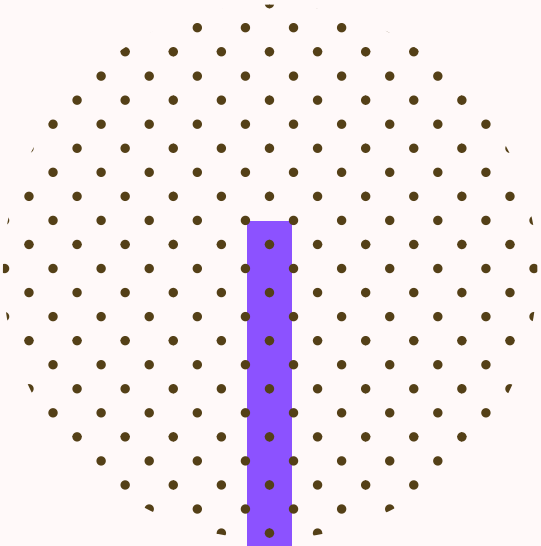
INSTALLATION

BRONZE-QISKIT



QWORLD

BRONZE

Welcome to QBronze-Qiskit!

This workshop consists of a collection of Jupyter notebooks

We use Python 3 (3.6+) as our programming language and we will be working on the library Qiskit!

This is a beginners guide to install Qiskit!

Note: If you have already installed Qiskit on your system, you may skip this guide and move on to the Start notebook

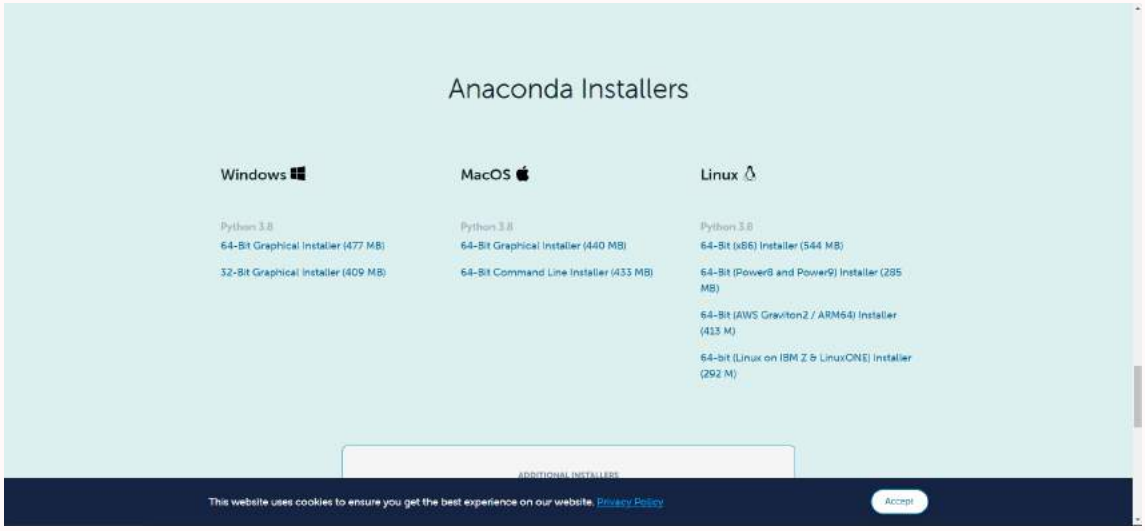
If you have Jupyter notebook/lab already installed, you may skip to the Install Qiskit section for the installation part

Installing Anaconda®

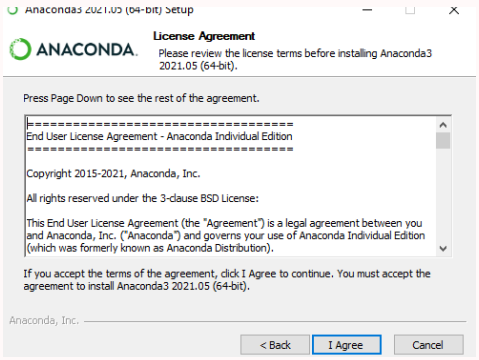
Installing Anaconda® will install the required Python compiler and libraries you need with one click! It will also make it easy to install Jupyter notebooks

