

```
In [1]: !pip install sqlalchemy==1.3.9
```

```
Collecting sqlalchemy==1.3.9
  Downloading SQLAlchemy-1.3.9.tar.gz (6.0 MB)
    ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 6.0/6.0 MB 136.7 MB/s eta 0:00:00
  Preparing metadata (setup.py) ... one
Building wheels for collected packages: sqlalchemy
  Building wheel for sqlalchemy (setup.py) ...done
  Created wheel for sqlalchemy: filename=SQLAlchemy-1.3.9-cp312-cp312-linux_x86_64.whl size=1160111 sha256=45fa36d4ce3b7c38ca88c6ccc1e4e1d87616bf7d90a2a19fa688531812c8ae04
  Stored in directory: /home/jupyterlab/.cache/pip/wheels/b3/1c/42/0e26b8d512adc6bce10ff71a05229366b4ccec641cd3b42111
Successfully built sqlalchemy
Installing collected packages: sqlalchemy
  Attempting uninstall: sqlalchemy
    Found existing installation: SQLAlchemy 2.0.37
    Uninstalling SQLAlchemy-2.0.37:
      Successfully uninstalled SQLAlchemy-2.0.37
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
jupyterhub 5.2.1 requires SQLAlchemy>=1.4.1, but you have sqlalchemy 1.3.9 which is incompatible.
Successfully installed sqlalchemy-1.3.9
```

```
In [2]: !pip install ipython-sql
        !pip install ipython-sql prettytable
```

```

Collecting ipython-sql
  Downloading ipython_sql-0.5.0-py3-none-any.whl.metadata (17 kB)
Collecting prettytable (from ipython-sql)
  Downloading prettytable-3.16.0-py3-none-any.whl.metadata (33 kB)
Requirement already satisfied: ipython in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (8.31.0)
Collecting sqlalchemy>=2.0 (from ipython-sql)
  Downloading sqlalchemy-2.0.43-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (9.6 kB)
Collecting sqlparse (from ipython-sql)
  Downloading sqlparse-0.5.3-py3-none-any.whl.metadata (3.9 kB)
Requirement already satisfied: six in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (1.17.0)
Requirement already satisfied: ipython-genutils in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (0.2.0)
Requirement already satisfied: greenlet>=1 in /opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql) (3.1.1)
Requirement already satisfied: typing-extensions>=4.6.0 in /opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql) (4.12.2)
Requirement already satisfied: decorator in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (5.1.1)
Requirement already satisfied: jedi>=0.16 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.19.2)
Requirement already satisfied: matplotlib-inline in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (5.14.3)
Requirement already satisfied: wcwidth in /opt/conda/lib/python3.12/site-packages (from prettytable->ipython-sql) (0.2.13)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in /opt/conda/lib/python3.12/site-packages (from jedi>=0.16->ipython->ipython-sql) (0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in /opt/conda/lib/python3.12/site-packages (from pexpect>4.3->ipython->ipython-sql) (0.7.0)
Requirement already satisfied: executing>=1.2.0 in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (2.1.0)
Requirement already satisfied: asttokens>=2.1.0 in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (3.0.0)
Requirement already satisfied: pure_eval in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (0.2.3)
Downloading ipython_sql-0.5.0-py3-none-any.whl (20 kB)
Downloading sqlalchemy-2.0.43-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (3.3 MB)
3.3/3.3 MB 74.2 MB/s eta 0:00:00
Downloading prettytable-3.16.0-py3-none-any.whl (33 kB)
Downloading sqlparse-0.5.3-py3-none-any.whl (44 kB)
Installing collected packages: sqlparse, sqlalchemy, prettytable, ipython-sql
  Attempting uninstall: sqlalchemy
    Found existing installation: SQLAlchemy 1.3.9

