

# CSCI 4140 – Advanced Database

## Tutorial: Query Implementation using Jupyter Notebook

# Pre-requisites:

**Before starting the assignment ensure that you have the following software's installed on your machine:**

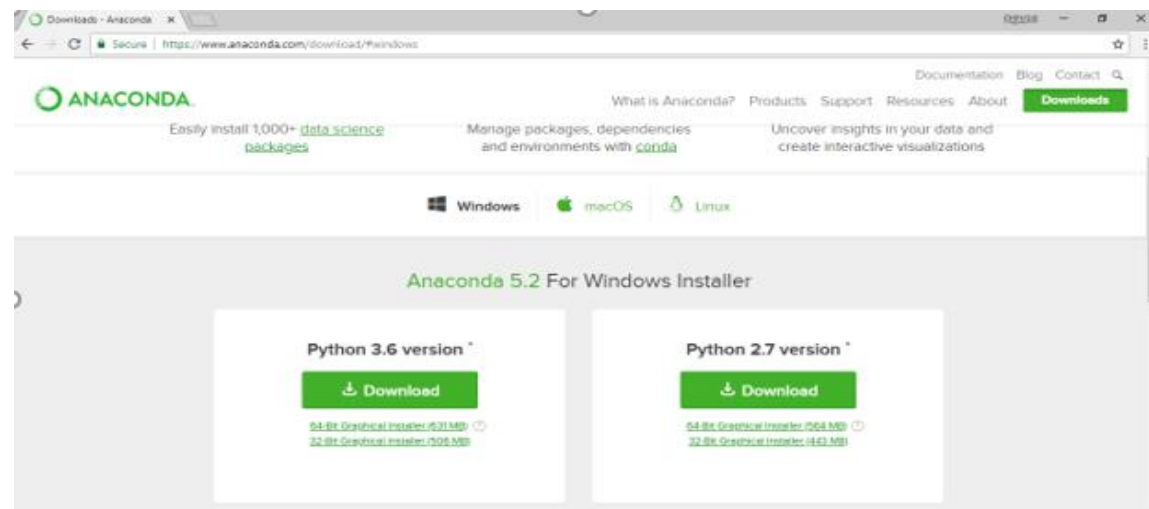
- Install a local sql server for back-end e.g. SQLite etc
- Install Jupyter Notebook

# Installation of Jupyter Notebook

- For Jupyter Notebook, you can install the Anaconda navigator and run the notebook from there using the below URL:

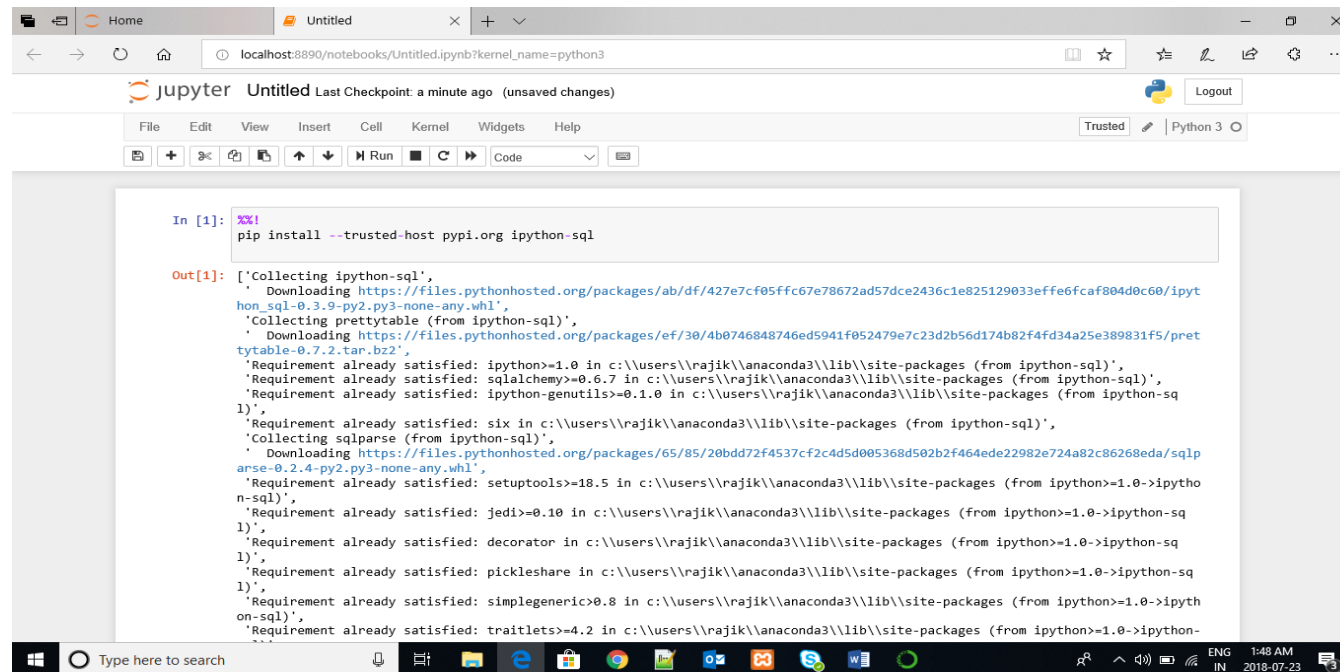
<https://www.anaconda.com/download/#windows>

