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Qiskit v2 Environment and QPU Instructions

Read First! Replace anything in <> with details specific to your machine. Windows machines might need to use "py" instead of "python" in the commands below until Step 5. MacOS and Linux users might need to use "python3" instead of "python" if "python" maps to a Python 2 version or is not present. Commands are *italicized*.

1. Open CMD, Terminal, or a Bash shell (in Administrator mode on Windows, if you have permission) and run the following commands one at a time.

2. If using macOS or Linux, skip to Step 3.
   Set-ExecutionPolicy -Scope CurrentUser RemoteSigned

3. Windows:
   python -m venv "C:\Users\<Username>\venvs\qiskit2_py<Version #>"
   e.g., "C:\Users\Gage\venvs\qiskit2_py31210" for Python 3.12.10.
   macOS/Linux:
   python -m venv $HOME/venvs/qiskit2_py<Version #>

4. Windows:
   C:\Users\<Username>\venvs\qiskit2_py<Version #>\Scripts\Activate.ps1
   macOS/Linux:
   source $HOME/venvs/qiskit2_py<Version #>/bin/activate
   (Some other Linux shells will use *activate.csh* or *activate.fish*).

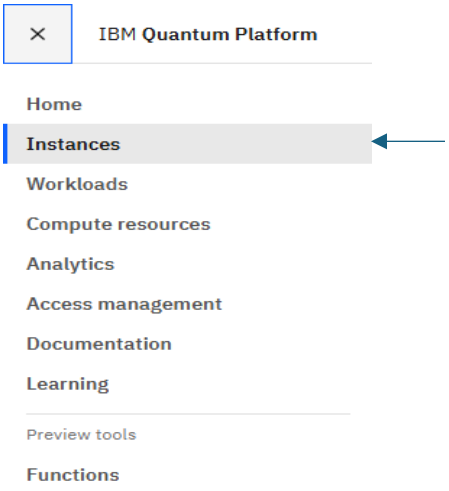
5. You should now be inside the new environment in the terminal/shell.
   python -m pip install --upgrade pip

6. *python -m pip install --upgrade "qiskit==2.*" "qiskit-aer>=0.17" "qiskit-ibm-runtime>=0.41" "qiskit-algorithms>=0.4.0" "qiskit-optimization>=0.7.0" "ipykernel"*

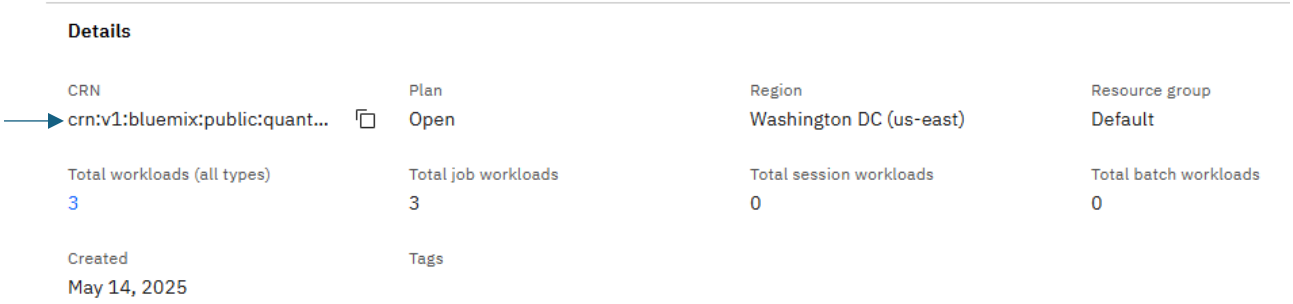
7. *python -m ipykernel install --user --name qiskit2_py<Version #> --display-name "Python (qiskit2_py<Version #>)"*

8. Create (or log in to) your IBM Quantum account here:
   https://quantum.cloud.ibm.com/.

9. Create an instance using the link in the upper-left menu (click “Create instance +” on this page and follow the instructions):

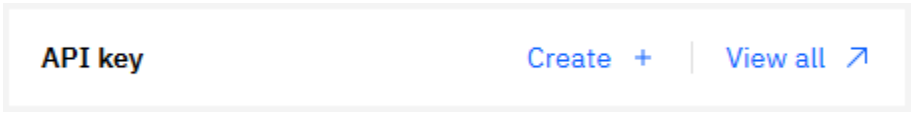


10. Click on the new instance in the list and copy the CRN on the screen that pops up:

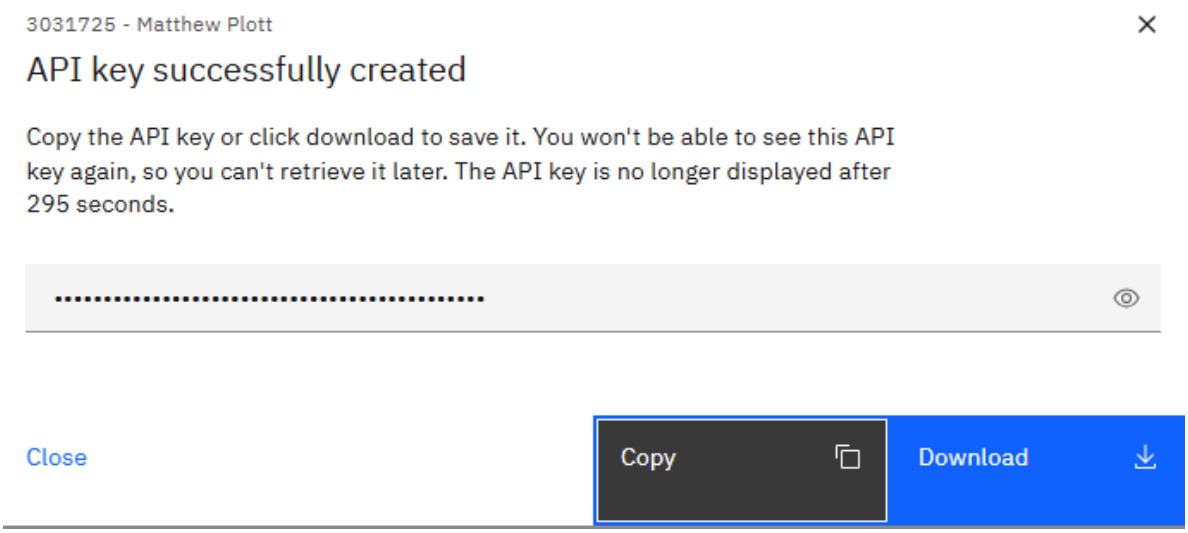


11. Enter the CRN in the appropriate place in your Qiskit code.

12. Create an API key by clicking “Create +” on the IBM Quantum Platform Home screen.



13. Once it is successfully created, click “Copy” on this screen and paste it into the appropriate spot in your Qiskit code.



14. Run “Qiskitv2_QPU_Min_Example.ipynb” and pass the checks. Ensure you are using the kernel created in this guide when running any Qiskit code and that your code conforms to Qiskit v2 standards and practices.

15. Refer to official documentation here for further information: https://quantum.cloud.ibm.com/docs/en.