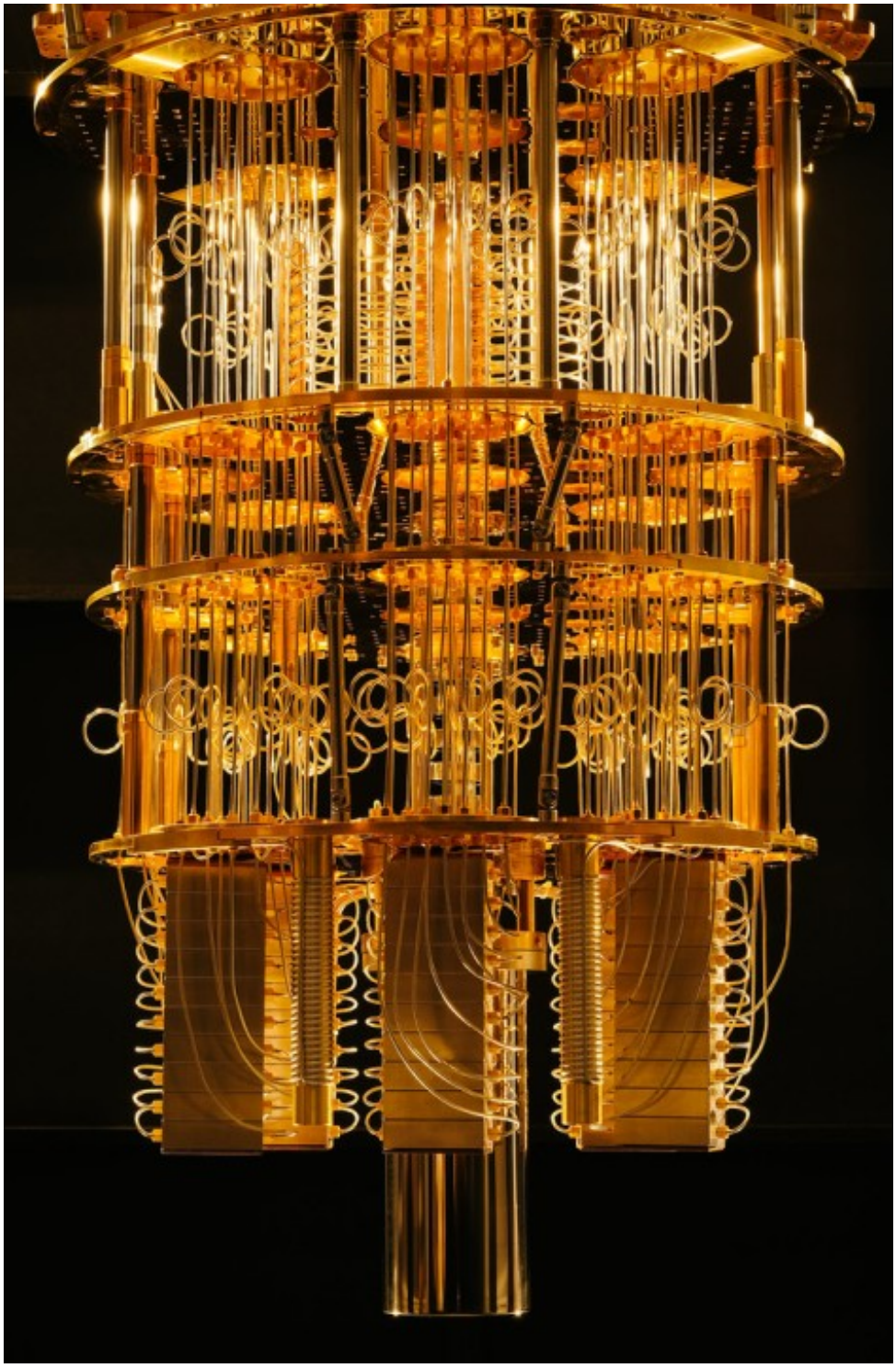
Quantum |Hello World>

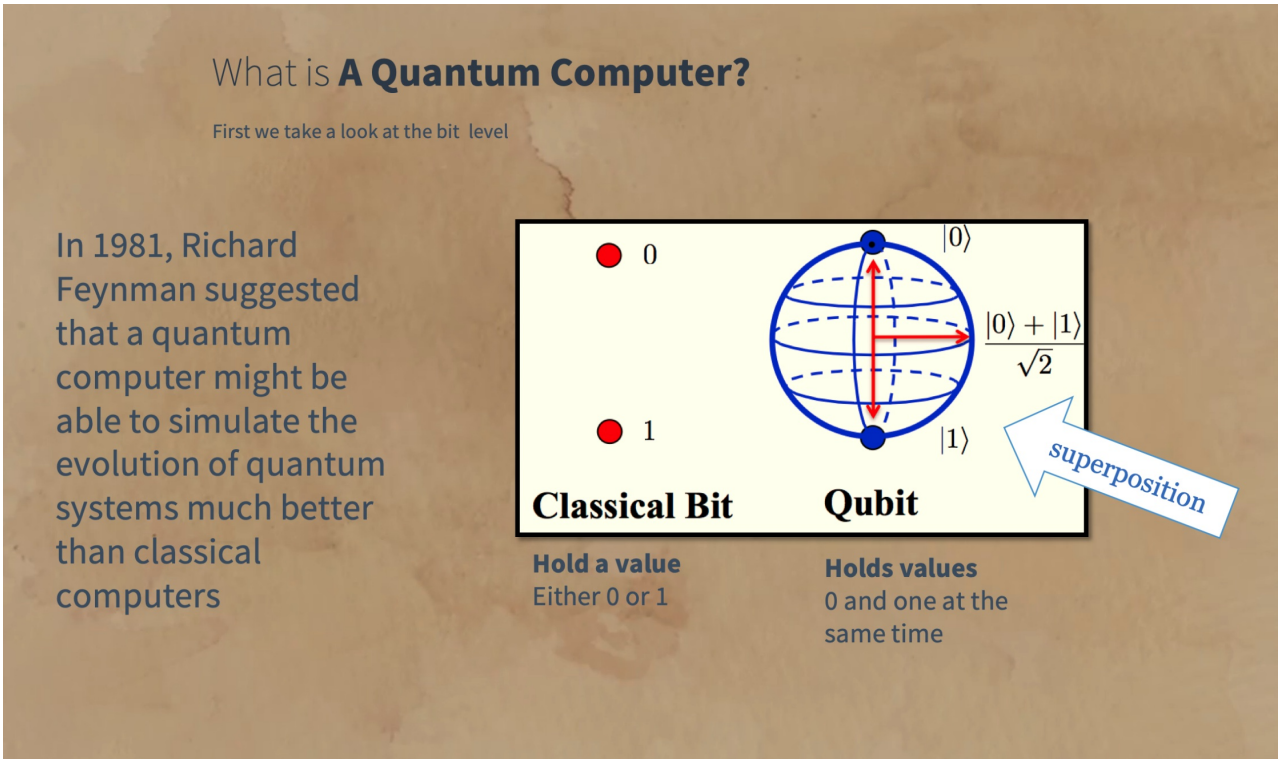
linkedin.com/pulse/quantum-hello-world-moshe-beeri



