I tried to implement the Quantum Circuits model for quantum computing and tested it on the GHZ state. I also checked my results agains GHZ in the Qiskit framework.

My goal was to try to implement it in a very general way to allow easier addition of more complicated gates and operations. I describe it more thoroughly in the README file.

GHZ

There is a prepared a target for the GHZ state in a file `src/ghz.cpp`. It can be compiled using CMake and run with the following steps:

1. `mkdir build && cd build`
2. `cmake ..`
3. `make ghz`
4. `./ghz`

The program prepares the quantum circuit for preparing the GHZ qubit and measuring all three qubits, each into its own classical register. It is set to work on a three qubit system and 1024 shots for measurement (as is the default in qiskit, I believe).

The results for three consecutive experiments look as follows:

outcomes	counts (exp 1)	counts (exp 2)	counts (exp 3)
000	506	534	500
111	518	490	524
sum	1024	1024	1024

More details about the implementation and API of the simulator is provided in the README.md file.