

.NET Interactive for Demos & Teaching

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Hello



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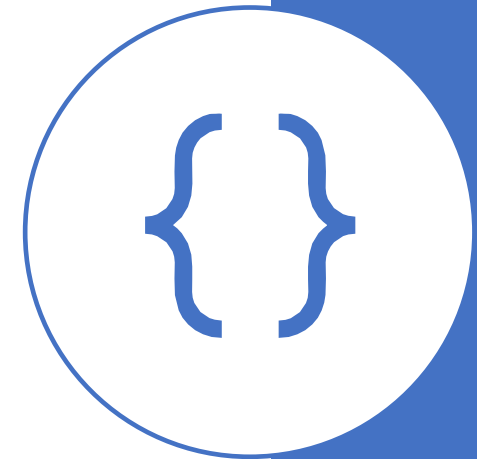
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Code & Slides

<http://bit.ly/netconfarmenia2021>



Agenda



Development Experience



Development
Environments

REPL
Code Projects



Jupyter

Notebooks
Ecosystem



.NET Interactive

Local
Hosted

What Do You Want Out of Your Development Experience?



Interactive



Reproducible



Documented



Collaborative



Extensible

Read- Evaluate- Print-Loop (REPL)



Interactive



Reproducible?



Documented?



Collaborative?



Extensible?

Demo Code Projects

Code Projects



Interactive?



Reproducible



Documented



Collaborative?



Extensible

Jupyter



Open Source
Interactive
Computing
Environment



Over 40
languages



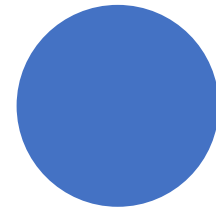
Notebooks



Hub

- Anaconda
 - Data Science Platform
 - Package Management
 - Tooling
 - IDE

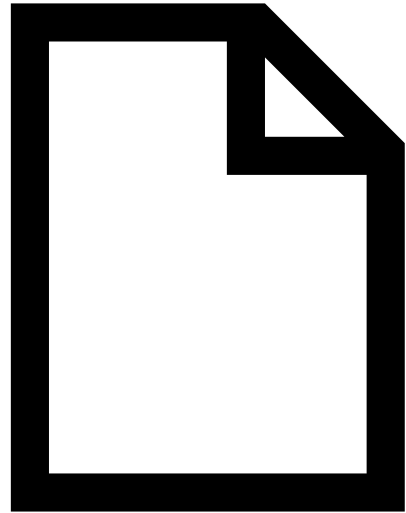
Getting Started Jupyter Notebooks



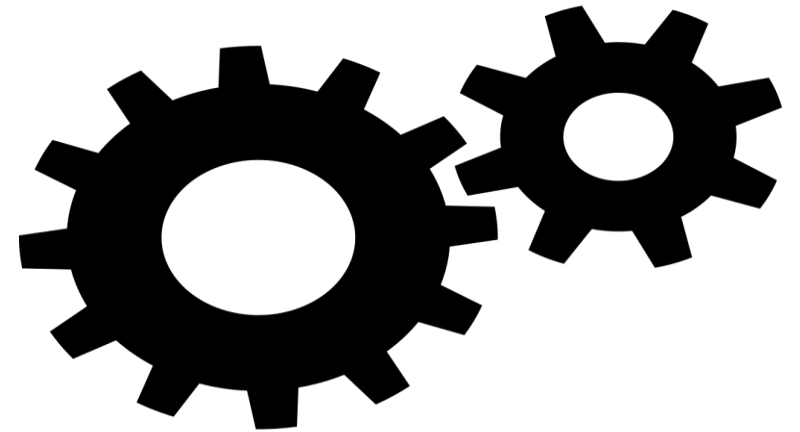
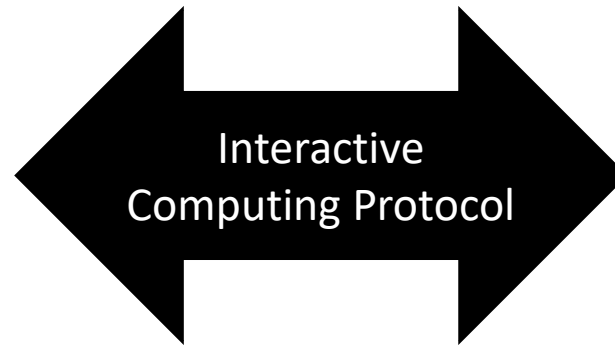