IBM Quantum Computer

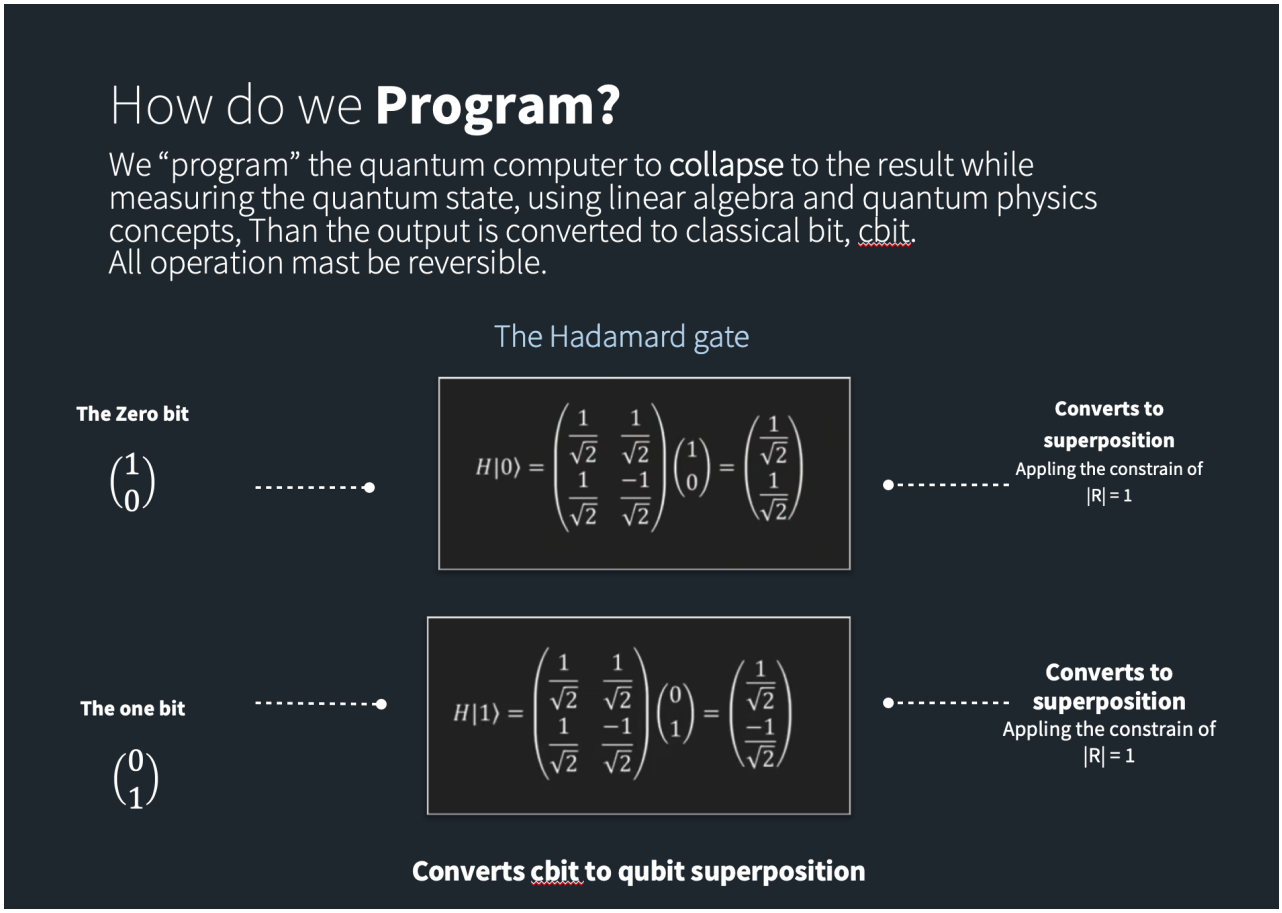
Today Quantum computing is all about hardware, since algorithmic phase of the field is way developed that the hardware capabilities. It seems that the field is ready for the next stage of development YET the advance in hardware capabilities is not yet predictable nor nearly ready for real applications.

I follow the subject for quite long time now, three years ago I established a MeetUp at Tel-Aviv on the subject trying to understand why wont we have one of those machine in Israel, but I realized it is too early for us, in the last year the Israeli government have decided to fund research in the field, while I don't