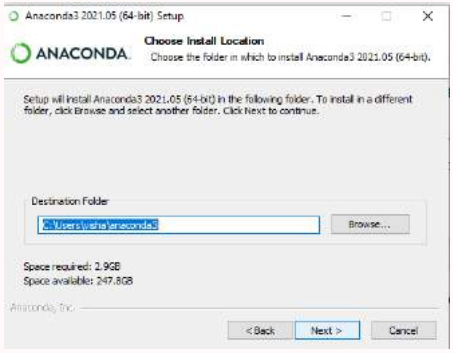
Click here to Download Anaconda

Setting up Anaconda®

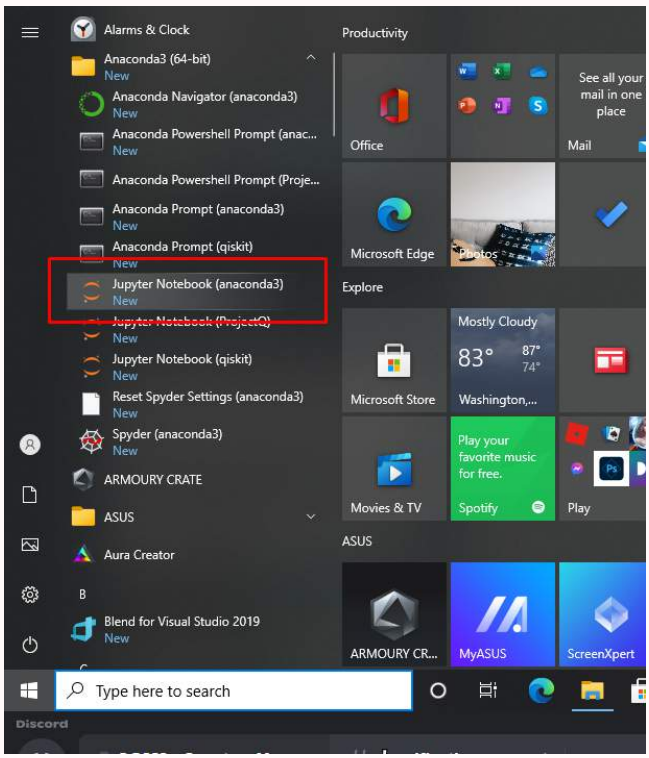


Select your preferred operating system and download the setup file. Run the setup file after downloading



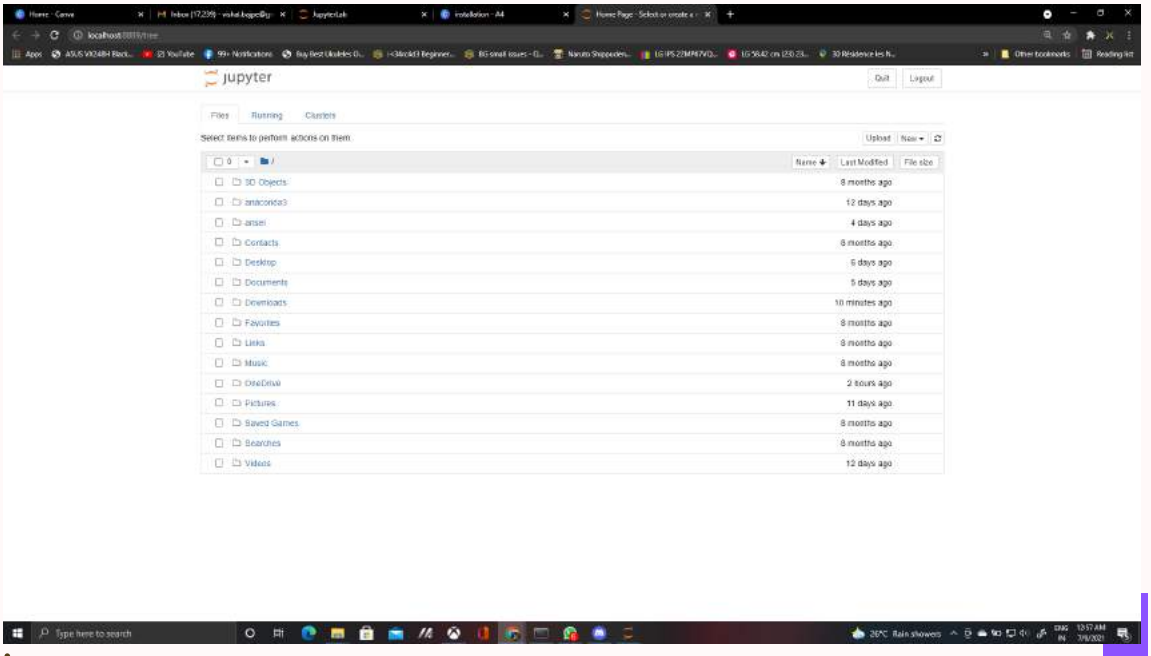


Setting up Jupyter notebooks



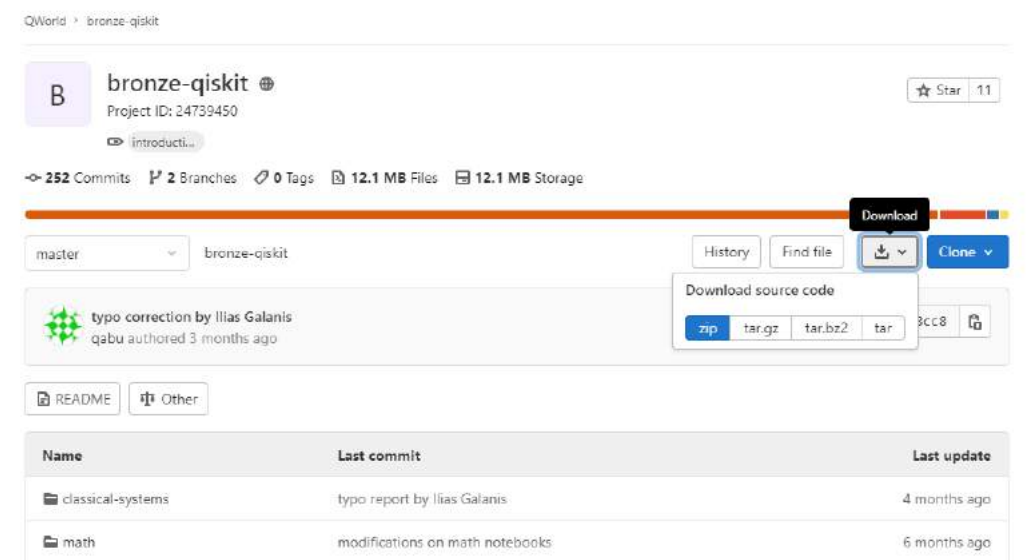
Run jupyter notebook from the start menu. A command prompt or powershell window should appear following an opening of a web browser page that looks like one below.

Note: Keep the command prompt window open while working



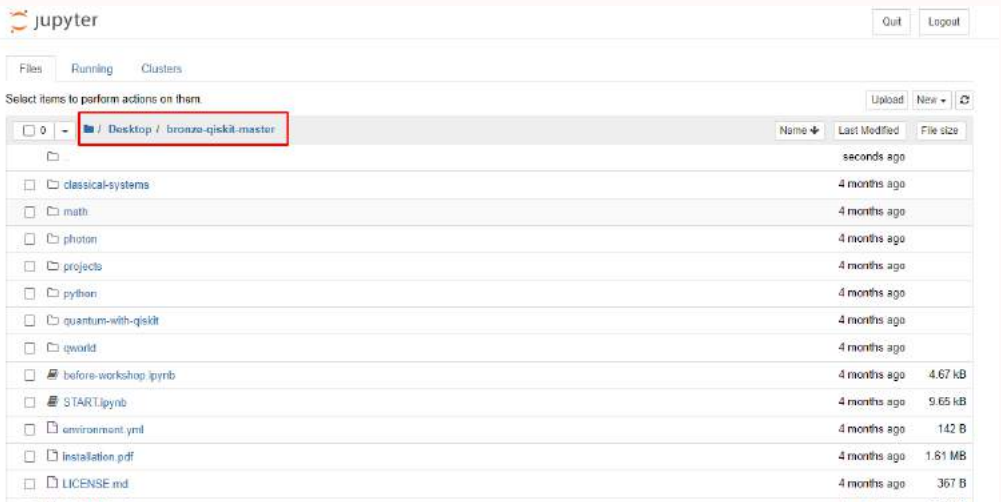
Setting up QBronze files

Download the QBronze-Qiskit files from this link



Extract the files to one of the accessible directories e.g. Desktop, Documents, Downloads etc.

We have extracted our files in the Desktop here and we can access it from the dashboard as shown



Installing Qiskit

1) Open the notebook "before-workshop.ipynb" from the dashboard and open "Qiskit installation and test"

2) When you run the first cell, you should get an error if Qiskit is not installed on your system

Check your system

Check your system, if Qiskit has already been installed:

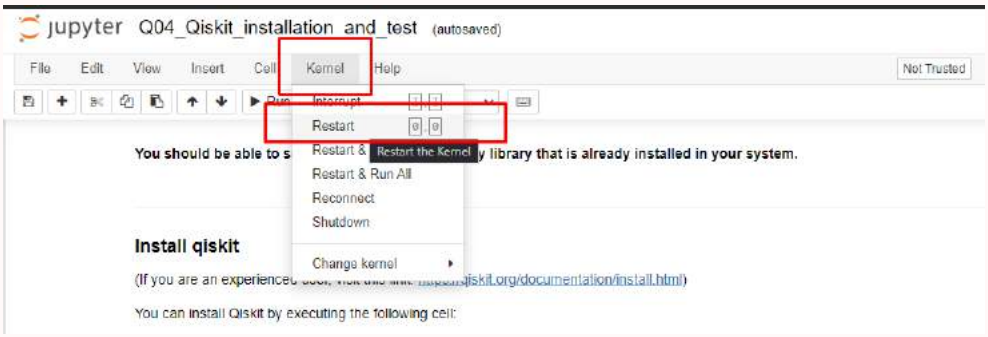
In [1]:
```
import qiskit
versions = qiskit.__qiskit_version__
print("The version of Qiskit is",versions['qiskit'])
print()
print("The version of each component:")
for key in versions:
    print(key,"->",versions[key])
```

