currency	String
Input_Total_Values_Inc_Tax	Boolean
Sales_Tax_Value	Decimal
Is_Paid_By_Hire_Purchase	Boolean
Locked_Reason	String
Contact_Name	String
Comments	String
Second_Sales_Tax_Value	Decimal
Recurring	String
View	String
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Bill_Items_Url	URI
Bill_Items_Sales_Tax_Rate	Decimal
Bill_Items_Locked_Attributes	Array
Bill_Items_Bill	String

Column	Type
Bill_Items_Total_Value_Ex_Tax	String
Bill_Items_Category	String
Bill_Items_Total_Value	String
Bill_Items_Sales_Tax_Status	String
Bill_Items_Locked_Reason	String
Bill_Items_Sales_Tax_Value	Decimal

Capital_Assets table

Column	Type
Id	String
Url	URI
View	String
Created_At	Timestamp
Description	String
Asset_Type	String
Asset_Life_Years	Integer
Purchased_On	String
Updated_At	Timestamp
Depreciation_Profile_Method	String
Depreciation_Profile_Asset_Life_Years	Integer
Depreciation_Profile_Frequency	String

Examples

```
SELECT
    TIMESTAMPADD (SQL_TSI_YEAR, Asset_Life_Years, Created_At) as EndOfDep,
    ca.*
FROM
    Capital_Assets ca
WHERE
    TIMESTAMPADD (SQL_TSI_YEAR, Asset_Life_Years, Created_At) > Current_Timestamp
```

Capital_Assets_History view

Column	Type
Id	String
Url	URI
View	String
Created_At	Timestamp
Description	String
Asset_Type	String
Asset_Life_Years	Integer
Purchased_On	String
Updated_At	Timestamp
Depreciation_Profile_Method	String
Depreciation_Profile_Asset_Life_Years	Integer
Depreciation_Profile_Frequency	String
Capital_Asset_History_Type	String
Capital_Asset_History_Description	String
Capital_Asset_History_Date	String
Capital_Asset_History_Value	Decimal
Capital_Asset_History_Tax_Value	Decimal
Capital_Asset_History_Link_Id	String
Capital_Asset_History_Link	String

Cashflow view

Column	Type
From_Date	Parameter
To_Date	Parameter
Outgoing_Months	Object
Outgoing_Total	String
From	String
Balance	String
Incoming_Months	Object
Incoming_Total	String
To	String

Cashflow_Incoming view

Column	Type
From_Date	Parameter
To_Date	Parameter
Outgoing_Months	Object
Outgoing_Total	String
From	String
Balance	String
Incoming_Total	String
To	String
Incoming_Months_Month	Integer
Incoming_Months_Year	Integer
Incoming_Months_Total	String

Cashflow_Outgoing view

Column	Type
From_Date	Parameter
To_Date	Parameter
Outgoing_Total	String
From	String
Balance	String
Incoming_Months	Object
Incoming_Total	String
To	String
Outgoing_Months_Month	Integer
Outgoing_Months_Year	Integer
Outgoing_Months_Total	String

Cis_Bands view

Column	Type
Name	String
Deduction_Rate	Decimal
Income_Description	String
Deduction_Description	String
Nominal_Code	String

Company view

Column	Type
Id	String
Name	String
Type	String
Country	String
Url	URI
Mileage_Units	String
Company_Start_Date	String
Locale	String
Subdomain	String
Currency	String
Short_Date_Format	String
Freeagent_Start_Date	String
Town	String
First_Accounting_Year_End	String
Company_Registration_Number	String
Address1	String
Address2	String
Address3	String
Updated_At	String
Sales_Tax_Name	String
Region	String
Postcode	String
Supports_Auto_Sales_Tax_On_Purchases	Boolean
Business_Category	String
Cis_Enabled	Boolean
Created_At	String
Sales_Tax_Registration_Status	String
Ec_Vat_Reporting_Enabled	Boolean
Sales_Tax_Effective_Date	String
Initially_On_Frs	Boolean
Sales_Tax_Is_Value_Added	Boolean
Initial_Vat_Basis	String
Second_Sales_Tax_Name	String
Time_Zone	String

