Qiskit cheat sheet

Circuit Basics

Create a classical register wiith 3 bits

```
cr = ClassicalRegister(3)
```

Create a quantum register with 3 qubits

```
qr = QuantumRegister(3)
```

Create an initial circuit with classical and quantum registers

```
circ = QuantumCircuit(qr,cr)
```

Gates

X on qubit 0: circ.x(qr[0])

H on qubit 0: circ.h(qr[0])

CNOT on qubit 0,1: circ.cx(qr[0], qr[1])

Measurement

```
circ.measure(qr, cr)
```

Visualization

```
circ.draw(output = 'mpl')
```

Running experiments on a simulator

```
simulator = Aer.get_backend('qasm_simulator')
```

Execute a job

```
result = execute (circ, backend=simulator, shots=1024).result()
```

Plot a histogram

```
plot_histogram(result.get_counts(circ))
```

Running experiments on a real quantum computer

Load accounts

```
from qiskit import IBMQ

IBMQ.load_account()
```

Get Backends

```
provider = IBMQ.get_provider(hub='ibm-q')

provider.backends()
```

Choose a backend

```
mel= provider.get_backend('ibmq_16_melbourne')
```

Execute a job

```
job_mel16 = execute(circ, backend=mel)
```

Job Monitor

```
from qiskit.tools.monitor import job_monitor

job_monitor(job_mel16)
```

Plot a histogram

```
result_mel16 = job_mel16.result()

plot_histogram(result_mel16.get_counts(circ))
```