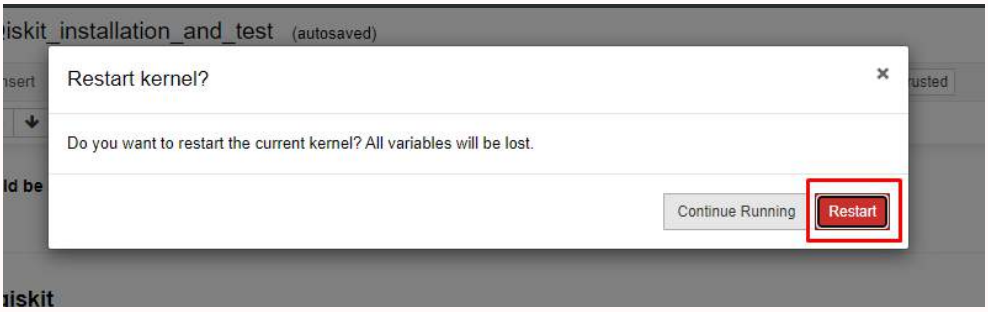
```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
~\AppData\Local\Temp/ipykernel_54728/3518098202.py in <module>
      1 import qiskit
----> 2 versions = qiskit.__qiskit_version__
      3 print("The version of Qiskit is",versions['qiskit'])
      4 print()
      5 print("The version of each component:")

AttributeError: module 'qiskit' has no attribute '__qiskit_version__'
```

Installing Qiskit

3) Run this cell to initiate installation of Qiskit

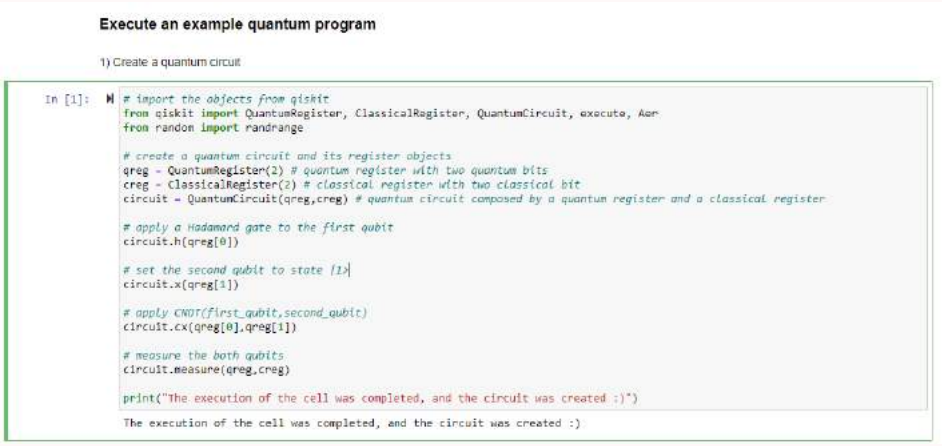
4) If there are no errors, Restart your kernel to finalise installation





Testing Qiskit Installation

1) Run the cell below to create a quantum circuit with a qubit in superposition



Execute an example quantum program

1) Create a quantum circuit

```
In [1]: # import the objects from qiskit
        from qiskit import QuantumRegister, ClassicalRegister, QuantumCircuit, execute, Aer
        from random import randrange

        # create a quantum circuit and its register objects
        qreg = QuantumRegister(2) # quantum register with two quantum bits
        creg = ClassicalRegister(2) # classical register with two classical bit
        circuit = QuantumCircuit(qreg,creg) # quantum circuit composed by a quantum register and a classical register

        # apply a Hadamard gate to the first qubit
        circuit.h(qreg[0])

        # set the second qubit to state |1>
        circuit.x(qreg[1])

        # apply CNOT(first_qubit,second_qubit)
        circuit.cx(qreg[0],qreg[1])

        # measure the both qubits
        circuit.measure(qreg,creg)

        print("The execution of the cell was completed, and the circuit was created :)")
The execution of the cell was completed, and the circuit was created :)
```

2) Run the next cell to display the circuit

```
In [2]: # draw circuit
        circuit.draw(output='mpl')

        # the output will be a "matplotlib.Figure" object
```

Out[2]:

If there are no errors, your installation is complete and successful! You can run the next code block to execute the circuit and get the results out!

Congratulations! You can continue onto the further notebooks and start your Bronze journey! :D

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