Column	Type
Second_Sales_Tax_Is_Compound	Boolean
Sales_Tax_Registration_Number	String
Vat_First_Return_Period_Ends_On	String
Contact_Email	String
Business_Type	String
Website	String
Logo_Url	URI
Logo_File_Name	String
Logo_Content_Type	String
Logo_Content_Src	String
Logo_Content_Src_Medium	String
Logo_Content_Src_Small	String
Logo_Expires_At	String
Locked_Attributes	Array
Annual_Accounting_Periods	Array
Sales_Tax_Rates	Array
Second_Sales_Tax_Rates	Array

Company_Annual_Accounting_Periods view

Column	Type
Id	String
Name	String
Type	String
Country	String
Url	URI
Mileage_Units	String
Company_Start_Date	String
Locale	String
Subdomain	String
Currency	String
Short_Date_Format	String
Freeagent_Start_Date	String
Town	String
First_Accounting_Year_End	String
Company_Registration_Number	String
Address1	String
Address2	String
Address3	String
Updated_At	String
Sales_Tax_Name	String
Region	String
Postcode	String
Supports_Auto_Sales_Tax_On_Purchases	Boolean
Business_Category	String
Cis_Enabled	Boolean
Created_At	String
Sales_Tax_Registration_Status	String
Ec_Vat_Reporting_Enabled	Boolean
Sales_Tax_Effective_Date	String
Initially_On_Frs	Boolean
Sales_Tax_Is_Value_Added	Boolean
Initial_Vat_Basis	String
Second_Sales_Tax_Name	String
Time_Zone	String

Column	Type
Second_Sales_Tax_Is_Compound	Boolean
Sales_Tax_Registration_Number	String
Vat_First_Return_Period_Ends_On	String
Contact_Email	String
Business_Type	String
Website	String
Logo_Url	URI
Logo_File_Name	String
Logo_Content_Type	String
Logo_Content_Src	String
Logo_Content_Src_Medium	String
Logo_Content_Src_Small	String
Logo_Expires_At	String
Annual_Accounting_Periods_Starts_On	String
Annual_Accounting_Periods_Ends_On	String

Company_Business_Categories view

Column	Type
Business_Category	String

Company_Locked_Attributes view

Column	Type
Id	Integer
Name	String
Type	String
Country	String
Url	URI
Mileage_Units	String
Company_Start_Date	String
Locale	String
Subdomain	String
Currency	String
Short_Date_Format	String
Freeagent_Start_Date	String
Town	String
First_Accounting_Year_End	String
Company_Registration_Number	String
Address1	String
Address2	String
Address3	String
Updated_At	String
Sales_Tax_Name	String
Region	String
Postcode	String
Supports_Auto_Sales_Tax_On_Purchases	Boolean
Business_Category	String
Cis_Enabled	Boolean
Created_At	String
Sales_Tax_Registration_Status	String
Ec_Vat_Reporting_Enabled	Boolean
Sales_Tax_Effective_Date	String
Initially_On_Frs	Boolean
Sales_Tax_Is_Value_Added	Boolean
Initial_Vat_Basis	String
Second_Sales_Tax_Name	String
Time_Zone	String

Column	Type
Second_Sales_Tax_Is_Compound	Boolean
Sales_Tax_Registration_Number	String
Vat_First_Return_Period_Ends_On	String
Contact_Email	String
Business_Type	String
Website	String
Logo_Url	URI
Logo_File_Name	String
Logo_Content_Type	String
Logo_Content_Src	String
Logo_Content_Src_Medium	String
Logo_Content_Src_Small	String
Logo_Expires_At	String
Locked_Attributes_Array_Id	String

Company_Sales_Tax_Rates view

Column	Type
Id	String
Name	String
Type	String
Country	String
Url	URI
Mileage_Units	String
Company_Start_Date	String
Locale	String
Subdomain	String
Currency	String
Short_Date_Format	String
Freeagent_Start_Date	String
Town	String
First_Accounting_Year_End	String
Company_Registration_Number	String
Address1	String
Address2	String
Address3	String
Updated_At	String
Sales_Tax_Name	String
Region	String
Postcode	String
Supports_Auto_Sales_Tax_On_Purchases	Boolean
Business_Category	String
Cis_Enabled	Boolean
Created_At	String
Sales_Tax_Registration_Status	String
Ec_Vat_Reporting_Enabled	Boolean
Sales_Tax_Effective_Date	String
Initially_On_Frs	Boolean
Sales_Tax_Is_Value_Added	Boolean
Initial_Vat_Basis	String
Second_Sales_Tax_Name	String
Time_Zone	String