understands why it is outside of the high-tech eco system I think that it will help the world progress in the field. About a year ago I if quantum computing may be helpful for the financial sector and got to the conclusion that it is too early.



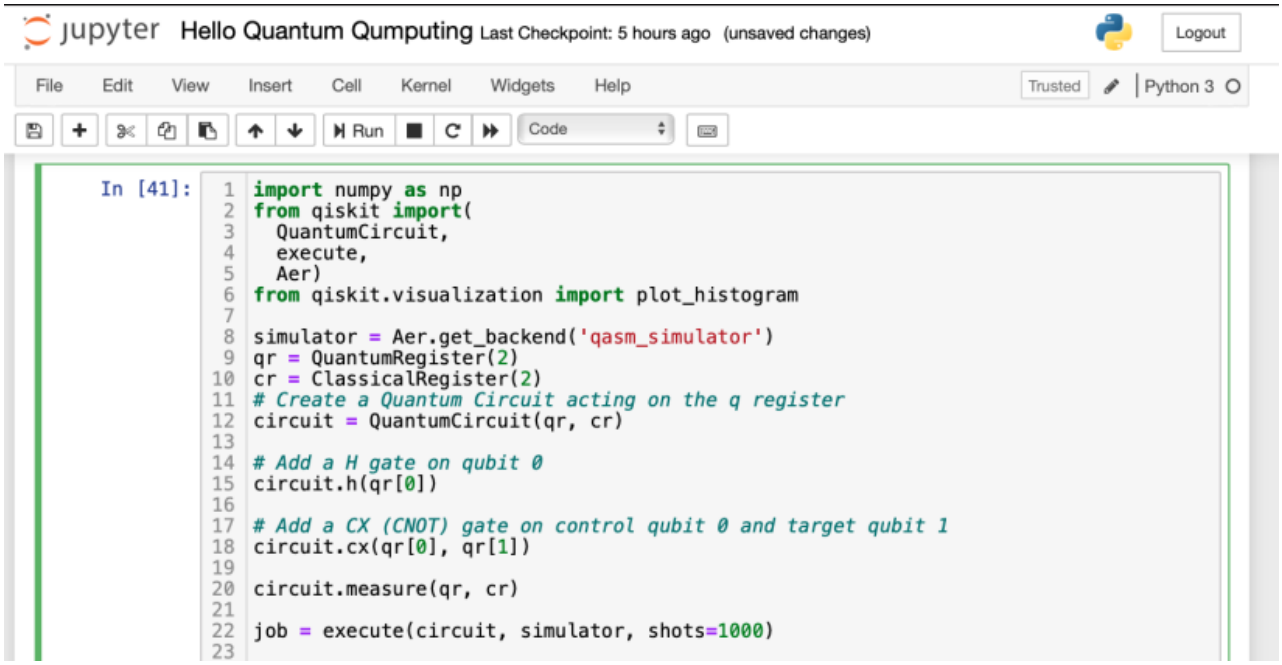
Quantum programming and software are definitely part of the quantum world and I had plans to learn it, 'some day' I said to my self over and over, I read some posts mainly learning the general idea, I read about Microsoft's latest advances is hardware and what where the differences between IBM's solution and D-Wave's. I also was impressed by Microsofts framework. well a lot is going on with the filed.

