ECE/CS 8381 Introduction to IBM Quantum Computer Programming
Homework 3

1.0 Overall Description of the Assignment

This homework assignment is designed to acquaint you with various forms of entanglement generators and to gain more experience with the IBM quantum computers. You will use the Anaconda/Jupyter framework that you setup in Homework 2. If you have questions about the environment or setting it up, please refer to the document accompanying Homework 2.

In the last homework, Homework 2, many students expressed confusion regarding deprecation warnings and queue times. Below are instructions regarding these topics. Please read carefully: because these issues have now been addressed multiple times, you will not receive full credit if you do not follow these instructions.

First, deprecation warnings. As previously explained, deprecation warnings aren't errors and for purposes of a single homework assignment, they need not be 'fixed.' But to avoid any confusion, we will use Qiskit's updated package for connecting to IBM backends going forward. The code for connecting to these backends is provided for you in sample cells in the Jupyter notebook, and you should *not* need to adjust this connection code beyond adding your token in the indicated location. However, to use the new package, you will need to install the `qiskit_ibm_provider` package, just as you installed other Qiskit packages in the instructions for Homework 2. You can do this using the command `pip install qiskit_ibm_provider`.

Assuming installation proceeds correctly, there shouldn't be difficulties using the `qiskit_ibm_provider` package, and issues connecting to the IBM backends will not be considered an excuse for late or incomplete homework. Please start the homework with enough time to ask appropriate questions, should any arise. Proper time management is your responsibility as a student in this 8000-level class.

Second, queue times. Now that you all understand the reality of queue times, please plan accordingly – this is an important aspect of proper time management as previously mentioned. Failure to complete the homework due to queue times is not an excuse, as I am building enough time into the assignment for delays due to queue times. Queue times are a reality of using busy cloud resources such as the IBM quantum computers.

2.0 Submitting the Completed homework

Follow all directions in the Jupyter notebook (read carefully). When your homework is complete and your notebook has been properly updated, save it to your disk using the "file" drop down menu within the web browser and export it to .html. Make sure that all output cells are properly populated with the output of each code cell. I strongly suggest that you first email the completed notebook to yourself, then open it and examine the content to make sure that you are turning in the updated and completed notebook. Notebooks turned in without the updated source code, output cells, and question answers will be counted as

late submissions. When you are sure that you have a properly updated notebook file, please email it to the instructor and the TAs. Send the email to:

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and

hendersonj@smu.edu

and

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