Column	Type
Second_Sales_Tax_Is_Compound	Boolean
Sales_Tax_Registration_Number	String
Vat_First_Return_Period_Ends_On	String
Contact_Email	String
Business_Type	String
Website	String
Logo_Url	URI
Logo_File_Name	String
Logo_Content_Type	String
Logo_Content_Src	String
Logo_Content_Src_Medium	String
Logo_Content_Src_Small	String
Logo_Expires_At	String
Sales_Tax_Rates_Array_Id	String

Company_Tax_Timeline view

Column	Type
Description	String
Nature	String
Dated_On	String
Is_Personal	Boolean
Amount_Due	real
Status	String

Corporation_Tax>Returns view

Column	Type
Id	String
Url	URI
Filing_Status	String
Period_Ends_On	String
Period_Starts_On	String
Filing_Due_On	String
Payment_Due_On	String
Amount_Due	String
Payment_Status	String

Credit_Note_Items view

Column	Type
Id	Integer
Url	URI
Contact_Id	String
Contact	String
Due_Value	Decimal
Updated_At	Timestamp
Payment_Terms_In_Days	Integer
Due_On	String
Omit_Header	Boolean
Dated_On	String
Reference	String
Status	String
Currency	String
Total_Value	Decimal
Involves_Sales_Tax	Boolean
Exchange_Rate	Decimal
Net_Value	Decimal
Is_Interim_Uk_Vat	Boolean
Refunded_Value	Decimal
Long_Status	String
Created_At	Timestamp
Bank_Account_Id	String
Bank_Account	String
Contact_Name	String
Sales_Tax_Value	Decimal
Refunded_On	String
Comments	String
Second_Sales_Tax_Value	Decimal
Credit_Note_Items_Url_Id	URI
Credit_Note_Items_Url	URI
Credit_Note_Items_Quantity	Decimal
Credit_Note_Items_Position	Integer
Credit_Note_Items_Description	String
Credit_Note_Items_Suffers_Cis_Deduction	Boolean

Column	Type
Credit_Note_Items_Item_Type	String
Credit_Note_Items_Price	Decimal
Credit_Note_Items_Sales_Tax_Rate	Decimal
Credit_Note_Items_Sales_Tax_Status	String
Credit_Note_Items_Second_Sales_Tax_Rate	Decimal
Credit_Note_Items_Second_Sales_Tax_Status	String
Credit_Note_Items_Category_Id	String
Credit_Note_Items_Category	String

Email_Addresses view

Column	Type
Email_Address	String

Invoice_Items view

Column	Type
Id	String
Url	URI
Exchange_Rate	Decimal
Contact_Id	String
Contact	String
Total_Value	Decimal
Omit_Header	Boolean
Updated_At	Timestamp
Dated_On	String
Currency	String
Due_On	String
Refunded_Value	String
Contact_Name	String
Is_Interim_Uk_Vat	Boolean
Reference	String
Net_Value	Decimal
Involves_Sales_Tax	Boolean
Payment_Terms_In_Days	Integer
Due_Value	Decimal
Status	String
Long_Status	String
Created_At	Timestamp
Bank_Account_Id	String
Bank_Account	String
Paid_Value	Decimal
Always_Show_Bic_And_Iban	Boolean
Paid_On	String
Payment_Methods_Paypal	Boolean
Payment_Methods_Stripe	Boolean
Send_Reminder_Emails	Boolean
Send_New_Invoice_Emails	Boolean
Send_Thank_You_Emails	Boolean
Sales_Tax_Value	Decimal
Second_Sales_Tax_Value	Decimal

Column	Type
Client_Contact_Name	String
Project	String
Po_Reference	String
Discount_Percent	Decimal
Discount_Value	Decimal
Comments	String
Show_Project_Name	Boolean
Written_Off_Date	String
Include_Timeslips	String
Include_Expenses	String
Include_Estimates	String
Recurring_Invoice	String
Invoice_Items_Url_Id	URI
Invoice_Items_Url	URI
Invoice_Items_Project_Id	String
Invoice_Items_Project	String
Invoice_Items_Position	Integer
Invoice_Items_Quantity	Decimal
Invoice_Items_Second_Sales_Tax_Rate	Decimal
Invoice_Items_Description	String
Invoice_Items_Price	Decimal
Invoice_Items_Category_Id	String
Invoice_Items_Category	String
Invoice_Items_Item_Type	String
Invoice_Items_Sales_Tax_Rate	Decimal
Invoice_Items_Suffers_Cis_Deduction	Boolean
Invoice_Items_Sales_Tax_Status	String
Invoice_Items_Second_Sales_Tax_Status	String
Invoice_Items_Stock_Item_Id	String
Invoice_Items_Stock_Item	String

Journal_Sets_Bank_Accounts view

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Tag	Parameter
Updated_At	Timestamp
Dated_On	String
Description	String
Bank_Accounts_Url_Id	URI
Bank_Accounts_Url	URI
Bank_Accounts_Description	String
Bank_Accounts_Debit_Value	Decimal

Journal_Sets_Journal_Entries view

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Tag	Parameter
Updated_At	Timestamp
Dated_On	String
Description	String
Journal_Entries_Url_Id	URI
Journal_Entries_Url	URI
Journal_Entries_Description	String
Journal_Entries_Category_Id	Integer
Journal_Entries_Category	String
Journal_Entries_Debit_Value	Decimal

Examples

```
SELECT
  *
FROM
  Journal_Sets_Journal_Entries
WHERE
  Id = '5754992'
```

Journal_Sets_Stock_Items view

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Updated_Since	Parameter
Tag	Parameter
Updated_At	Timestamp
Dated_On	String
Description	String
Stock_Items_Url_Id	URI
Stock_Items_Url	URI
Stock_Items_Description	String
Stock_Items_Debit_Value	Decimal

Opening_Balance_Summary view

Column	Type
Id	Integer
Category	String
Display_Nominal_Code	String
Nominal_Code	String
From_Date	Parameter
To_Date	Parameter
User	String
Name	String
Total	Decimal
Bank_Account_Id	String
Bank_Account	String

Payroll_Payslips view

Column	Type
User_Id	String
User	URI
Year	Integer
Period	Integer
Postgrad_Loan_Deduction	Decimal
Employer_Ni	Decimal
Student_Loan_Deduction	Decimal
Employee_Pension_Salary_Sacrifice	Decimal
Tax_Code	String
Other_Deductions	Decimal
Commission	Decimal
Frequency	String
Other_Deductions_From_Net_Pay	Decimal
Absence_Payments	Decimal
Statutory_Adoption_Pay	Decimal
Dated_On	Date
Deduction_Free_Pay	Decimal
Basic_Pay	Decimal
Week_1_Month_1_Basis	Boolean
Tax_Deducted	Decimal
Statutory_Maternity_Pay	Decimal
Statutory_Sick_Pay	Decimal
Statutory_Paternity_Pay	Decimal
Employee_Ni	Decimal
Employer_Pension	Decimal
Overtime	Decimal
Allowance	Decimal
Bonus	Decimal
Statutory_Parental_Bereavement_Pay	Decimal
Other_Payments	Decimal
Created_At	Timestamp
Employee_Pension	Decimal
Employee_Pension_Not_Under_Net_Pay	Decimal
Attachments	Decimal

Column	Type
Payroll_Giving	Decimal
Ni_Calc_Type	String
Additional_Statutory_Paternity_Pay	Decimal
Deductions_Subject_To_Nic_But_Not_Paye	Decimal
Other_Salary_Sacrifice_Deductions	Decimal
Ni_Letter	String
Deduct_Student_Loan	Boolean
Deduct_Postgrad_Loan	Boolean
Student_Loan_Deductions_Plan	String
Hours_Worked	Decimal
Updated_At	Timestamp
Period_Url_Id	URI
Period_Url	URI
Period_Status	String
Period_Updated_At	Timestamp
Period_Dated_On	String
Period_Employment_Allowance_Claimed	Boolean
Period_Created_At	Timestamp
Period_Employment_Allowance_Amount	Decimal
Period_Construction_Industry_Scheme_Deduction	Decimal
Period_Frequency	String

Payroll_Periods view

Column	Type
Year	Integer
Period	Integer
Url	URI
Employment_Allowance_Amount	String
Frequency	String
Status	String
Dated_On	String
Employment_Allowance_Claimed	Boolean
Construction_Industry_Scheme_Deduction	String
Created_At	Timestamp
Updated_At	Timestamp

