

qai-practical-assignment-2

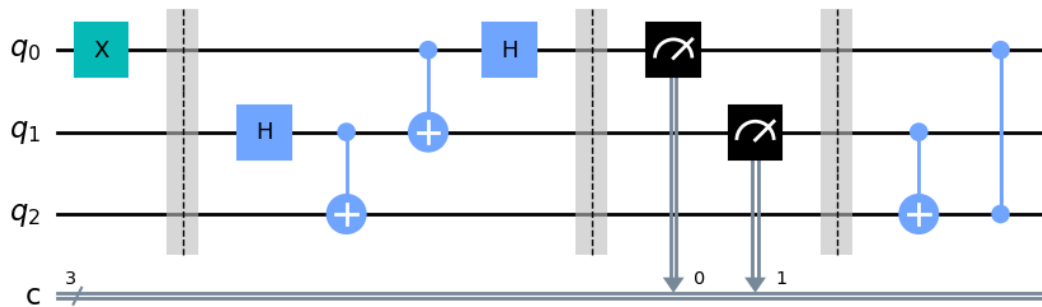
August 22, 2023

0.1 Circuit Building

```
[2]: from qiskit.circuit import QuantumCircuit
```

```
[3]: circuit = QuantumCircuit(3, 3)
      circuit.x(0)
      circuit.barrier(range(3))
      circuit.h(1)
      circuit.cx(1, 2)
      circuit.cx(0, 1)
      circuit.h(0)
      circuit.barrier(range(3))
      circuit.measure(range(2), range(2))
      circuit.barrier(range(3))
      circuit.cx(1, 2)
      circuit.cz(0, 2)
      circuit.draw()
```

[3]:



0.2 Simulation Part

```
[4]: from qiskit_aer import AerSimulator
      from qiskit import transpile
```

```
[5]: backend = AerSimulator()
```

```
[6]: qc_compiled = transpile(circuit, backend)
```

```
[7]: job_sim = backend.run(qc_compiled, shots=1024)
result_sim = job_sim.result()
```

```
[8]: counts = result_sim.get_counts(qc_compiled)
print(counts)
```

```
{'000': 256, '010': 253, '001': 251, '011': 264}
```

```
[9]: from qiskit.visualization import plot_histogram
plot_histogram(counts)
```

[9]:

