Written documentation

IBM Quantum



What is quantum computing?

Quantum computers could spur the development of new breakthroughs in science, medications to save lives, machine learning methods to diagnose illnesses sooner, materials to make more efficient devices and structures, financial strategies to live well in retirement, and algorithms to quickly direct resources such as ambulances.

But what exactly is quantum computing, and what does it take to achieve these quantum breakthroughs? Here's what you need to know

Launch IBM Quantum Experience IBM Quantum Quantum computing fundamentals All computing systems rely on a fundamental ability to store and manipulate information. Current computers manipulate individual bits. which store information as binary 0 and 1 states. Quantum computers leverage quantum mechanical phenomena to manipulate information. To do this, they rely on quantum bits, or qubits. Here, learn about the quantum properties leveraged by gubits, how they're used to compute, and how quantum systems scale. Learn more about quantum computing Quantum properties Quantum computation Scaling quantum systems fundamentals

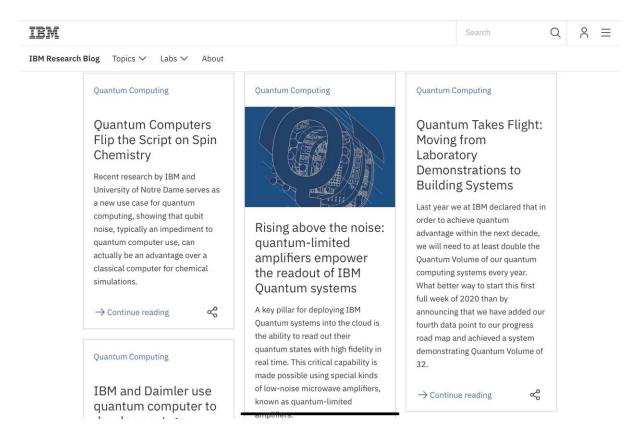
Code documentation

```
import numpy as np
from qiskit import(
 QuantumCircuit,
  execute,
from qiskit.visualization import plot_histogram
# Use Aer's qasm_simulator
simulator = Aer.get_backend('qasm_simulator')
# Create a Quantum Circuit acting on the q register
circuit = QuantumCircuit(2, 2)
# Add a H gate on qubit 0
circuit.h(0)
# Add a CX (CNOT) gate on control qubit 0 and target qubit 1
circuit.cx(0, 1)
# Map the quantum measurement to the classical bits
circuit.measure([0,1], [0,1])
# Execute the circuit on the qasm simulator
job = execute(circuit, simulator, shots=1000)
# Grab results from the job
result = job.result()
# Returns counts
counts = result.get_counts(circuit)
print("\nTotal count for 00 and 11 are:",counts)
# Draw the circuit
circuit.draw()
import numpy as np
from qiskit import(
 QuantumCircuit,
  execute,
 Aer)
from qiskit.visualization import plot_histogram
```

In more detail, the imports are

- QuantumCircuit: can be thought as the instructions of the quantum system. It holds all your quantum operations.
- execute: runs your circuit / experiment.
- Aer: handles simulator backends.
- plot histogram: creates histograms.

Community documentation



National Accelerator Laboratory, has joined the IBM Q Network. As a member organization, Q-FARM will collaborate with IBM to accelerate joint research in quantum computing and develop curricula to help prepare students for careers that will be influenced by this next era of computing across science and business.

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Quantum Computing



Qiskit - Write once, target multiple architectures

Qiskit has the flexibility to target different underlying quantum

Quantum Computing

IBM and Wells Fargo Collaborate to Accelerate Innovation

IBM Research is embarking on a multi-year, collaborative effort with Wells Fargo focused on research and learning that is intended to enhance the company's artificial intelligence and quantum computing capabilities. Together with IBM Research, Wells Fargo plans to accelerate its learnings to inform innovation initiatives that reimagine the future of financial services in a way that is designed to deliver customer experiences that are simple, fast, safe and convenient.

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Quantum Computing



IBM and the Unitary Fund Unite for Open Source Projects for Quantum Computing

We are pleased to announce our support to grow the community of quantum enthusiasts and explorers, by partnering with the Unitary Fund to provide funding for grants and priority access to certain IBM Q systems.

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