HELLO QUBIT

SOURCE CODE:

```
try:
    import cirq
except ImportError:
    print("installing cirq...")
    !pip install --quiet cirq
    import cirq
    print("installed cirq.")



# Pick a qubit.
qubit = cirq.GridQubit(0, 0)

# Create a circuit
circuit = cirq.Circuit(
    cirq.X(qubit)**0.5,  # Square root of NOT.
    cirq.measure(qubit, key='m')  # Measurement.
)
print("Circuit:")
print(circuit)

# Simulate the circuit several times.
simulator = cirq.Simulator()
result = simulator.run(circuit, repetitions=20)
print("Results:")
print(result)
```

OUTPUT :

```
C:\Users\Asus>python -c "import cirq_google; print(cirq_google.Sycamore)"
                                        (0, 5)──(0, 6)
                                         │       │
                                         │       │
                                (1, 4)──(1, 5)──(1, 6)──(1, 7)
                                 │       │       │       │
                                 │       │       │       │
                        (2, 3)──(2, 4)──(2, 5)──(2, 6)──(2, 7)──(2, 8)
                         │       │       │       │       │       │
                         │       │       │       │       │       │
                (3, 2)──(3, 3)──(3, 4)──(3, 5)──(3, 6)──(3, 7)──(3, 8)──(3, 9)
                 │       │       │       │       │       │       │       │
                 │       │       │       │       │       │       │       │
        (4, 1)──(4, 2)──(4, 3)──(4, 4)──(4, 5)──(4, 6)──(4, 7)──(4, 8)──(4, 9)
         │       │       │       │       │       │       │       │
         │       │       │       │       │       │       │       │
(5, 0)──(5, 1)──(5, 2)──(5, 3)──(5, 4)──(5, 5)──(5, 6)──(5, 7)──(5, 8)
         │       │       │       │       │       │       │
         │       │       │       │       │       │       │
        (6, 1)──(6, 2)──(6, 3)──(6, 4)──(6, 5)──(6, 6)──(6, 7)
                 │       │       │       │       │
                 │       │       │       │       │
                (7, 2)──(7, 3)──(7, 4)──(7, 5)──(7, 6)
                         │       │       │
                         │       │       │
                        (8, 3)──(8, 4)──(8, 5)
                                 │
                                 │
                                (9, 4)
```

SOURCE CODE:

```
import cirq
a = cirq.NamedQubit('s')
b = cirq.NamedQubit('t')
a, b, c = cirq.LineQubit.range(3)
d = cirq.LineQubit(6)
e = cirq.GridQubit(4, 5)
print(a)
print(b)
print(c)
print(d)
print(e)
```

OUTPUT :

```
q(0)
q(1)
q(2)
q(6)
q(4, 5)
```

SOURCE CODE:

```
import cirq
a= cirq.Circuit()
b= cirq.LineQubit.range(4)
a.append(cirq.H(b[0]))
a.append(cirq.H(b[1]))
a.append(cirq.H(b[2]))
a.append(cirq.H(b[3]))

print(a)
```

OUTPUT :

```
0: ───H───

1: ───H───

2: ───H───

3: ───H───
```

SOURCE CODE:

```
import cirq
a = cirq.NamedQubit('a')
b = cirq.NamedQubit('s')
c = cirq.NamedQubit('c')
```

```
print(cirq.H(b))
print(cirq.CNOT(b, c))
print(cirq.CNOT(a, b))
print(cirq.H(a))
print(cirq.measure(a,b))
```

OUTPUT :

```
H(s)
CNOT(s, c)
CNOT(a, s)
H(a)
cirq.MeasurementGate(2, cirq.MeasurementKey(name='a,s'), ())(a, s)
```

SOURCE CODE:

```
import cirq
cnot= cirq.CNOT
pauli= cirq.Z
sqrt1= cirq.X**0.5
sqrt2= cirq.YPowGate(exponent=0.25)
a, b= cirq.LineQubit.range(2)
swap= cirq.SQRT_ISWAP(a, b)
c= cnot(a, b)
d= pauli(a)
e= sqrt1(b)
f= sqrt2(a)
print(c)
print(d)
print(e)
print(f)
print(swap)
```

OUTPUT :

```
CNOT(q(0), q(1))
Z(q(0))
X**0.5(q(1))
Y**0.25(q(0))
ISWAP**0.5(q(0), q(1))
```

SOURCE CODE:

```
import cirq
a = cirq.GridQubit(0, 1)
b = cirq.Circuit(
    cirq.X(a)**0.5,
    cirq.measure(a, key='m')
)
print("Circuit:")
print(b)

s = cirq.Simulator()
r = s.run(b, repetitions=15)
```

```
print("Results:")
print(r)
```

OUTPUT :

```
Circuit:
(0, 1): ───X^0.5───M('m')───
Results:
m=011000111010111
```

SOURCE CODE:

```
print(cirq.Circuit(cirq.SWAP(q, q + 1) for q in cirq.LineQubit.range(4)))
```

OUTPUT :

```
0: ───×───────────
      │
1: ───×───×───────
          │
2: ───────×───×───
              │
3: ───────────×───×───
                  │
4: ───────────────×───
```

SOURCE CODE:

```
import cirq
a= cirq.CZ(qubits[0], qubits[1])
b= cirq.X(qubits[2])
d= cirq.Moment(b,a)

print(d)
```

OUTPUT :

```
  ╷ 0 1 2
╶─┼───────
0 │ @─@ X
  │
```