2023 부산시 양자컴퓨팅 개발자 교육 프로그램

Lecture 4

Inho Choi

Qiskit Advocate

Qiskit

Syllabus

- Lecture 1: 게이트와 양자 회로 기본 작성법
  - Single qubit gate — Lecture 1
  - Multiple qubit gate — Lecture 2
  - Multiple qubit gate Notebook Demonstration — Lecture 3
  - Barriers and Properties of Quantum Circuit — Lecture 3
- Lecture 2: 양자 회로의 측정과 OpenQasm
  - Notebook Demonstration — Lecture 4
- Lecture 3: 양자 백엔드에 양자회로 실행하기 — Lecture 4
- Lecture 4: 양자 회로 및 회로의 실행 결과 시각화 및 해석 — Lecture 5
- Lecture 5: 유용한 기능들 — Lecture 5

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Qiskit

Github: Qiskit-Dev-Cert-lectures, 3 양자 회로의 실행과 백엔드

Github: Qiskit-Dev-Cert-lectures, 2 양자 회로의 측정과 OpenQasm

Quantum Circuit and Measurement

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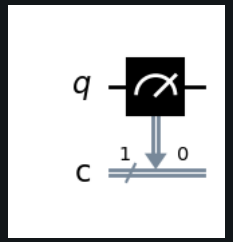
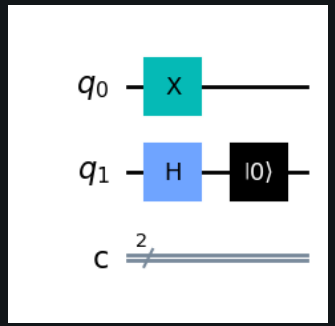
1. Non-unitray Operator
2. Quantum Circuit and Register
3. OpenQasm

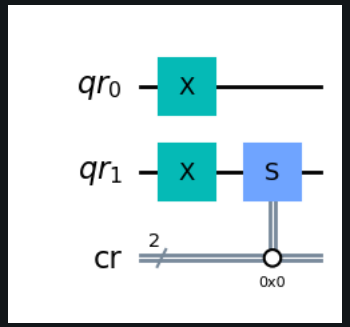
Non-unitary Operator



Measure



Initialization



Classical conditional operator

Quantum Circuit and Register

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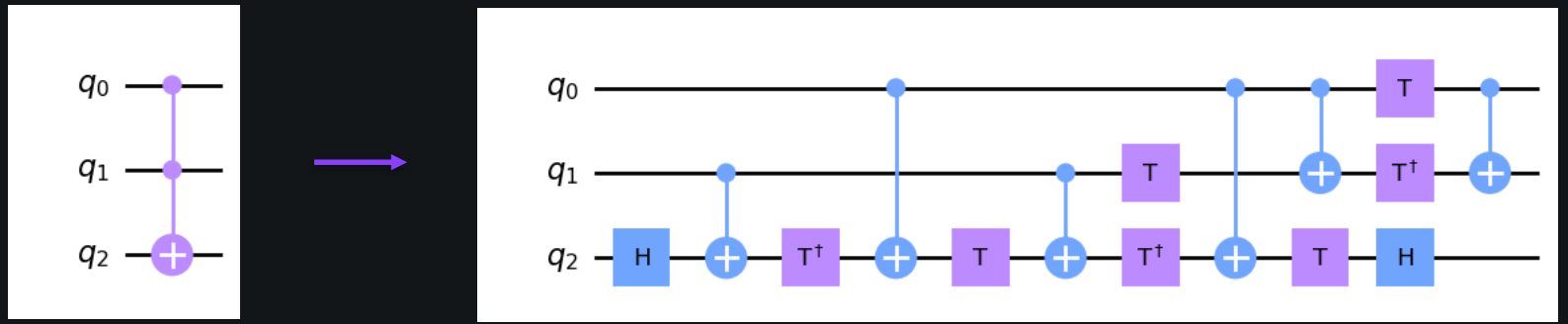
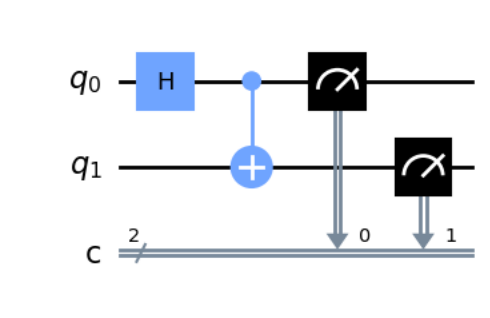
1. Quantum Register
2. Classical Register
3. Decompose



OpenQasm

Qiskit




```
OPENQASM 2.0;
include "qelib1.inc";
qreg q[2];
creg c[2];
h q[0];
cx q[0],q[1];
measure q[0] -> c[0];
measure q[1] -> c[1];
```

Quantum Backend and Executing Quantum Circuit

1. Real Backend
2. Transpile
3. Simulation

QnA