

Creative Tools for Qiskit



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Qiskit

pypi v0.7.2

An open-source quantum computing framework for leveraging today's quantum processors in research, education, and business

[View on GitHub](#)

[Join the Slack community](#)

Qiskit

- Open source framework for quantum computation
- Apache 2.0 license

qiskit.org

```
q = QuantumRegister(2)
c = ClassicalRegister(2)
qc = QuantumCircuit(q, c)
```

```
qc.h(q[0])
qc.cx(q[0], q[1])
qc.measure(q, c)
```

```
backend = Aer.get_backend('qasm_simulator')
```

Qiskit Terra

. ‘Machine code’ level manipulation of quantum programs

qiskit.org/terra

```
sat_cnf -  
c Example DIMACS 3-sat  
p cnf 3 5  
-1 -2 -3 0  
1 -2 3 0  
1 2 -3 0  
1 -2 -3 0  
-1 2 3 0
```

Qiskit Aqua

- High level tools for AI, optimization, chemistry, finance

qiskit.org/aqua



Qiskit Aer

A high performance simulator framework for quantum circuits

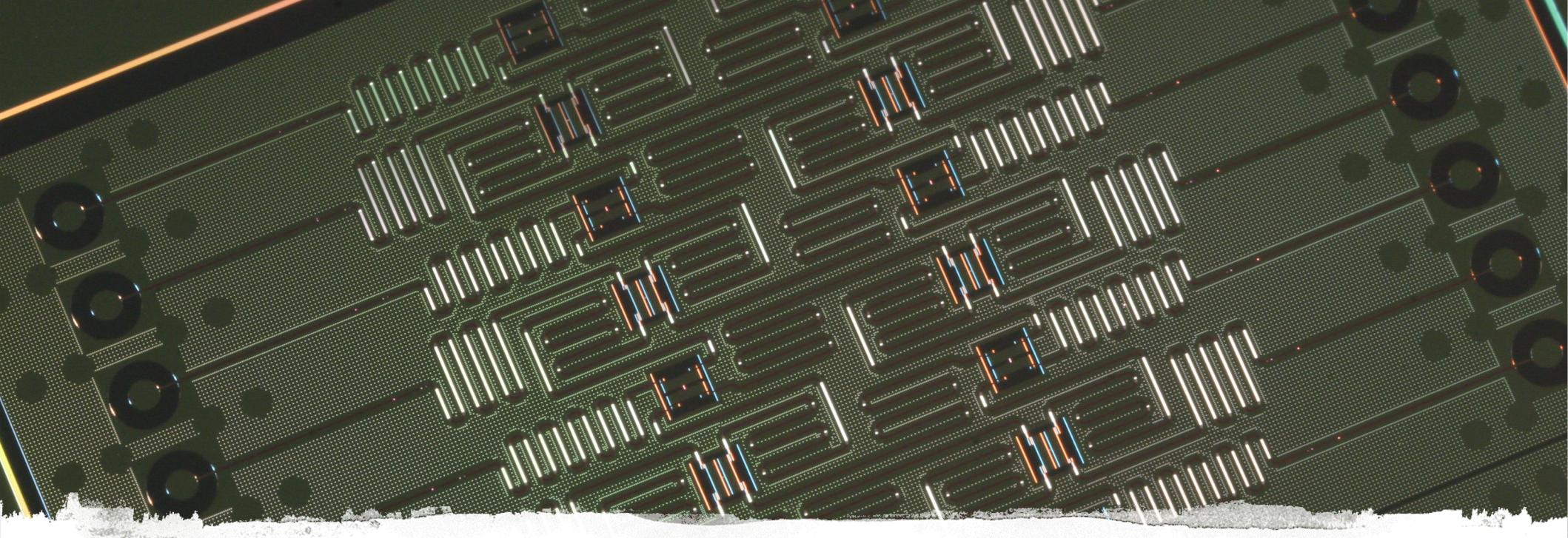
 GitHub

Tutorials

Qiskit Aer

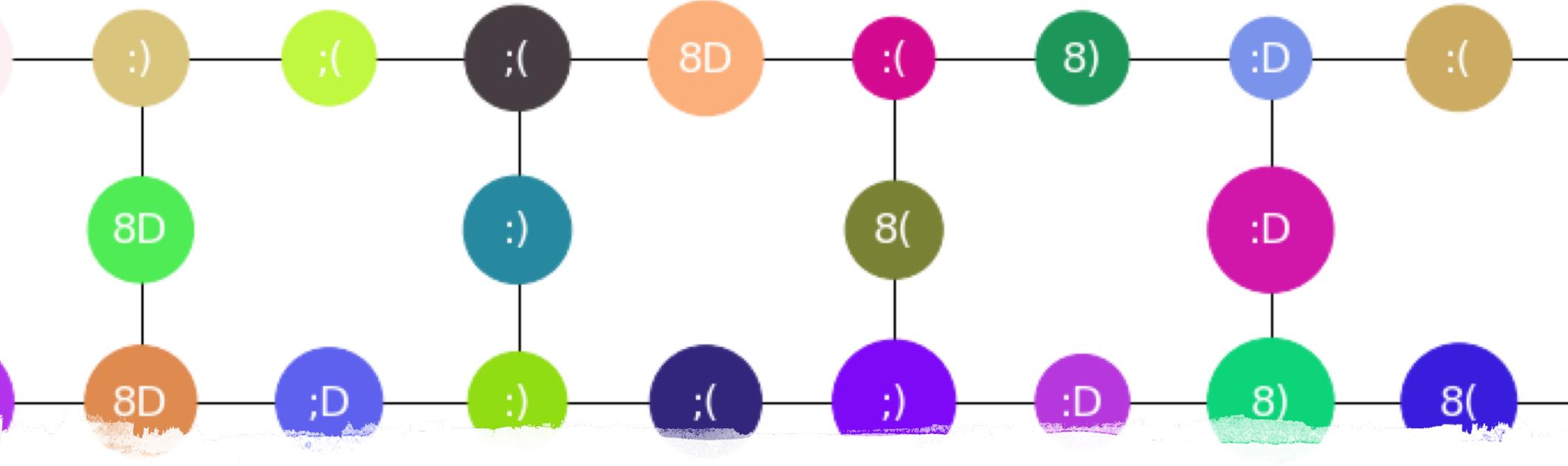
- Simulates quantum programs with your own computers
- Can simulate them perfectly, or with noise

qiskit.org/aer



IBMQ Hardware

- Can also run on real, prototype quantum devices
- Adds design constraints and mysterious effects of noise
- Sign up for an account to use
- Results provided for non-commercial purposes

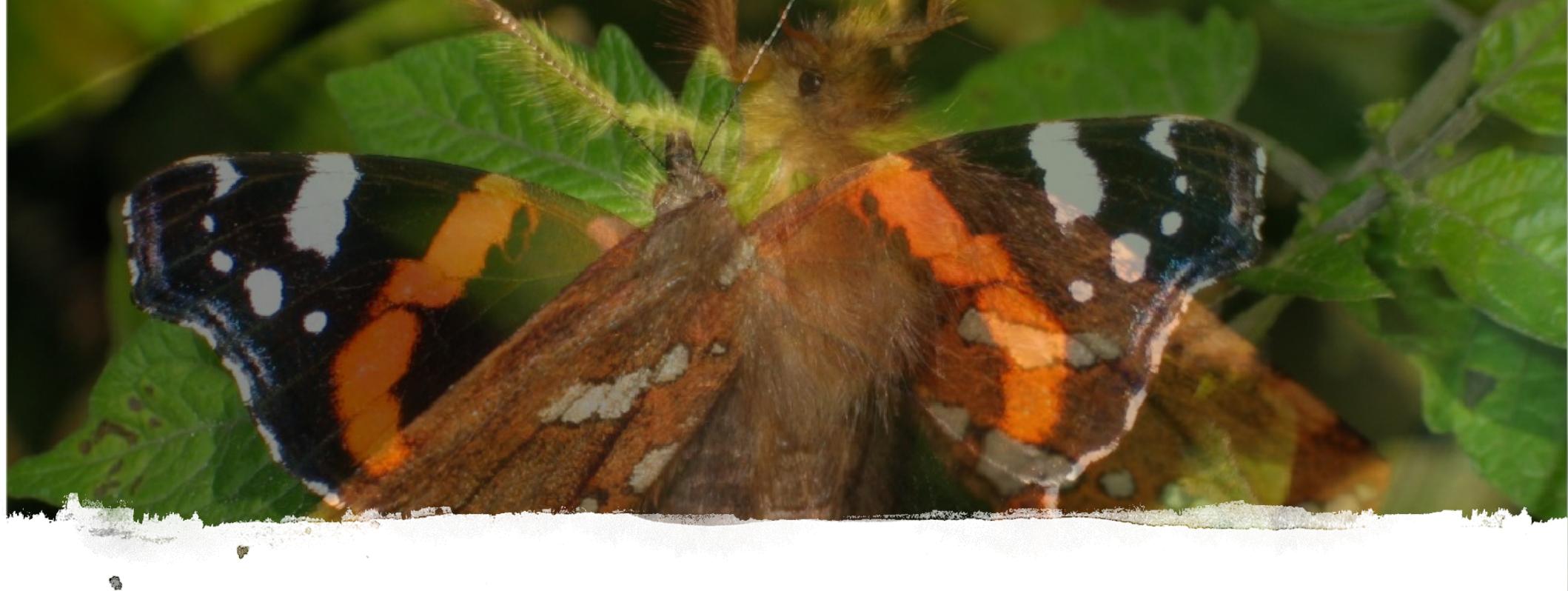


CreativeQiskit

- Do you not want to learn all of QC in a game jam?
- Do you not want to make a game in Python?
- CreativeQiskit is for you!

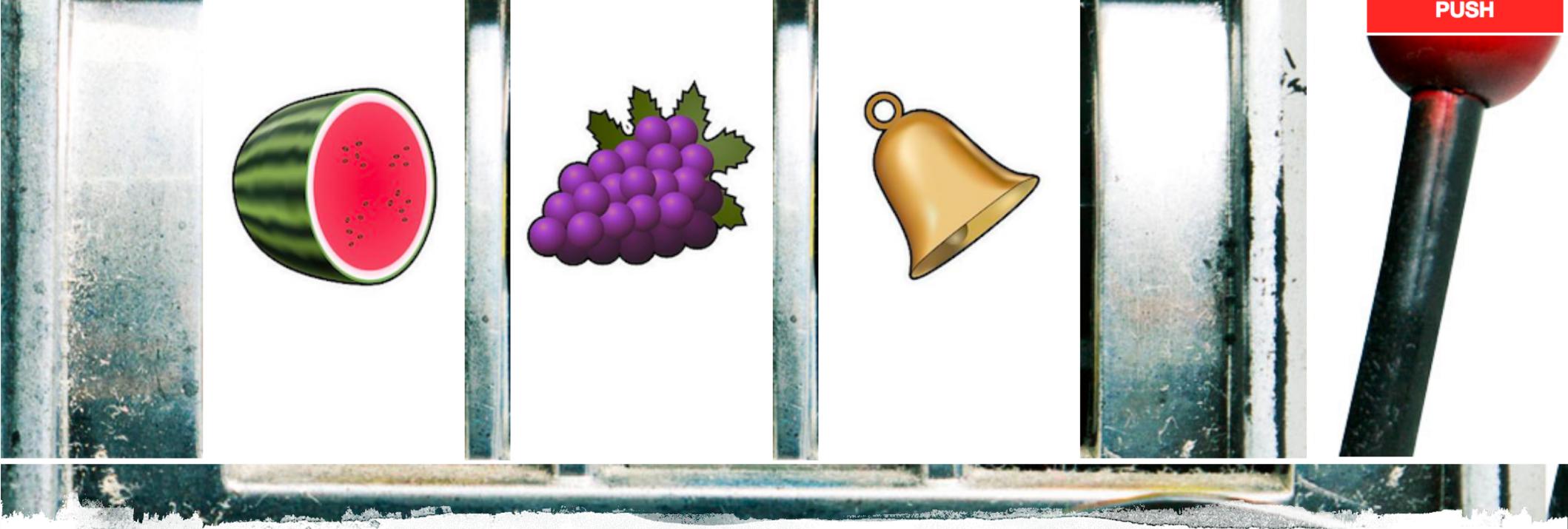
CreativeQiskit

- Quantum game mechanics
- Image and audio generation
- Visualize what's going on in a quantum computer
- Procedural generation
- QRNG



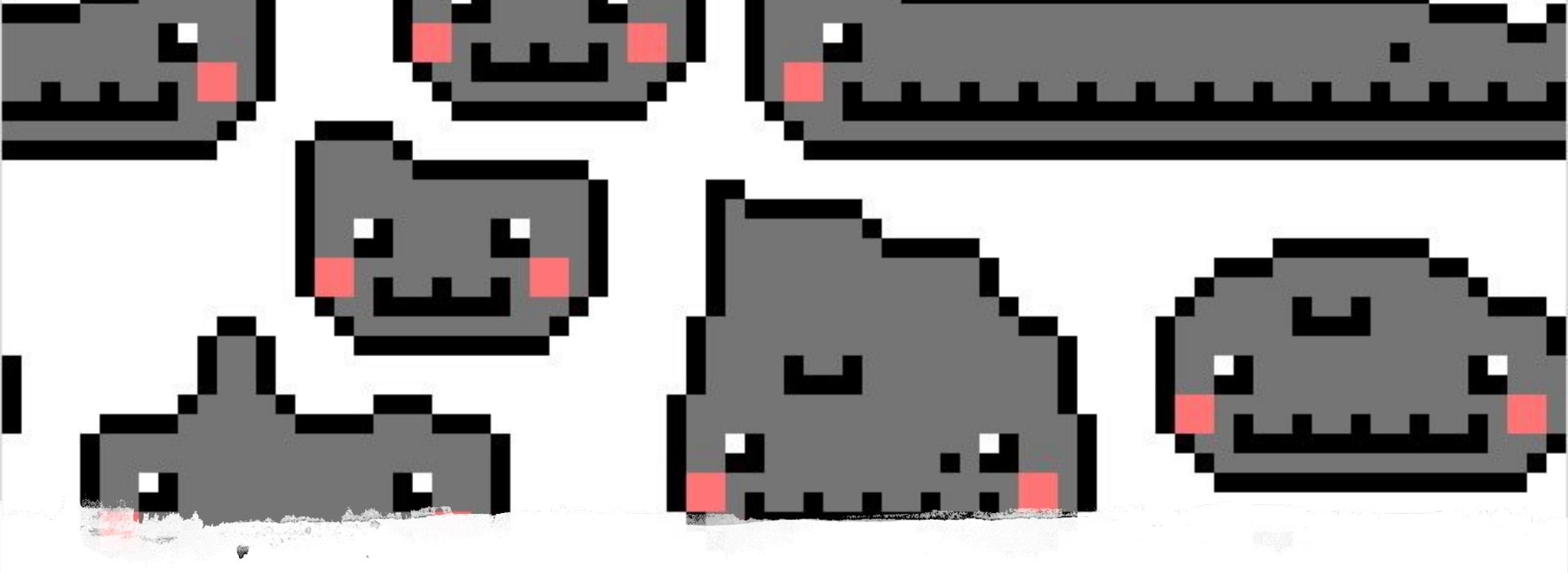
CreativeQiskit

- Use CreativeQiskit to make assets for your game
ibm.biz/get-creative-qiskit
- Download from
ibm.biz/run-creative-qiskit
- Run on the web at



How to Use

- Examples for all tools ibm.biz/get-creative-qiskit
- Also info on
 - Using the IBM Q Experience
 - Setting up QRNG without Python

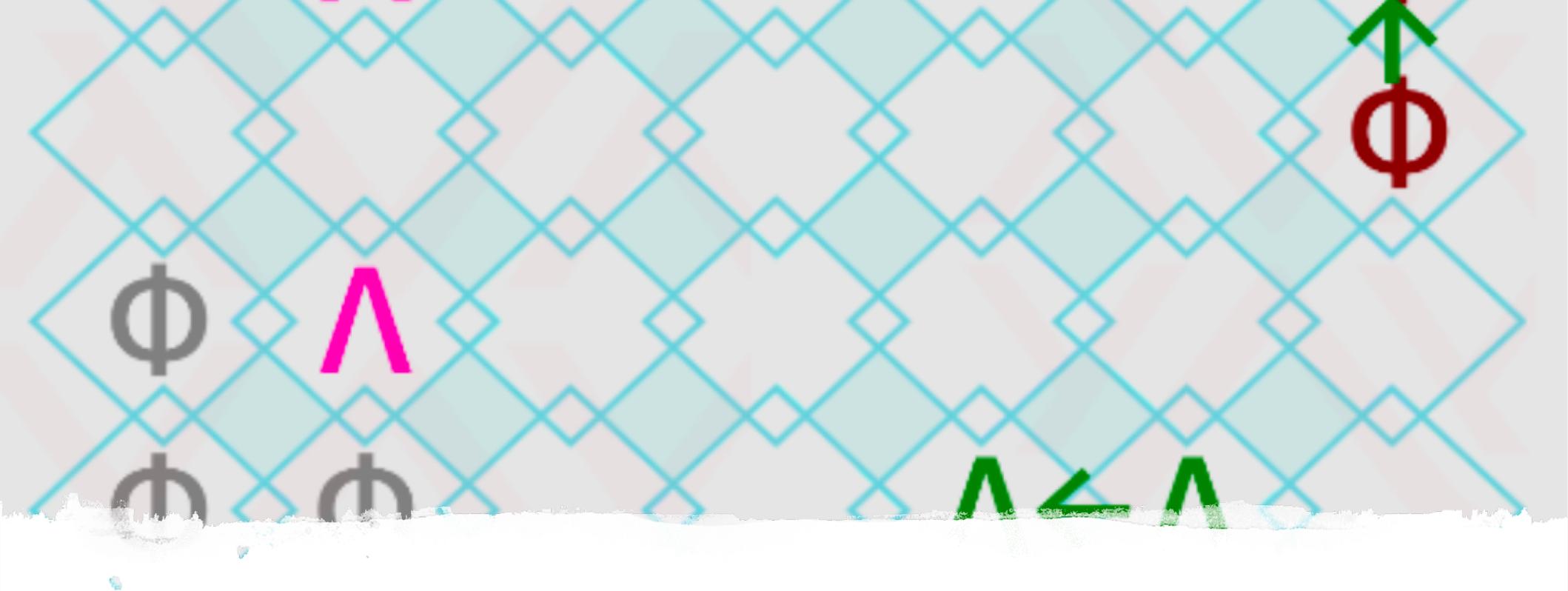


Other Tools

- . Quantum Piano: to jam with a quantum computer
ibm.biz/quantum-piano
- . Wavefunction collapse with real quantum
ibm.biz/wfcollapse

Noise

- . Current quantum devices are noisy
- . Strange things happen, even for the simplest programs
- . You'll see it on the real devices
- . You can simulate it within Creative Qiskit



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Noise

- We need to track noise noise
- We need to find out what it is doing
- We need to fight it!



Noise

- Cutting-edge science experiment
- Glimpse into the unknown
- Opportunity to explore!



Over to you!

ibm.biz/get-creative-qiskit