```

```

Uninstalling SQLAlchemy-1.3.9:
  Successfully uninstalled SQLAlchemy-1.3.9
Successfully installed ipython-sql-0.5.0 prettytable-3.16.0 sqlalchemy-2.0.43 sqlparse-0.5.3
Requirement already satisfied: ipython-sql in /opt/conda/lib/python3.12/site-packages (0.5.0)
Requirement already satisfied: prettytable in /opt/conda/lib/python3.12/site-packages (3.16.0)
Requirement already satisfied: ipython in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (8.31.0)
Requirement already satisfied: sqlalchemy>=2.0 in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (2.0.43)
Requirement already satisfied: sqlparse in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (0.5.3)
Requirement already satisfied: six in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (1.17.0)
Requirement already satisfied: ipython-genutils in /opt/conda/lib/python3.12/site-packages (from ipython-sql) (0.2.0)
Requirement already satisfied: wcwidth in /opt/conda/lib/python3.12/site-packages (from prettytable) (0.2.13)
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Requirement already satisfied: matplotlib-inline in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in /opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (5.14.3)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in /opt/conda/lib/python3.12/site-packages (from jedi>=0.16->ipython->ipython-sql) (0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in /opt/conda/lib/python3.12/site-packages (from pexpect>4.3->ipython->ipython-sql) (0.7.0)
Requirement already satisfied: executing>=1.2.0 in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (2.1.0)
Requirement already satisfied: asttokens>=2.1.0 in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (3.0.0)
Requirement already satisfied: pure_eval in /opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql) (0.2.3)

```

```
In [3]: %load_ext sql
```

```
In [4]: import csv, sqlite3
import prettytable
prettytable.DEFAULT = 'DEFAULT'
```

```
con = sqlite3.connect("my_data1.db")
cur = con.cursor()
```

In [5]: `!pip install -q pandas`

In [6]: `%sql sqlite:///my_data1.db`

In [7]: `import pandas as pd`
`df = pd.read_csv("https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/df.to_sql("SPACEXTBL", con, if_exists='replace', index=False,method="multi")`

Out[7]: 101

In [8]: `#DROP THE TABLE IF EXISTS`

```
%sql DROP TABLE IF EXISTS SPACEXTABLE;
```

```
* sqlite:///my_data1.db
```

Done.

Out[8]: []

In [9]: `%sql create table SPACEXTABLE as select * from SPACEXTBL where Date is not null`

```
* sqlite:///my_data1.db
```

Done.

Out[9]: []

In [10]: `SELECT DISTINCT "Launch_Site"`
`FROM SPACEXTBL;`

Cell In[10], line 1

```
SELECT DISTINCT "Launch_Site"
```

^

SyntaxError: invalid syntax

In [11]: `%sql SELECT DISTINCT "Launch_Site" FROM SPACEXTBL;`

```
* sqlite:///my_data1.db
```

Done.

Out[11]: **Launch_Site**

CCAFS LC-40

VAFB SLC-4E

KSC LC-39A

CCAFS SLC-40

In [12]: `%%sql`
`SELECT *`
`FROM SPACEXTBL`

```
WHERE "Launch_Site" LIKE 'CCA%'
LIMIT 5;
```

* sqlite:///my_data1.db
Done.

Out[12]:

Date	Time (UTC)	Booster_Version	Launch_Site	Payload	PAYLOAD_MASS_KG_	Orbit	Ct
2010-06-04	18:45:00	F9 v1.0 B0003	CCAFS LC-40	Dragon Spacecraft Qualification Unit	0	LEO	
2010-12-08	15:43:00	F9 v1.0 B0004	CCAFS LC-40	Dragon demo flight C1, two CubeSats, barrel of Brouere cheese	0	LEO (ISS)	
2012-05-22	7:44:00	F9 v1.0 B0005	CCAFS LC-40	Dragon demo flight C2	525	LEO (ISS)	
2012-10-08	0:35:00	F9 v1.0 B0006	CCAFS LC-40	SpaceX CRS-1	500	LEO (ISS)	
2013-03-01	15:10:00	F9 v1.0 B0007	CCAFS LC-40	SpaceX CRS-2	677	LEO (ISS)	

In [13]:

```
%%sql
SELECT SUM("PAYLOAD_MASS_KG_") AS "Total_Payload_Mass_NASA_CRs"
FROM SPACEXTBL
WHERE "Customer" = 'NASA (CRS)';
```

* sqlite:///my_data1.db
Done.