- Once you have click on download it will prompt you to download python. Download python if you already don't have it installed.



# Connection to back-end using Jupyter Notebook

- Here in the below screenshots python was used to connect to the back-end server and on my back-end I have SQLite installed.
- First, we are installing the ipython sql module using the below command.

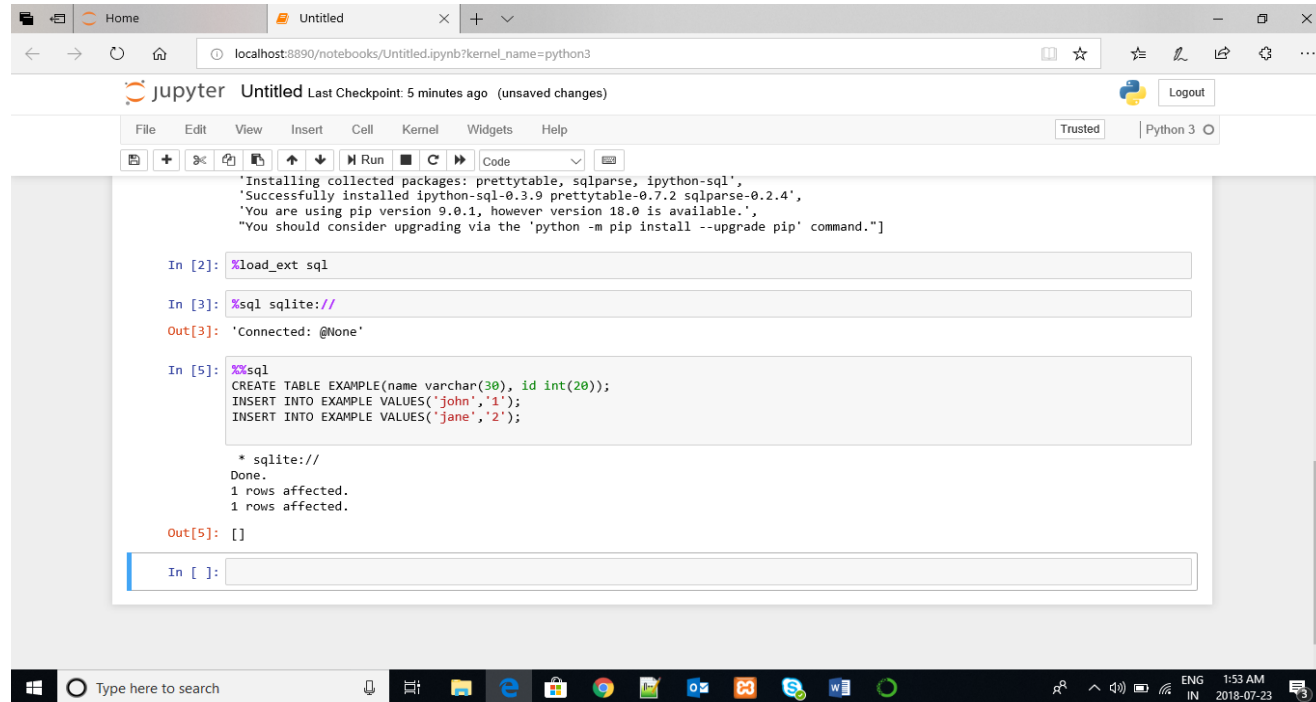


The screenshot displays a Jupyter Notebook window titled 'Untitled' with the URL 'localhost:8890/notebooks/Untitled.ipynb?kernel\_name=python3'. The interface includes a top bar with the Jupyter logo, a menu bar (File, Edit, View, Insert, Cell, Kernel, Widgets, Help), and a toolbar with icons for file operations and execution. The main area shows a code cell with the command `pip install --trusted-host pypi.org ipython-sql`. The output cell displays the installation progress, including downloading wheels and resolving dependencies like prettytable, sqlalchemy, and sqlparse. The Windows taskbar at the bottom shows the search bar and various application icons.

```
In [1]: pip install --trusted-host pypi.org ipython-sql
```

```
Out[1]: ['Collecting ipython-sql',  
  '  Downloading https://files.pythonhosted.org/packages/ab/df/427e7cf05ffc67e78672ad57dce2436c1e825129033effe6fcaf804d0c60/ipython-sql-0.3.9-py2.py3-none-any.whl',  
  'Collecting prettytable (from ipython-sql)',  
  '  Downloading https://files.pythonhosted.org/packages/ef/30/4b0746848746ed5941f852479e7c23d2b56d174b82f4fd34a25e389831f5/prettytable-0.7.2.tar.bz2',  
  'Requirement already satisfied: ipython>=1.0 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython-sql)',  
  'Requirement already satisfied: sqlalchemy>=0.6.7 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython-sql)',  
  'Requirement already satisfied: ipython-genutils>=0.1.0 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython-sql)',  
  'Requirement already satisfied: six in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython-sql)',  
  'Collecting sqlparse (from ipython-sql)',  
  '  Downloading https://files.pythonhosted.org/packages/65/85/20bdd72f4537cf2c4d5d005368d502b2f464ede22982e724a82c86268eda/sqlparse-0.2.4-py2.py3-none-any.whl',  
  'Requirement already satisfied: setuptools>=18.5 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)',  
  'Requirement already satisfied: jedi>=0.10 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)',  
  'Requirement already satisfied: decorator in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)',  
  'Requirement already satisfied: pickleshare in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)',  
  'Requirement already satisfied: simplegeneric>=0.8 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)',  
  'Requirement already satisfied: traitlets>=4.2 in c:\\users\\rajik\\anaconda3\\lib\\site-packages (from ipython>=1.0->ipython-sql)']
```

- Now once the module has been installed we will load the sql using `load_ext` magic function.



The screenshot shows a Jupyter Notebook window titled 'Untitled' at the URL `localhost:8890/notebooks/Untitled.ipynb?kernel_name=python3`. The notebook interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Widgets, Help) and a toolbar with icons for file operations, running, and code execution. The notebook content shows the following:

```
Installing collected packages: prettytable, sqlparse, ipython-sql',
Successfully installed ipython-sql-0.3.9 prettytable-0.7.2 sqlparse-0.2.4',
'You are using pip version 9.0.1, however version 18.0 is available.',
'You should consider upgrading via the 'python -m pip install --upgrade pip' command.]"

In [2]: %load_ext sql

In [3]: %sql sqlite://

Out[3]: 'Connected: @None'

In [5]: %%sql
CREATE TABLE EXAMPLE(name varchar(30), id int(20));
INSERT INTO EXAMPLE VALUES('john','1');
INSERT INTO EXAMPLE VALUES('jane','2');

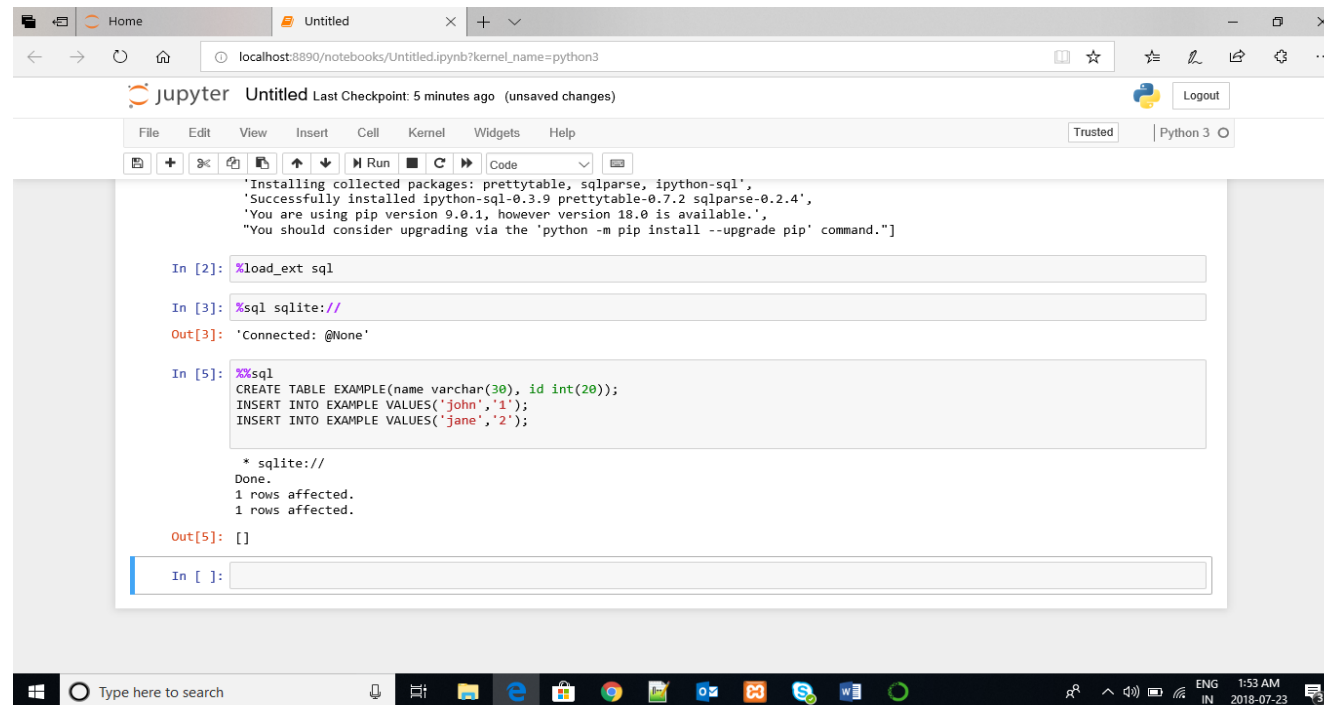
* sqlite://
Done.
1 rows affected.
1 rows affected.

Out[5]: []

In [ ]:
```

The Windows taskbar at the bottom shows the search bar, task view, and several application icons. The system clock indicates 1:33 AM on 2018-07-23.

- Using the above function we can connect to any sql server supported by sqlalchemy. For this example, I have connected to SQLite.
- After a connection is made we can run sql queries on the Jupyter Notebook and run sql queries.



The screenshot displays a Jupyter Notebook window titled 'Untitled' with a browser address bar showing 'localhost:8890/notebooks/Untitled.ipynb?kernel\_name=python3'. The notebook interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Widgets, Help) and a toolbar with icons for file operations and code execution. The main area contains a code cell with the following content:

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'Successfully installed ipython-sql-0.3.9 prettytable-0.7.2 sqlparse-0.2.4',
'You are using pip version 9.0.1, however version 18.0 is available.',
'You should consider upgrading via the 'python -m pip install --upgrade pip' command.'])

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Out[3]: 'Connected: @None'

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INSERT INTO EXAMPLE VALUES('john','1');
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* sqlite://
Done.
1 rows affected.
1 rows affected.

Out[5]: []

In [ ]:
```

The bottom of the image shows a Windows taskbar with the search bar and several application icons. The system clock in the bottom right corner indicates the time is 1:33 AM on 2018-07-23.

THANK YOU