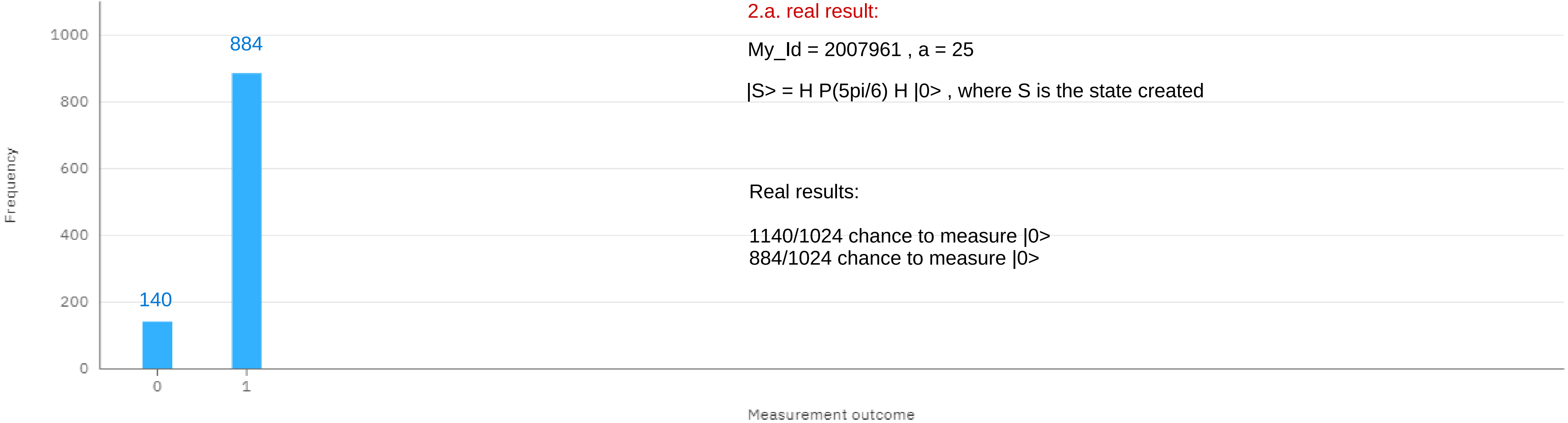


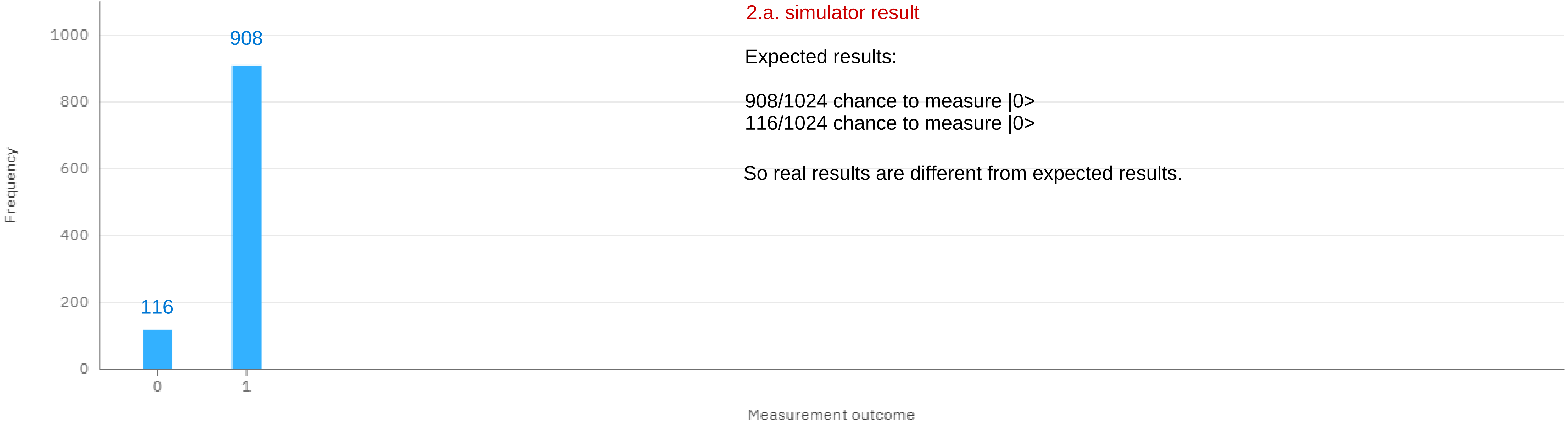
2.a. real result:

My_Id = 2007961 , a = 25

|S> = H P(5pi/6) H |0> , where S is the state created

Real results:

1140/1024 chance to measure |0>
884/1024 chance to measure |0>



2.a. simulator result

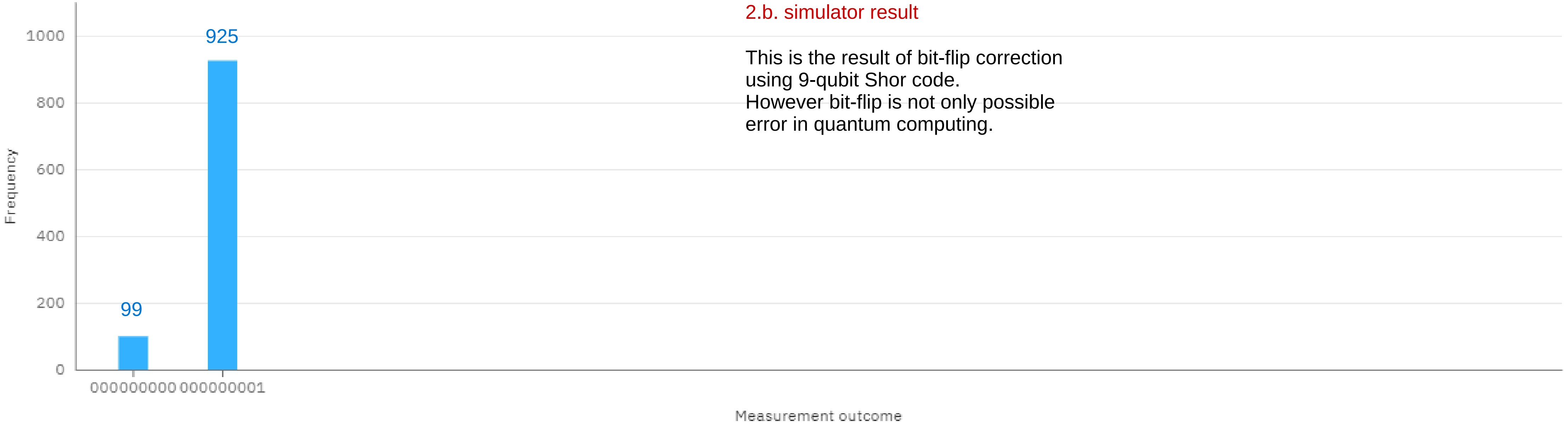
Expected results:

908/1024 chance to measure |0>
116/1024 chance to measure |0>

So real results are different from expected results.

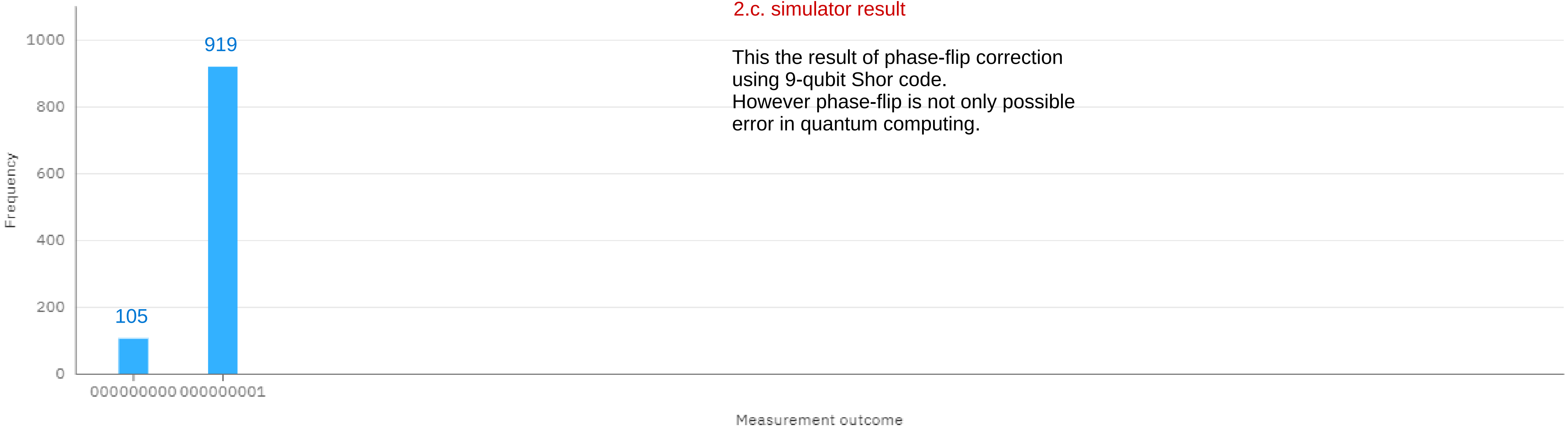
2.b. simulator result

This is the result of bit-flip correction
using 9-qubit Shor code.
However bit-flip is not only possible
error in quantum computing.

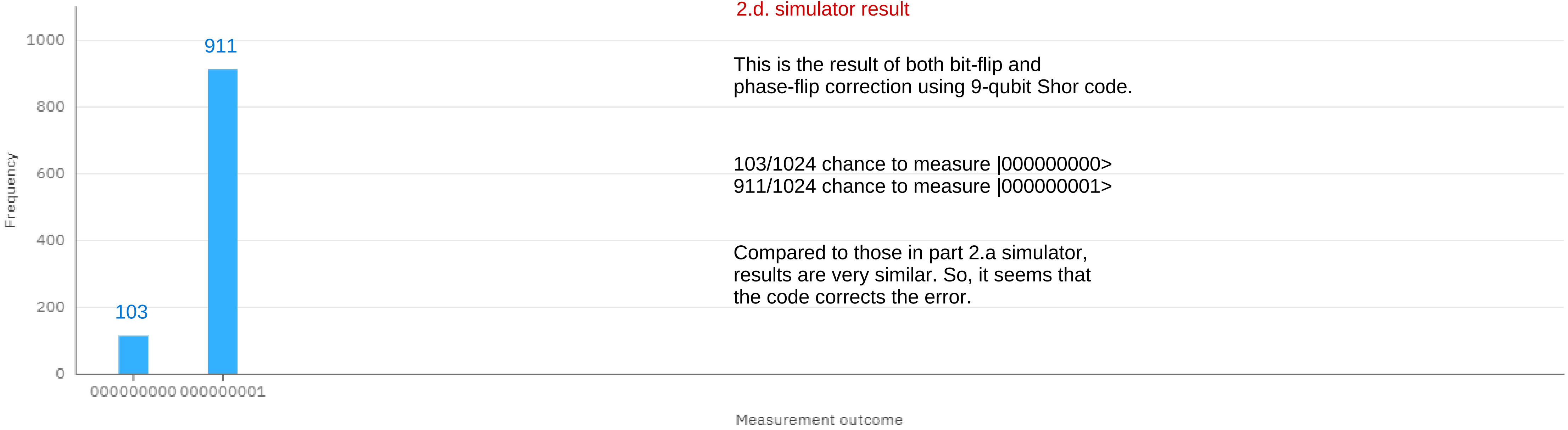


2.c. simulator result

This the result of phase-flip correction using 9-qubit Shor code.
However phase-flip is not only possible error in quantum computing.



2.d. simulator result



This is the result of both bit-flip and phase-flip correction using 9-qubit Shor code.

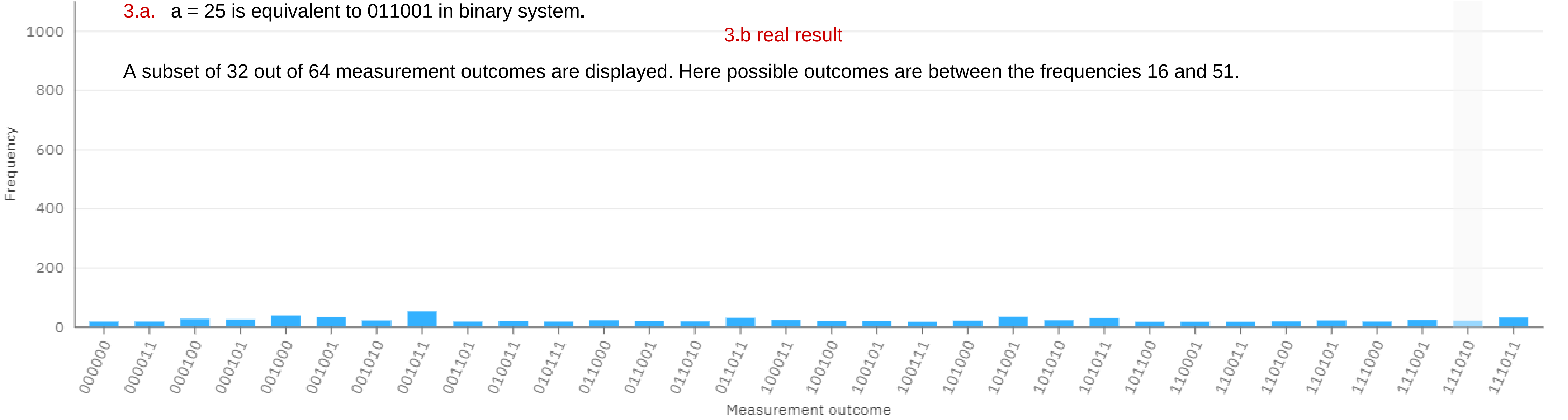
103/1024 chance to measure |000000000>
911/1024 chance to measure |000000001>

Compared to those in part 2.a simulator, results are very similar. So, it seems that the code corrects the error.

3.a. a = 25 is equivalent to 011001 in binary system.

3.b real result

A subset of 32 out of 64 measurement outcomes are displayed. Here possible outcomes are between the frequencies 16 and 51.



3.b. simulator result

A subset of 32 out of 64 measurement outcomes are displayed. Here possible outcomes are between the frequencies 16 and 21.

3.c. By QFT, at most n gates applied to each qubit, totally O(n^2) gates but totally O((2^n)*n) gates are applied to each qubit in classical computing, where n is the number of qubits. So, QFT is very efficient compared to Fourier transformation on classical computing. Since n = 7 is a small number, the advantage may not seen in this application. However, if the input size n becomes bigger, then the advantage is easily easily detectable.