Out[13]:

Total_Payload_Mass_NASA_CRs
45596

In [14]:

```
%%sql
SELECT AVG("PAYLOAD_MASS_KG_") AS "Average_Payload_Mass_F9_v1_1"
FROM SPACEXTBL
WHERE "Booster_Version" = 'F9 v1.1';
```

* sqlite:///my_data1.db
Done.

Out[14]:

Average_Payload_Mass_F9_v1_1
2928.4

```
In [15]: %%sql
SELECT "Booster_Version"
FROM SPACEXTBL
WHERE "Landing_Outcome" = 'Success (drone ship)'
      AND "PAYLOAD_MASS_KG_" > 4000
      AND "PAYLOAD_MASS_KG_" < 6000;
```

* sqlite:///my_data1.db

Done.

Out[15]: **Booster_Version**

F9 FT B1022

F9 FT B1026

F9 FT B1021.2

F9 FT B1031.2

```
In [16]: %%sql
SELECT "Mission_Outcome", COUNT(*) AS "Total_Count"
FROM SPACEXTBL
GROUP BY "Mission_Outcome"
ORDER BY "Total_Count" DESC;
```

* sqlite:///my_data1.db

Done.

Out[16]:

Mission_Outcome	Total_Count
Success	98
Success (payload status unclear)	1
Success	1
Failure (in flight)	1

```
In [17]: %%sql
SELECT "Booster_Version"
FROM SPACEXTBL
WHERE "PAYLOAD_MASS_KG_" = (
    SELECT MAX("PAYLOAD_MASS_KG_")
    FROM SPACEXTBL
);
```

* sqlite:///my_data1.db

Done.

Out[17]: **Booster_Version**

F9 B5 B1048.4

F9 B5 B1049.4

F9 B5 B1051.3

F9 B5 B1056.4

F9 B5 B1048.5

F9 B5 B1051.4

F9 B5 B1049.5

F9 B5 B1060.2

F9 B5 B1058.3

F9 B5 B1051.6

F9 B5 B1060.3

F9 B5 B1049.7

```
In [18]: %%sql
SELECT
    SUBSTR(Date, 6, 2) AS "Month_Number",
    "Landing_Outcome",
    "Booster_Version",
    "Launch_Site"
FROM SPACEXTBL
WHERE SUBSTR(Date, 1, 4) = '2015'
AND "Landing_Outcome" = 'Failure (drone ship)'
ORDER BY "Month_Number";
```

* sqlite:///my_data1.db

Done.

Out[18]: **Month_Number Landing_Outcome Booster_Version Launch_Site**

Month_Number	Landing_Outcome	Booster_Version	Launch_Site
01	Failure (drone ship)	F9 v1.1 B1012	CCAFS LC-40
04	Failure (drone ship)	F9 v1.1 B1015	CCAFS LC-40

```
In [19]: %%sql
SELECT
    "Landing_Outcome",
    COUNT(*) AS "Outcome_Count"
FROM SPACEXTBL
WHERE Date BETWEEN '2010-06-04' AND '2017-03-20'
GROUP BY "Landing_Outcome"
ORDER BY "Outcome_Count" DESC;
```

* sqlite:///my_data1.db

Done.

Out[19]:

Landing_Outcome	Outcome_Count
No attempt	10
Success (drone ship)	5
Failure (drone ship)	5
Success (ground pad)	3
Controlled (ocean)	3
Uncontrolled (ocean)	2
Failure (parachute)	2
Precluded (drone ship)	1

In []: