

# Quantum\_Computing\_Part\_1

March 8, 2020

```
[1]: import cirq
import math
```

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[2]: #Initialising 5 Grid Qubits
(q0, q1, q2, q3, q4) = [cirq.GridQubit(i,i+1) for i in range(5)]
qubits = (q0, q1, q2, q3, q4)
print(qubits)
```

```
(cirq.GridQubit(0, 1), cirq.GridQubit(1, 2), cirq.GridQubit(2, 3),
cirq.GridQubit(3, 4), cirq.GridQubit(4, 5))
```

```
[3]: #Creating an object with name 'circuit'
circuit = cirq.Circuit()

#Adding various functions to the Qubits in the Circuit
#Hadamard Gate
circuit.append(cirq.H(q) for q in qubits)

#Controlled NOT Gate
circuit.append([cirq.CNOT(q0,q1), cirq.CNOT(q1,q2), cirq.CNOT(q2,q3), cirq.
↪CNOT(q3,q4)])

#Swapping
circuit.append(cirq.SWAP(q0,q4))

#Rotation
qbits = (q1, q2, q3, q4)
circuit.append(cirq.rx(math.pi/2).on(q) for q in qbits)

#Printing the Circuit
print(circuit)
```

```
(0, 1):  H  @                ×
```

```
(1, 2):  H  X  @  Rx(0.5 )
```

```
(2, 3):  H    X  @      Rx(0.5 )
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(3, 4): H X @ Rx(0.5 )

(4, 5): H X × Rx(0.5 )

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