QOSF Mentorship Program

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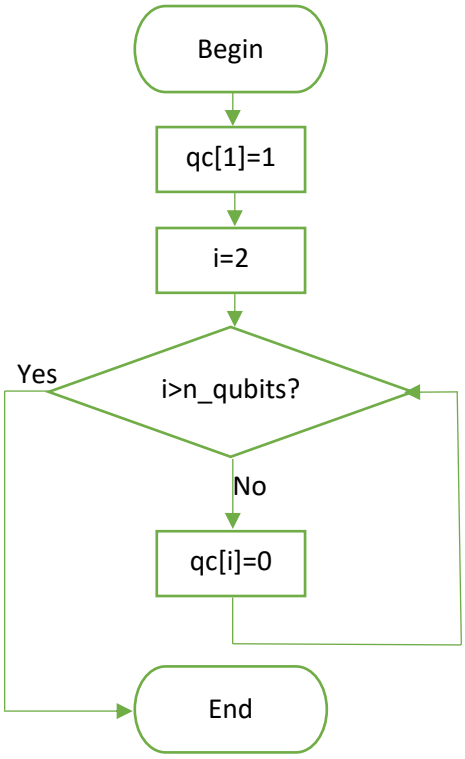
I decided to implement Task #3, where I have to develop a Quantum circuit simulator that applies a series of unitary operations to a ***n_qubits*** system. The program starts with the ground state of the computational basis and considers an ensemble composed by ***num_shots*** identically prepared quantum systems, in a quantum computer. The following operations are considered:

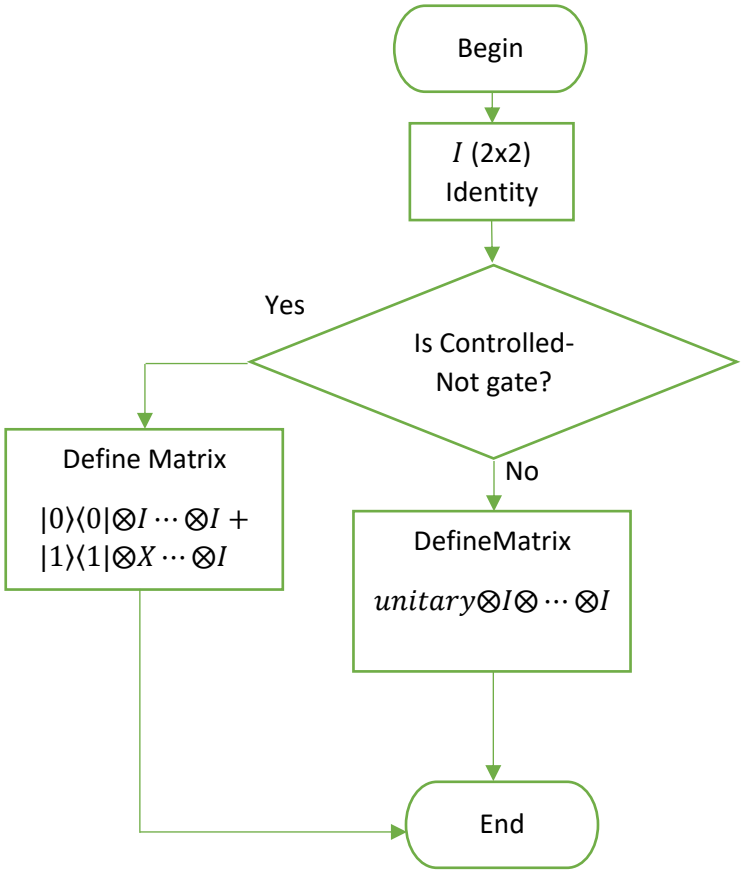
- Generate de ground state for the ***n*** qubits system.
- Define unitary gates.
- Apply all the unitary gates on the system.
- Prepare the measurement by considering suitable unitary gates.
- Perform a measurement of the n-qubits.

The following Flux diagrams represents the general structure of the program:

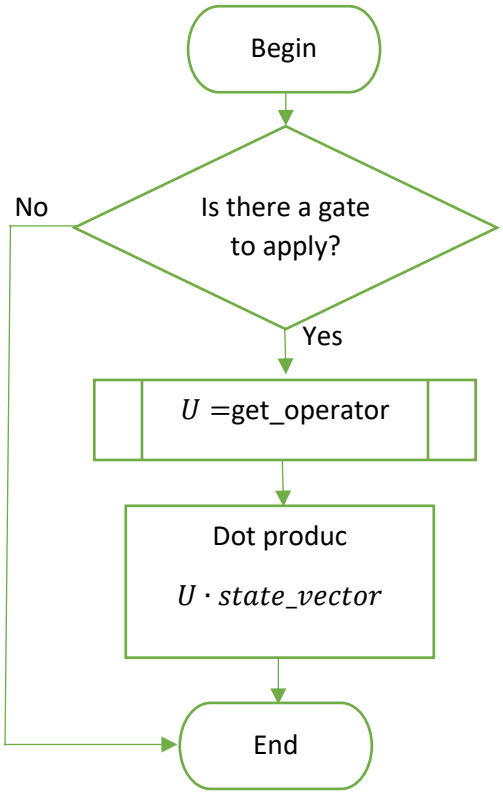
get_ground_state(n_qubits)



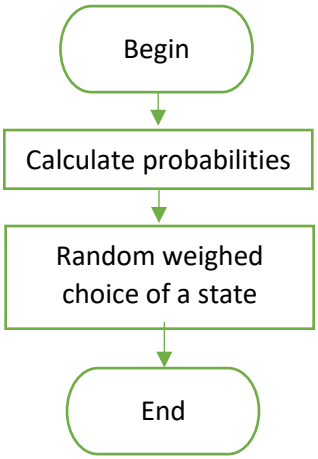
get_operator(n_qubits, unitary, target)



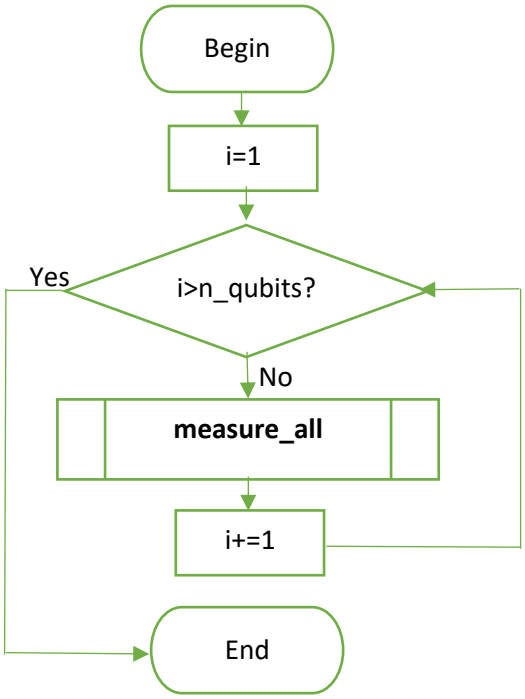
run_progam(state_vector, program)



measure_all(states,state_vector)



get_counts(state_vector,num_shots)



Using the functions defined before the following Flux Diagram represent the structure of the final program