IBM Certified Associate Developer - Quantum Computation using Qiskit v0.2X
Preparation Guide
Prepared on April 10, 2023

If you are passionate about Quantum Computing and you want to take a formal step into the field then this is probably the best starting point for you. It takes a lot of effort to be an IBM certified Associate Developer for Quantum Computing, especially when you are preparing all the materials by yourself. It might be confusing to know where to start, but I have tried my best to include some important links in this document. I could have made it a large document with too many links, but it would just confuse students and they might feel like it is too much work. Well, it is easy to get the certificate if you know how to approach the material and it should only take you a few weeks even if you start from scratch. I would say anyone irrespective of their education level can prepare for the exam if they have some basic idea of quantum mechanics like interference, entanglement, and matrices.

Also, please note that this is not a document prepared for learning quantum computing, rather it is a preparation guide particularly for IBM Certified Associate Developer exam-Quantum Computing using Qiskit v0.2X.

Brief overview of the exam: You need to score 73.33% (i.e. 44/60) to pass the exam. Since it is a multiple choice question based exam, you do not have to write anything. Best way to prepare is to play around with Qiskit and get familiar with the Qiskit syntax. If you haven't already, you can [install Qiskit](#).

Note: Make sure to go step by step. If you skip steps, it might be overwhelming.

Step 1: Finish first two Chapters of Qiskit textbook.
Anything after two chapters will not show up in the exam. However, there is not enough density of information in those two chapters that will prepare you for the exam. So, finish other steps too.
Qiskit text book:
[QISKIT Textbook](#)

Additional to those two chapters, you can finish some other materials that are mentioned at the end of this document.

Step 2: Most Important Resource: [Most Important Resource](#)

I would say this is the most important chapter to finish right after you finish Step 1. Almost all the problems in the exam are based on the content available here. Only review the other Steps after you are done with this material.

Step 3: A Short Practice Exam.
Try this short practice exam to see how far you are in the prep. At first, it might be very confusing that answers in multiple choice seem very similar. Do not get disappointed if you get a low score. We are still yet to practice some other important materials.

Practice Test: 🗎 Practice exam.pdf

Solutions: [Wrong answer rationate](#)

This youtube playlist by Manny Gomez from UIC Quantum Computing Club goes through the answers. It was pretty helpful for me. You can check it out to see how the guy approaches the problem.
Youtube playlist: [one by one solutions](#)

Step 4: At this point, you should feel comfortable enough about the material you have covered. That does not mean you would have enough practice to pass the exam since some problems might be very confusing and the concept seems very different from what you have learnt already. So, we need more practice right? Luckily, Udemy has two practice tests that you can buy: [PracticeTEST.Udemy](#)
Some of the problems are quite similar to the actual exam, but I have to warn you that there might be some problems in the exam that are not here in the practice exam. You can also buy a practice test from IBM in the pearsons (The platform to take the exam) for $20. You can choose to buy it when you are buying the exam here in this link:
https://www.ibm.com/training/certification/C0010300

Note: When you buy the IBM's practice exam, you only get to attend the practice exam as if it is a regular exam. IBM will not provide you any solutions and it will not allow you to save answers/questions either. As soon as you finish the practice exam, everything disappears and you will not be able to review any questions. That kinda sucks right? But the questions are way similar to what you will actually see in the real exam.

Additional materials:

This should be enough to prepare for the exam. However, if you find it difficult to understand different concepts, here are a few resources to help you understand the basics:

1. https://rb.gy/vq8e3: This document contains some important links that you can check out. Some links might be outdated (or repeated) as it was prepared a year ago.
2. [Quantum Computing Glossary](#): This is a glossary you can check out to get familiar with more technical terms that you might not have encountered while preparing for the exam. Check it out if you have enough time.

3. https://javafxpert.github.io/grok-bloch/: This was a very important visualization platform for me. Everytime I felt it hard to visualize what different gates would do to a quantum state, I would simulate it using this link. Worth trying it.
4. IBM Quantum Composer : You can simulate quantum circuits which makes it easier to visualize the stuff you want to implement. Make sure you notice how the state vectors and probabilities change whenever you
5. Youtube short Videos by Qiskit These are some short entertaining videos that do a good job in explaining complicated concepts in just a few minutes.