Demo Jupyter Notebooks

Jupyter Notebooks Internals



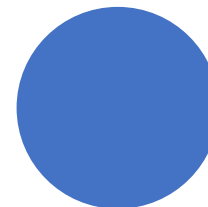
Notebook
Document
Format



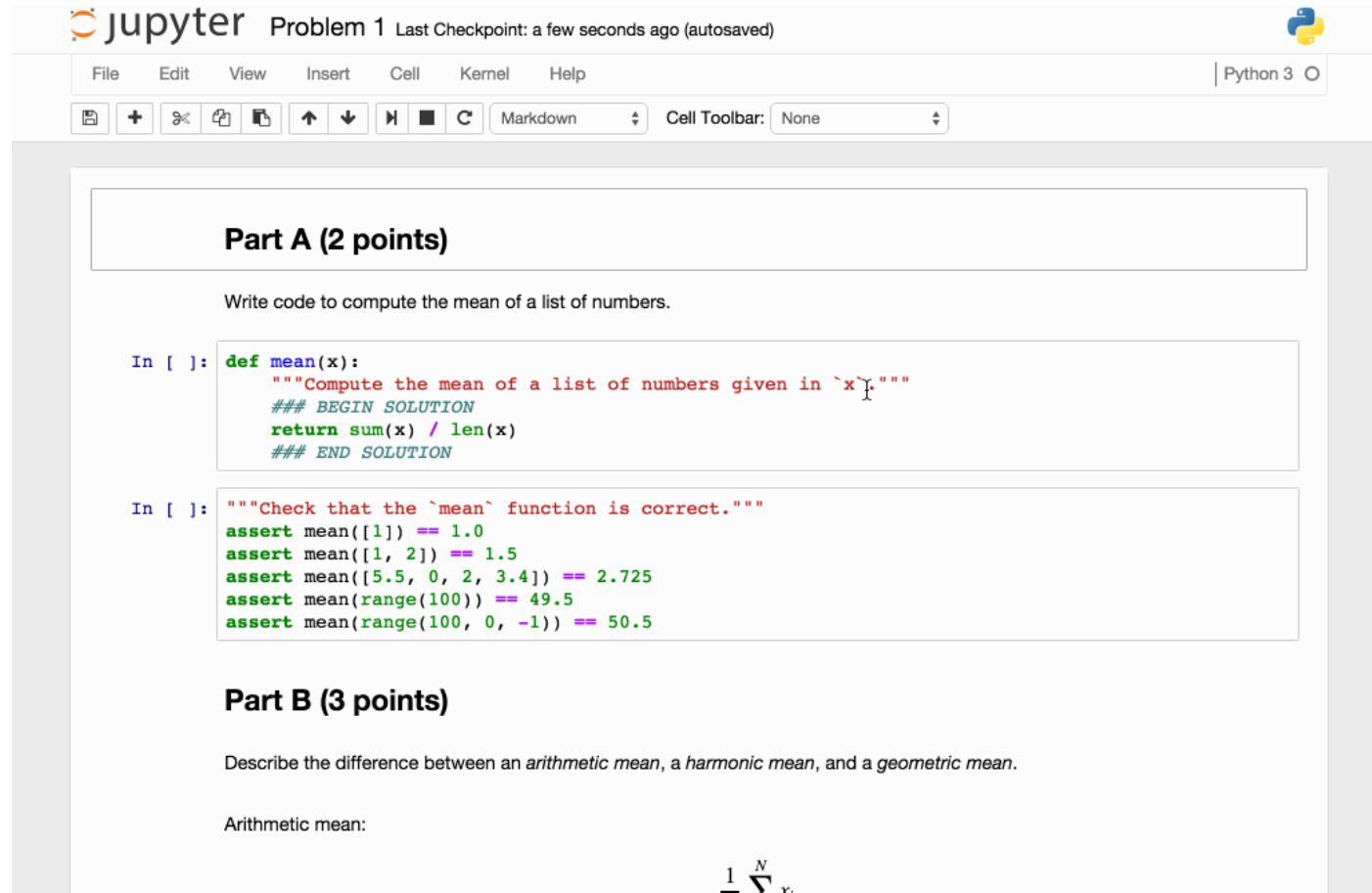
Kernel

- Extensions
 - NBGrader
 - Nteract
 - Many more...

