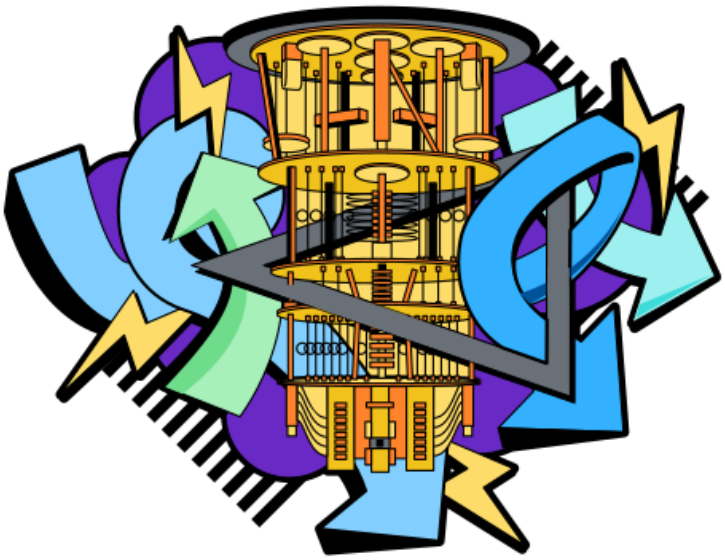
QickStart



Overview

QickStart is an online challenge based on a mix of classical and quantum computing concepts. Participants will be given 5 major problem sets with varying difficulties for them to solve. Some prerequisites for doing well in the challenge are Basics of Quantum Computing, Familiarity with Qiskit and Python programming. Some optional prerequisites are Classical Data Structures and Complexity Analysis of algorithms

Guidelines

General

- The challenge would be hosted on the *qbraid* platform as jupyter notebooks. Each notebook would contain a problem which the teams have to solve.
- The participation in the online challenge would be *team wise*. Each individual would be able to submit solutions through their *team leader's account,* with one set of solutions per team.
- Duration of the challenge : 5 hours
- The users would code their solutions and submit them to an *autograder* present in the notebooks.

Challenge Structure

- The challenge would consist of 5 problems with a total of *1000 points*
- Point Distribution :

Problem	Points
1	50
2	100
3	200
4	250
5	400

- Each problem may further be divided into other sub-problems and this internal distribution would be revealed when the challenge goes online.

Ranking and Scoring

- Users are ranked based on their points. A total of x points for a team would mean that this team would be ranked above all other teams with a total < x.
- Each problem / sub-problem solution would be evaluated as **correct / incorrect.**
- For a correct solution, the participant would be rewarded all the points for the problem and their time of submission will be noted (to break ties).
- For an incorrect solution, the participants would be getting a **penalty of -2** points. Note that your *total may be < 0* if you don't have any correct solution.
- Incorrect solutions may be due to -
    - A wrong answer to the question
    - Exceeding the time limit alotted for the solution to run
- NOTE : penalty is deducted **only** if the grader evaluates the solution, not if you are running it in your notebook and it turns out wrong.
- If a team has submitted a correct solution for a problem at a time t1, then any submission to the problem at a time t2 > t1, whether incorrect / correct, **will not** deduct / reward them with points.

* The example is only for reference purposes, the point distribution may not come out to be same

Tie - Breaks

If two teams have the same number of points, then ties will be resolved in the following way -

- Let's say team A and team B have gotten the same points and they have the following results after challenge ends* (assume all times in minutes from start of challenge) -

Problem	Time A	Time B	Wrong A	Wrong B
1	2	3	1	1
2	4	2	2	2
3	-	-	3	4
4	6	8	1	5
5	10	13	1	2

- Now, for each participant Earlier(x) stores how many problems they solved earlier than the opponent.Eg. Here, we are comparing A and B, thus Earlier(A) = 3 (for problems 1, 4 and 5) and Earlier(B) = 1 (for problem 2). Whichever participant has a bigger Earlier(x) will be ranked above.

- If the teams have the same Earlier(x) values, then we will look at the wrong submissions. Whichever team has the lesser number of wrong submissions will be having a better rank. Eg. Here, if assume Earlier(A) = Earlier(B) then Team A would have a better rank with a total of 8 wrong submissions vs 14 wrong submissions by Team B.

- If still a tie exists, we'll let a *quantum computer decide*!!

* The example is only for reference purposes, the point distribution may not come out to be same