1)Team Name : Qitcat

2)Participants:

Name : Niloy Kumar Mondal

Email: niloy12101001@gmail.com

Job : Undergrad CSE student

Organization : Bangladesh University of Engineering and Technology

Role: Single Handedly solved every aspect of the problem

3) Qualification : Participated in various Hackathon like MIT iqHACK , Yale Quantum Hackathon

4)

a) High-level overview of your proposed solution

We will apply projection operation conditionally.

If y at ith step is known to be 0, we need states that has last qubit as 0, we will project third qubit on $|0><0|$. Entanglement will help us discard the states with 1 as last qubit.

If y at ith step is known to be 1, we will project third qubit on $|1><1|$. We now know all states has 1 as last qubit, we apply controlled X gate to reset it to 0, that will not harm the states of first two qubit.

If we want to generalize, we can use I tensor I tensor (projection or CX).

b)
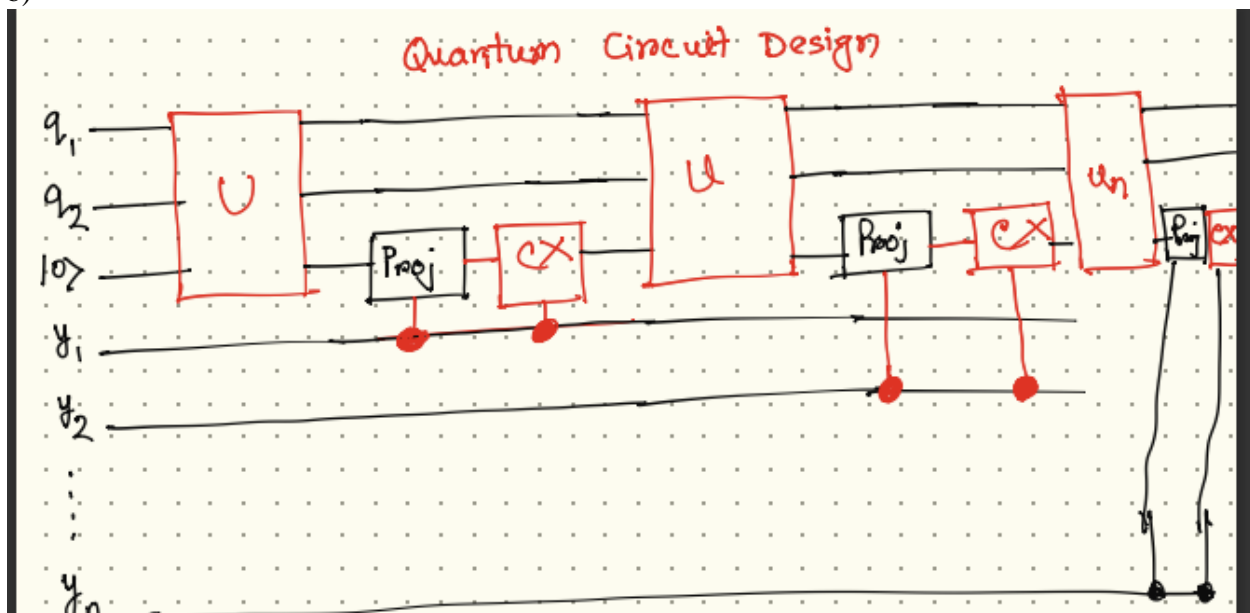
Proj means controlled projection operator .Classical methods cannot simulate all possible state simultaneously.We can get an exponential speed up.

C)Industry impact :Computationlly fast,can make descision quickly,predict last state by easily switching possible outcomes at early states reducing complexity We can do backward calculation too.