Payroll_Profiles view

Column	Type
Year	Integer
User	String
Address_Line_1	String
Address_Line_3	String
Address_Line_2	String
Postcode	String
Total_Pay_In_Previous_Employment	Decimal
Title	String
Gender	String
Date_Of_Birth	String
Total_Tax_In_Previous_Employment	Decimal
Created_At	Datetime
Updated_At	Datetime

Profit_And_Loss view

Column	Type
From_Date	Parameter
To_Date	Parameter
Accounting_Period	Parameter
From	String
To	String
Operating_Profit	Decimal
Retained_Profit	Decimal
Expenses	Decimal
Retained_Profit_Brought_Forward	Decimal
Income	Decimal
Retained_Profit_Carried_Forward	Decimal
Less	Array

Profit_And_Loss_Less view

Column	Type
From_Date	Parameter
To_Date	Parameter
Accounting_Period	Parameter
From	String
To	String
Operating_Profit	Decimal
Retained_Profit	Decimal
Expenses	Decimal
Retained_Profit_Brought_Forward	Decimal
Income	Decimal
Retained_Profit_Carried_Forward	Decimal
Less_Title	String
Less_Total	Decimal

Recurring_Invoice_Invoice_Items view

Column	Type
Id	Integer
Url	URI
Net_Value	Decimal
Recurring_End_Date	String
Next_Recurs_On	String
Contact_Id	String
Contact	String
Send_New_Invoice_Emails	Boolean
Comments	String
Contact_Name	String
Dated_On	String
Recurring_Status	String
Frequency	String
Reference	String
Created_At	Timestamp
Due_Value	Decimal
Profile_Id	String
Currency	String
Exchange_Rate	Decimal
Second_Sales_Tax_Value	Decimal
Total_Value	Decimal
Payment_Terms_In_Days	Integer
Sales_Tax_Value	Decimal
Omit_Header	Boolean
Always_Show_Bic_And_Iban	Boolean
Send_Reminder_Emails	Boolean
Updated_At	Timestamp
Send_Thank_You_Emails	Boolean
Bank_Account_Id	String
Bank_Account	String
Invoice_Items_Id	String
Invoice_Items_Url	URI
Invoice_Items_Position	Integer
Invoice_Items_Price	Decimal

Column	Type
Invoice_Items_Description	String
Invoice_Items_Item_Type	String
Invoice_Items_Quantity	Decimal
Invoice_Items_Stock_Item_Id	String
Invoice_Items_Stock_Item	String
Invoice_Items_Sales_Tax_Rate	Decimal
Invoice_Items_Suffers_Cis_Deduction	Boolean
Invoice_Items_Second_Sales_Tax_Rate	Decimal
Invoice_Items_Sales_Tax_Status	String
Invoice_Items_Second_Sales_Tax_Status	String
Invoice_Items_Category_Id	String
Invoice_Items_Category	String

Stock_Items view

Column	Type
Id	Integer
Url	URI
Updated_At	Timestamp
Description	String
Cost_Of_Sale_Category	String
Opening_Quantity	Decimal
Created_At	Timestamp
Opening_Balance	Decimal
Stock_On_Hand	Decimal

Transactions view

Column	Type
Id	Integer
Url	URI
From_Date	Parameter
To_Date	Parameter
Dated_On	String
Description	String
Debit_Value	Decimal
Created_At	Timestamp
Updated_At	Timestamp
Category	String
Category_Name	String
Nominal_Code	String
Source_Item_Url	URI
Foreign_Currency_Data_Currency_Code	String
Foreign_Currency_Data_Debit_Value	String

Trial_Balance_Summary view

Column	Type
Id	Integer
Category	String
Display_Nominal_Code	String
Nominal_Code	String
From_Date	Parameter
To_Date	Parameter
User	String
Name	String
Total	Decimal
Bank_Account_Id	String
Bank_Account	String

Vat_Return_Payments view

Column	Type
Year	year
Url	URI
Filing_Due_On	String
Period_Starts_On	String
Period_Ends_On	String
Filing_Status	String
Payments_Amount_Due	Integer
Payments_Label	String
Payments_Due_On	String

Vat_Returns view

Column	Type
Year	year
Url	URI
Filing_Due_On	String
Period_Starts_On	String
Period_Ends_On	String
Filing_Status	String
Payments	Array

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