But yet someone will have to program those machine? Heisenbergs cat will be there or not **only** if we'll put it in the box shut on one side and see that the cat is half alive! well this future may be in a reach of a decade, and I might do some Q-programming in my career. I really decided to learn Quantum Programming.



Few days ago I came across a wonderful YouTube video series regarding QisKit since I realized it is a new quantum software technology the curiosity killed the cat and I just started to learn more and more about it. so it based on Python "GREATE!!!" jumped to my mined, only run `pip install qiskit` and you are good to go in Jupyter notebook, WoW!

So I did it, I run my Hello (get the qbit state) World program and run it on a real Fu**ken quantum computer, and as I always do, here it is one pager for Quantum programming hello world




```
import numpy as np
from qiskit import(
  QuantumCircuit,
  execute,
  Aer)
from qiskit.visualization import plot_histogram

simulator = Aer.get_backend('qasm_simulator')
qr = QuantumRegister(2)
cr = ClassicalRegister(2)
# Create a Quantum Circuit acting on the q register
circuit = QuantumCircuit(qr, cr)

# Add a H gate on qubit 0
circuit.h(qr[0])

# Add a CX (CNOT) gate on control qubit 0 and target qubit 1
circuit.cx(qr[0], qr[1])

circuit.measure(qr, cr)

job = execute(circuit, simulator, shots=1000)
```

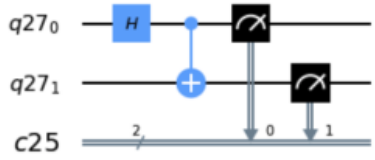
```
result = job.result()
counts = result.get_counts(circuit)
print("\nTotal count for 00 and 11 are:",counts)

circuit.draw(output='mpl')

```

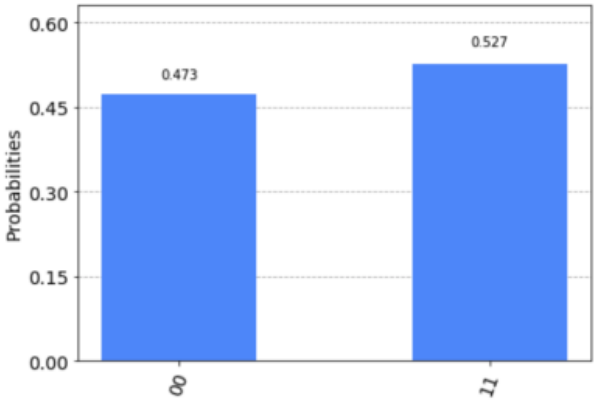
```
Total count for 00 and 11 are: {'00': 473, '11': 527}
```

Out[41]:



In [42]:
```
plot_histogram(result.get_counts(circuit))
```

Out[42]:



In [43]:
```
provider = IBMQ.get_provider('ibm-q')
qcomp = provider.get_backend('ibmq_16_melbourne')
```

In [44]:
```
job = execute(circuit, backend=qcomp)
from qiskit.tools.monitor import job_monitor
job_monitor(job)
```

```
Job Status: job has successfully run
```

In [45]:
```
result = job.result()
plot_histogram(result.get_counts(circuit))
```

Out[45]: