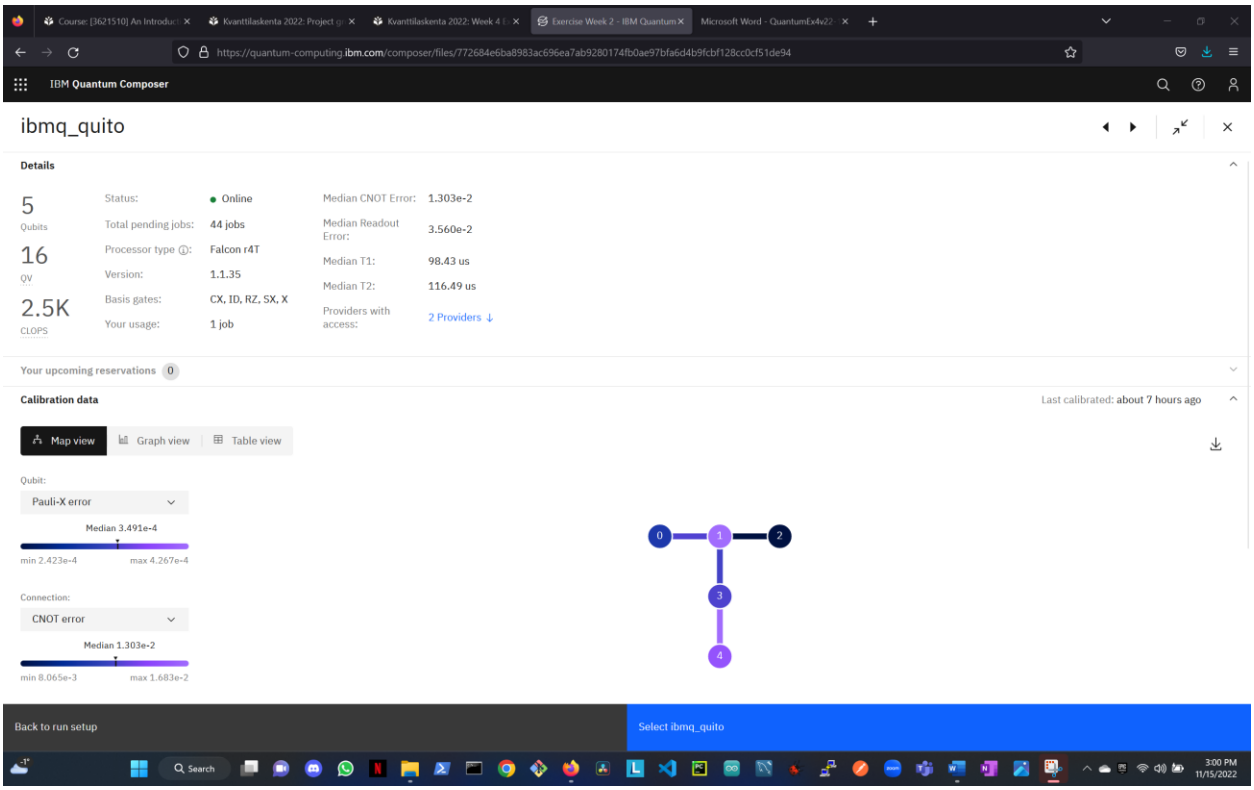
Haritha Weerathunga – Exercise 4

Q1

1. **Decide which circuit you want to run**
2. **implement it on the Quantum Composer**

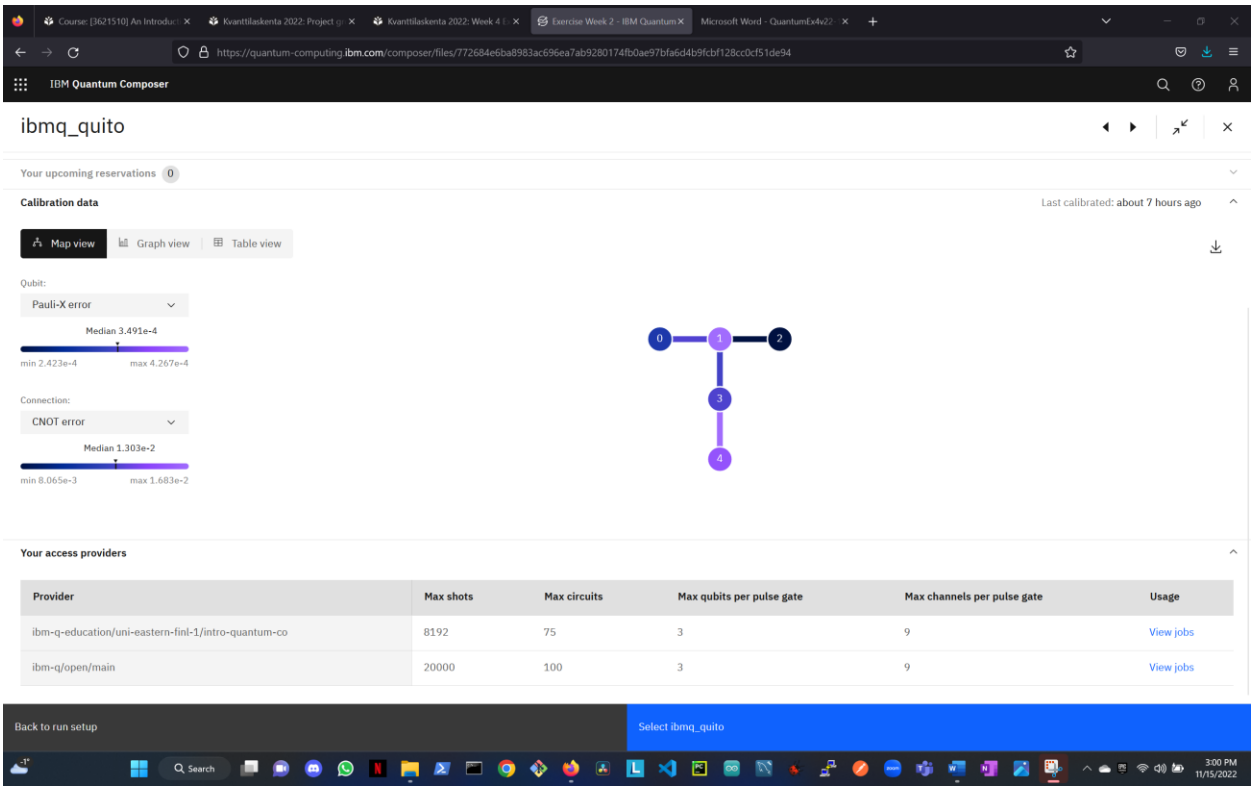
Reason :

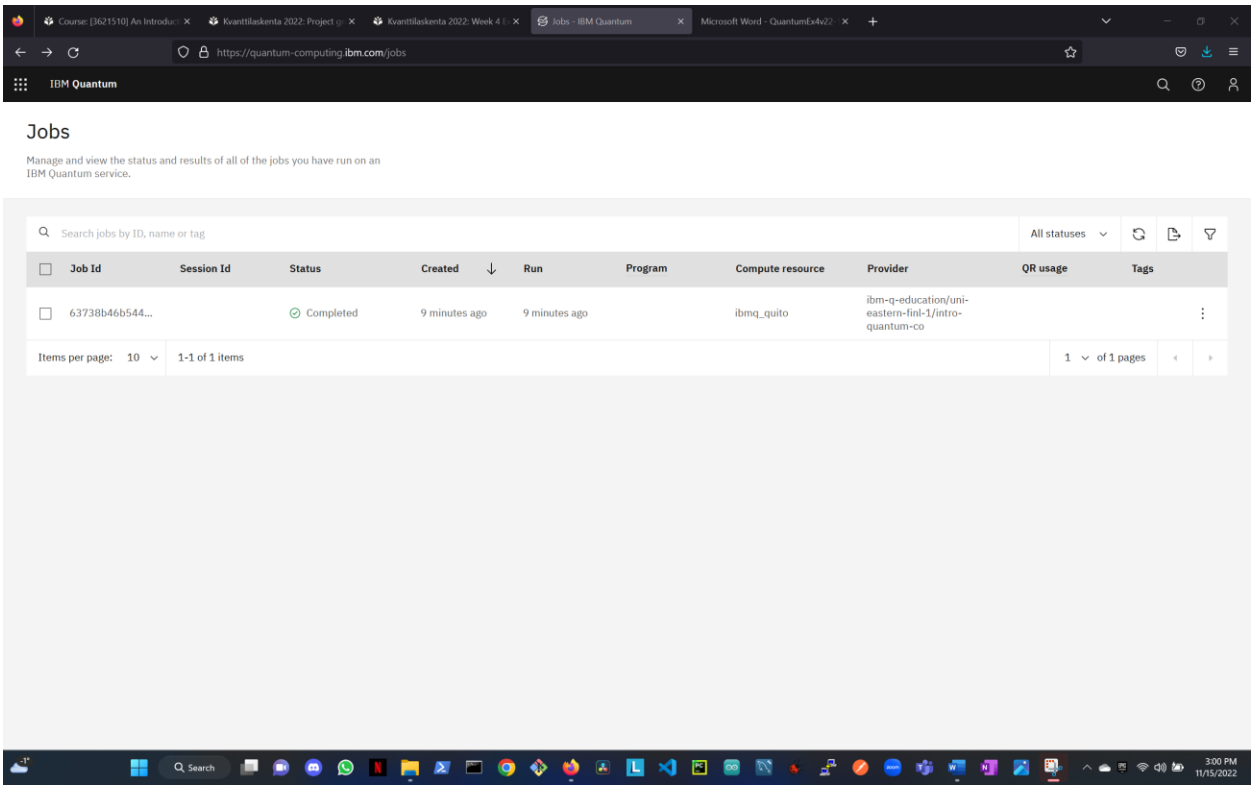
3. **measurements are included**
4. **Setup and Run**

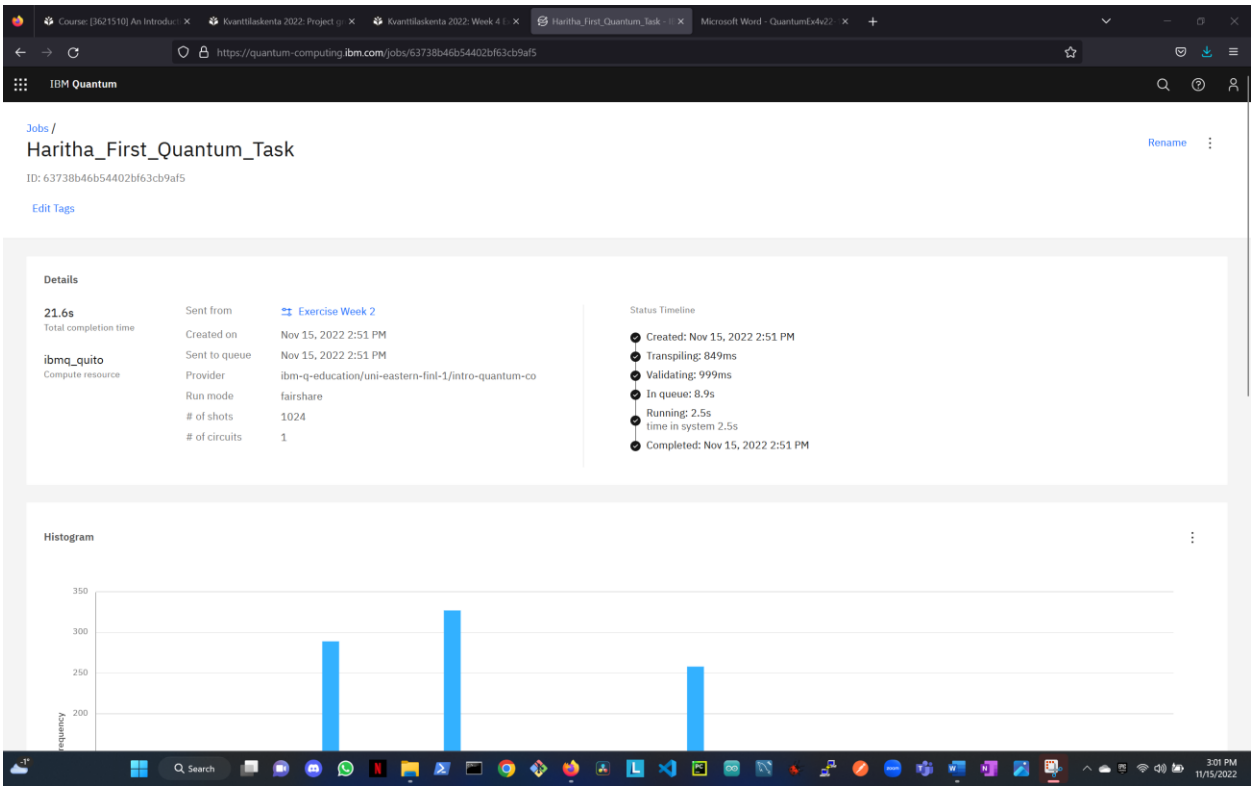


why you selected that circuit, what did you think about the process of running it and how do you view the results

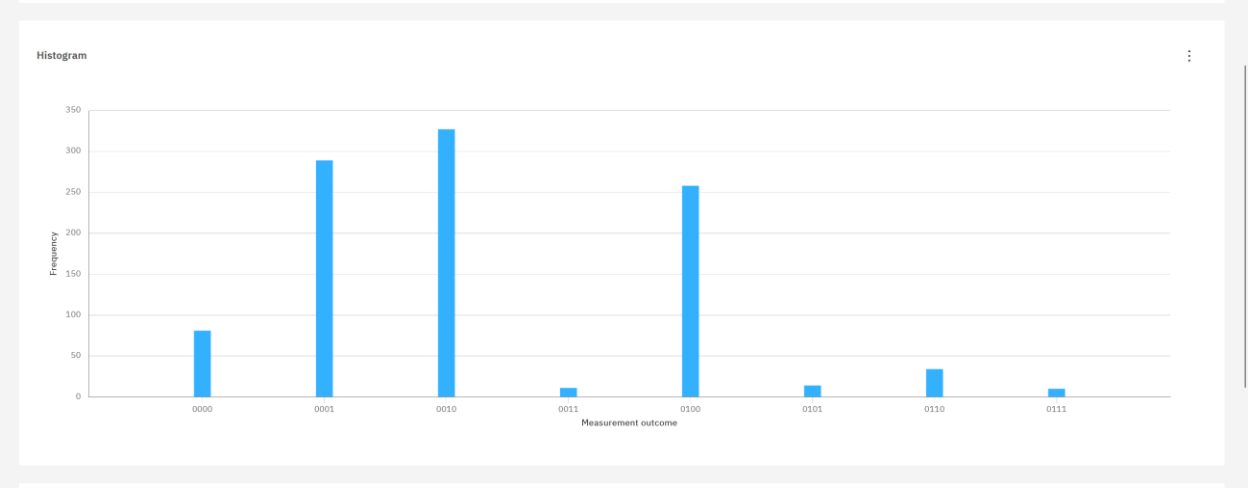
- Reason for selecting this circuit is the number of qubits are adequate to do the measurement.



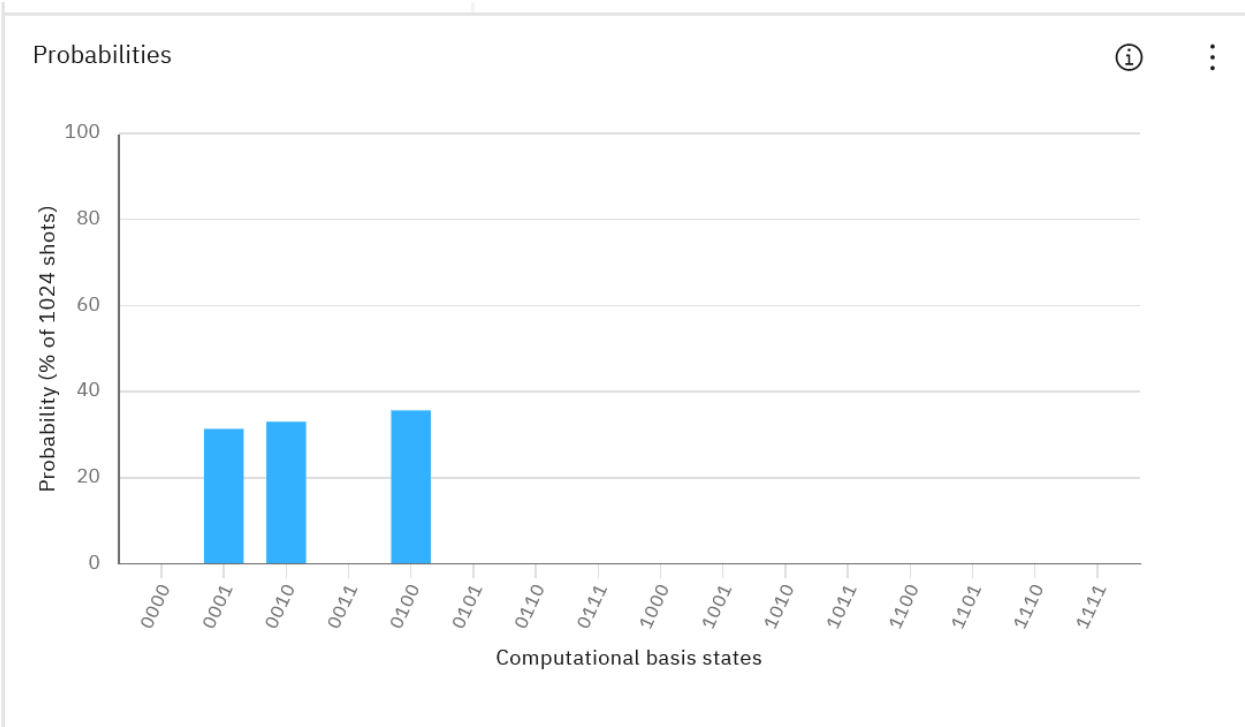




Output from the real Quantum Computer:



Output from the Quantum Composer Simulator:



- There is a clear difference between the outputs of real quantum computer and the simulator. The reason for this might be that in a simulator we simulate a perfect quantum environment. But when you connect to the IBM Real Quantum Computer that environment is not perfect. So there can be errors. That is why we see some more probabilities in the measurement of the real quantum computer

Q2

I have attached the pdf seperately

Why did the probabilities between job1 (result1) and job2 (result2) differ as the circuit is the same?

- Because the number of shots are different when initializing the job.

How does this environment and the QLM language differ compared to the IBM Quantum Lab and Qiskit?

- QLM environment is using the same simulator as in Qskit. I think Qskit and Quantum lab goes hand in hand. They are very intertwined.

Q3A – Have attached the pdf seperately