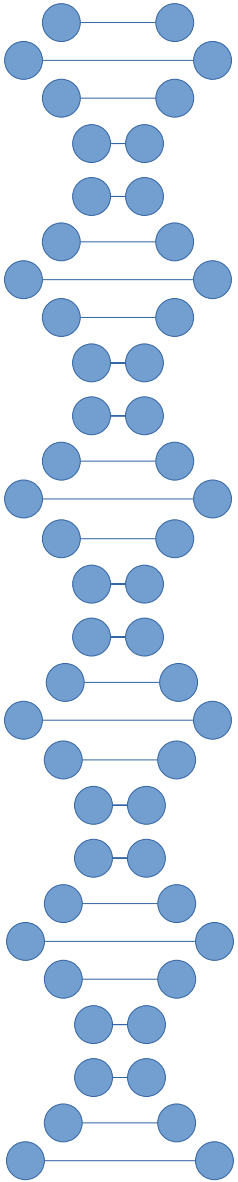
22-Aug-2020

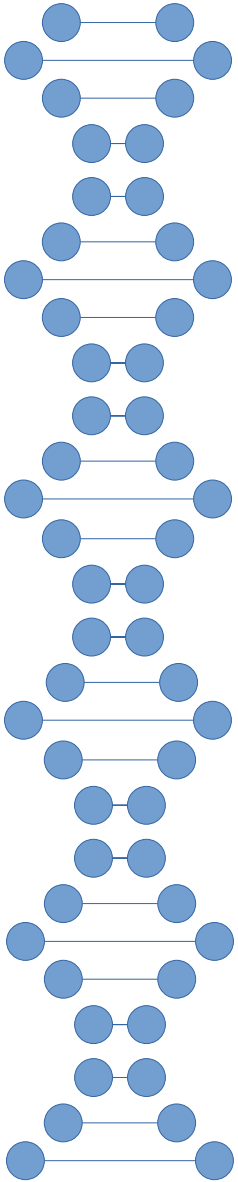
Day Zero

Quantum Computation Community



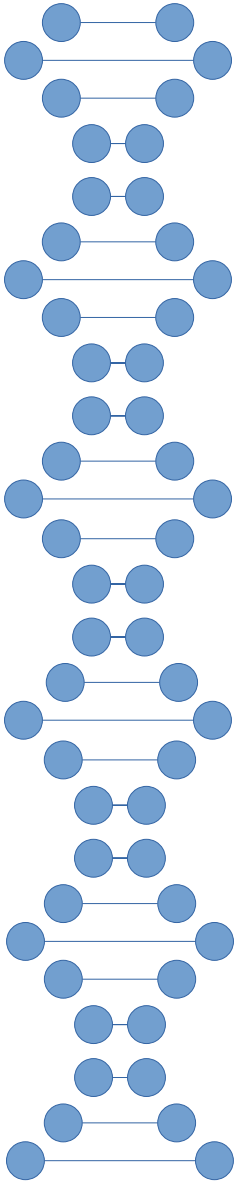
Introduction

- Rohit Prasad, 16MS
- Let’s hear from you guys.



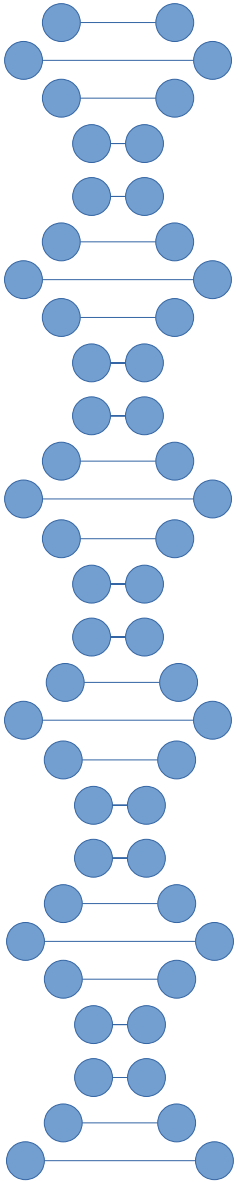
What is this group about??

- Initially, this group was made to share resource, works, projects and help each other out.
- But now I want to start from scratch.
- Do you need Quantum knowledge?



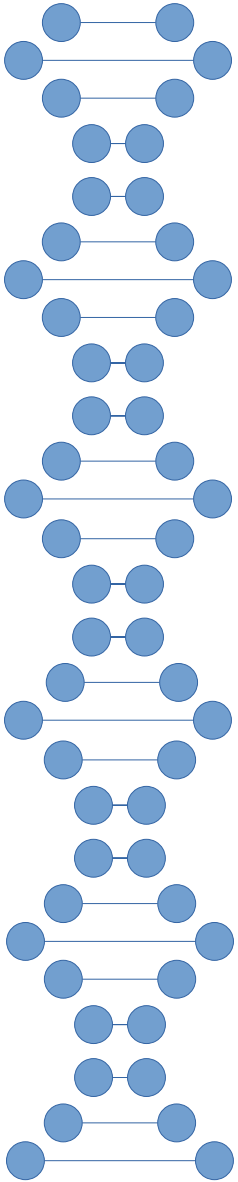
What we want to achieve

- Firstly, introduce you to Quantum Computation.
- After that if you form an interest towards the topic, we can work on some Quantum Mech. and go deeper.
- Then you can explore the field on your own and can contribute to Quantum Computation and Quantum Information.
- This may also help you grab some interesting internships in the upcoming summer.



Steps we will be following

- Why Quantum Computation
- Why Qiskit
- Forming Circuits with Qiskit
- Qubit as a Classical bit
- Representation of states
- Gates in QC
- Playing with Gates
- Linear algebra and some Quantum Mechanics
- Representation of a Circuit as a Matrix
- Complex Algorithms
- You are on your own this onward.
- We can still help you by suggesting resources and clearing your doubt.



Those who already know these stuff

- They can start going through Qiskit Textbook
- They can also refer to a book named

Quantum Computation and Quantum Information

by – Michal A. Nielsen and Isaac L. Chuang

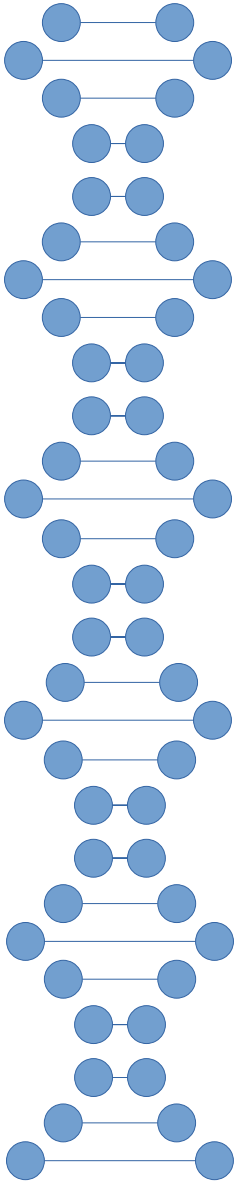
Try this for fun!

- Try making a part of Mitra Panigrahi State, Given by
- $|\psi\rangle = 0.353\,|0011\rangle + 0.5\,|0101\rangle + 0.353\,|0110\rangle$

  $- 0.353\,|1001\rangle - 0.5\,|1010\rangle + 0.353\,|1100\rangle$
- We took 1/sqr(8) = 0.353
- No Ancilla Qubit should be used. Only 4 qubits are used in making of M.P. State.

Expectations

- Let’s hear from you guys, what do you expect from this group.
- The Framework we intend to follow can be mended to suit your expectations.



Thank You !

See You in next session