Assignment 6

Due 3/15/23

Create an account at IBM (username[@email.(edu|com)/Password](mailto:Your@email.com/Password))

<https://quantum-computing.ibm.com/>

For some helpful tips follow the Qiskit Tutorial on YouTube.  
Start in the middle of Season 1, Episode 2 (around 5:05) available here:

<https://www.youtube.com/watch?v=M4EkW4VwhcI&list=PLOFEBzvs-Vvp2xg9-POLJhQwtVktlYGbY&index=2&ab_channel=Qiskit>  
  
The assignment roughly follows Season 1, Episode 3:

<https://www.youtube.com/watch?v=RrUTwq5jKM4&list=PLOFEBzvs-Vvp2xg9-POLJhQwtVktlYGbY&index=3&ab_channel=Qiskit>

Run the following code ‘in the cloud’ on a browser:

from qiskit import \*

qr = QuantumRegister(2)

cr = ClassicalRegister(2)

circuit = QuantumCircuit(qr, cr)

%matplotlib inline

circuit.draw()

circuit.h(qr[0])

circuit.draw()

circuit.cx(qr[0], qr[1])

circuit.draw()

circuit.measure(qr, cr)

# To run on a real Quantum Computer you would use ibmq\_quito or ibmq\_lima

# instead of qasm\_simulator

simulator = Aer.get\_backend('qasm\_simulator')

result = execute(circuit, backend = simulator).result()

from qiskit.tools.visualization import plot\_histogram

plot\_histogram(result.get\_counts(circuit) )

# The code below can be uncommented and run for 10 extra credit rubrics

### You will need to make sure that your account is loaded

# IBMQ.load\_account()

# provider = IBMQ.get\_provider('ibm-q')

### There may be machines better than ibmq\_quito available.   
### You may be able to probe the site to find them

# qcomp = provider.get\_backend('ibmq\_quito')

# job = execute(circuit, backend=qcomp)

### The execute command is going to take a while

# from qiskit.tools.monitor import job\_monitor

# # You are about to wait

# job\_monitor(job)

# # And then, you wait...

# result = job.result()

# plot\_histogram(result.get\_counts(circuit) )