Jupyter Ecosystem



NBGrader



jupyter Problem 1 Last Checkpoint: a few seconds ago (autosaved)

File Edit View Insert Cell Kernel Help Python 3

Part A (2 points)

Write code to compute the mean of a list of numbers.

```
In [ ]: def mean(x):  
        """Compute the mean of a list of numbers given in `x`"""  
        ### BEGIN SOLUTION  
        return sum(x) / len(x)  
        ### END SOLUTION
```

```
In [ ]: """Check that the `mean` function is correct."""  
assert mean([1]) == 1.0  
assert mean([1, 2]) == 1.5  
assert mean([5.5, 0, 2, 3.4]) == 2.725  
assert mean(range(100)) == 49.5  
assert mean(range(100, 0, -1)) == 50.5
```

Part B (3 points)

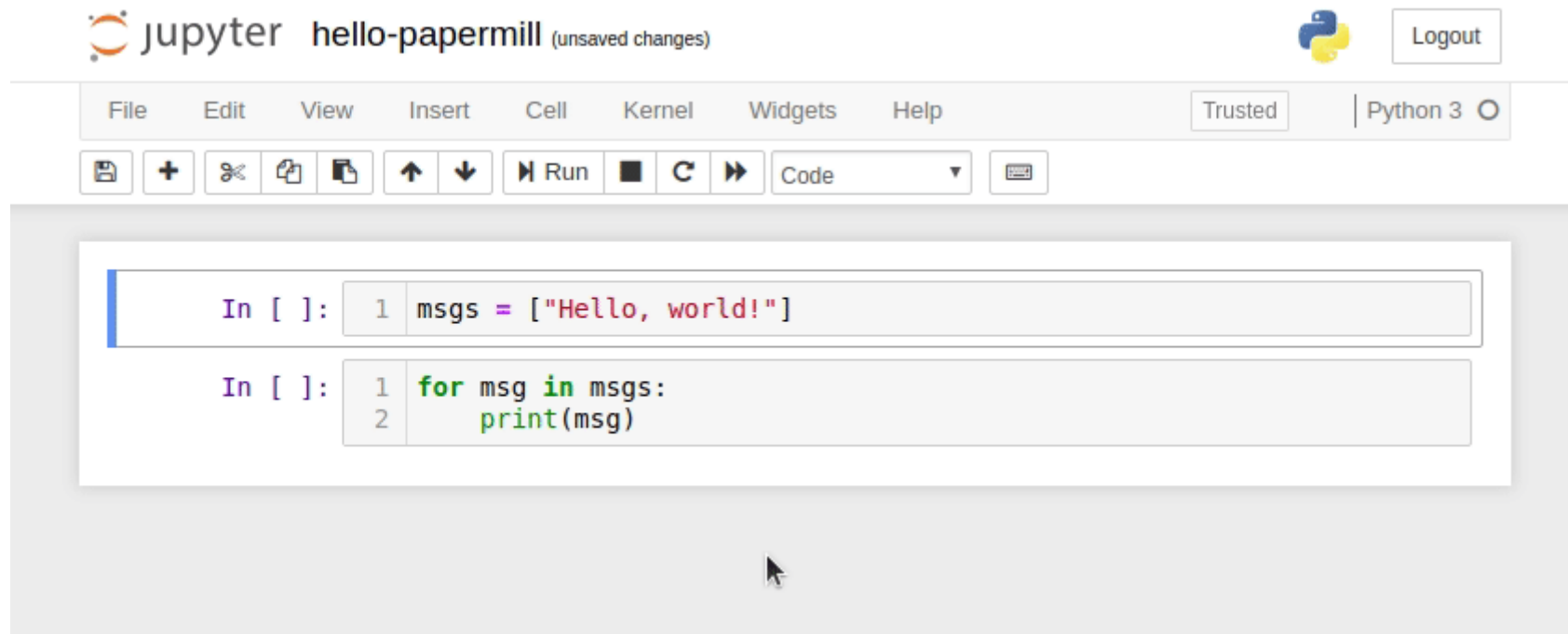
Describe the difference between an *arithmetic mean*, a *harmonic mean*, and a *geometric mean*.

Arithmetic mean:

$$\frac{1}{N} \sum x_i$$

Source: <https://github.com/jupyter/nbgrader>

Papermill



```
$ papermill local/input.ipynb s3://bkt/output.ipynb -p alpha 0.6 -p ll_ratio 0.1
```

Source: <https://github.com/nteract/papermill>

Jupyter



Interactive



Reproducible



Documented



Collaborative



Extensible

.NET Interactive



.NET 5.0



Jupyter



Cross-Platform



Local – .NET Interactive



Hosted



Demo .NET Interactive

Takeaways



Interactive environments enable rapid development



Jupyter Notebooks make prototyping, documentation and learning easy



Jupyter Notebooks open standards make it easy to extend the tool



.NET Interactive makes it easy to use Jupyter Notebooks with .NET



Questions



Resources

- <https://jupyter.org/>
- <https://github.com/dotnet/interactive>