The Alan Turing Institute

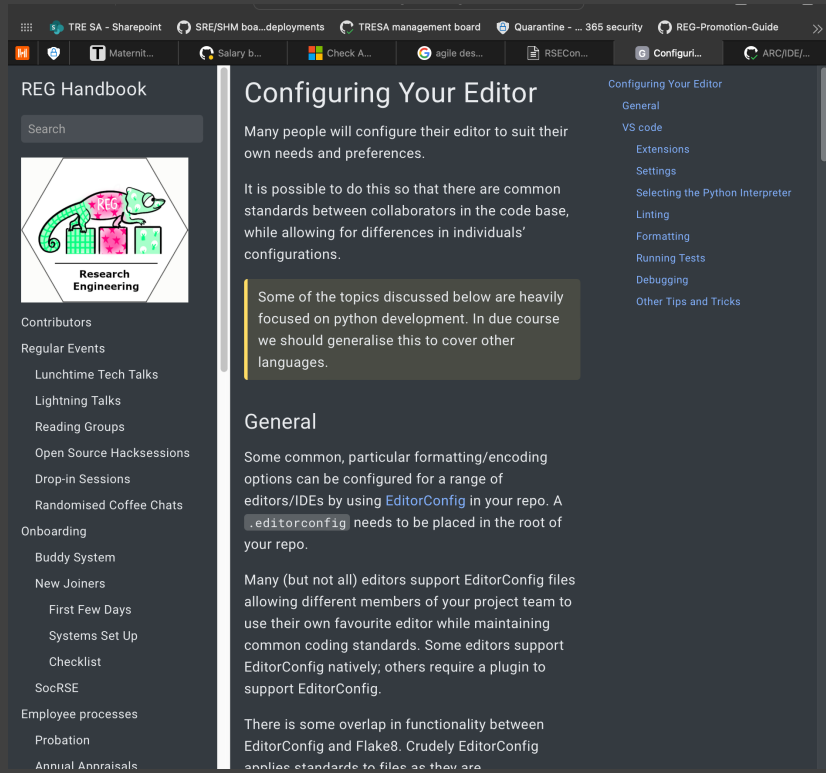
Visual Studio Code for Python Development

Carlos Gavidia-Calderon

Image: https://commons.wikimedia.org/wiki/File:The_Young_Snake_Charmer.jpg

Python IDEs at REG

There’s no mandatory IDE at REG, but it seems there’s a preferences towards VS Code. With PyCharm as a runner-up.



Bibliography

From the official Visual Studio Code website:

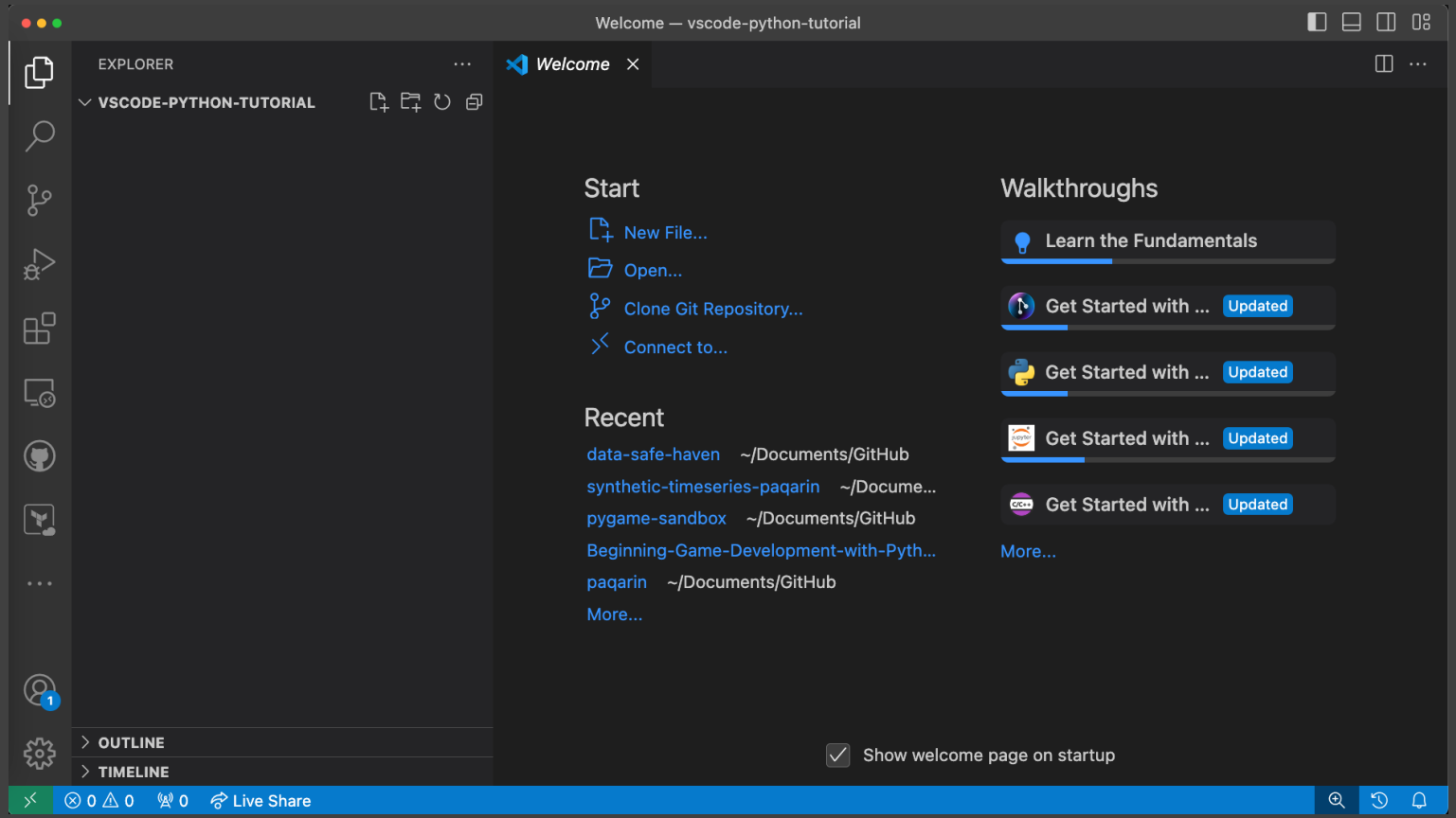
– Getting Started with Python in VS Code.
– Using Git source control in VS Code.
– Code Navigation.
– Data Science in VS Code tutorial.

Software Requirements

1. Install a Python interpreter, like Miniconda.
2. Install Git.
3. Create a GitHub Account.
4. Install Visual Studio Code.
5. Install the Python extension.
6. Download the Titanic data file.

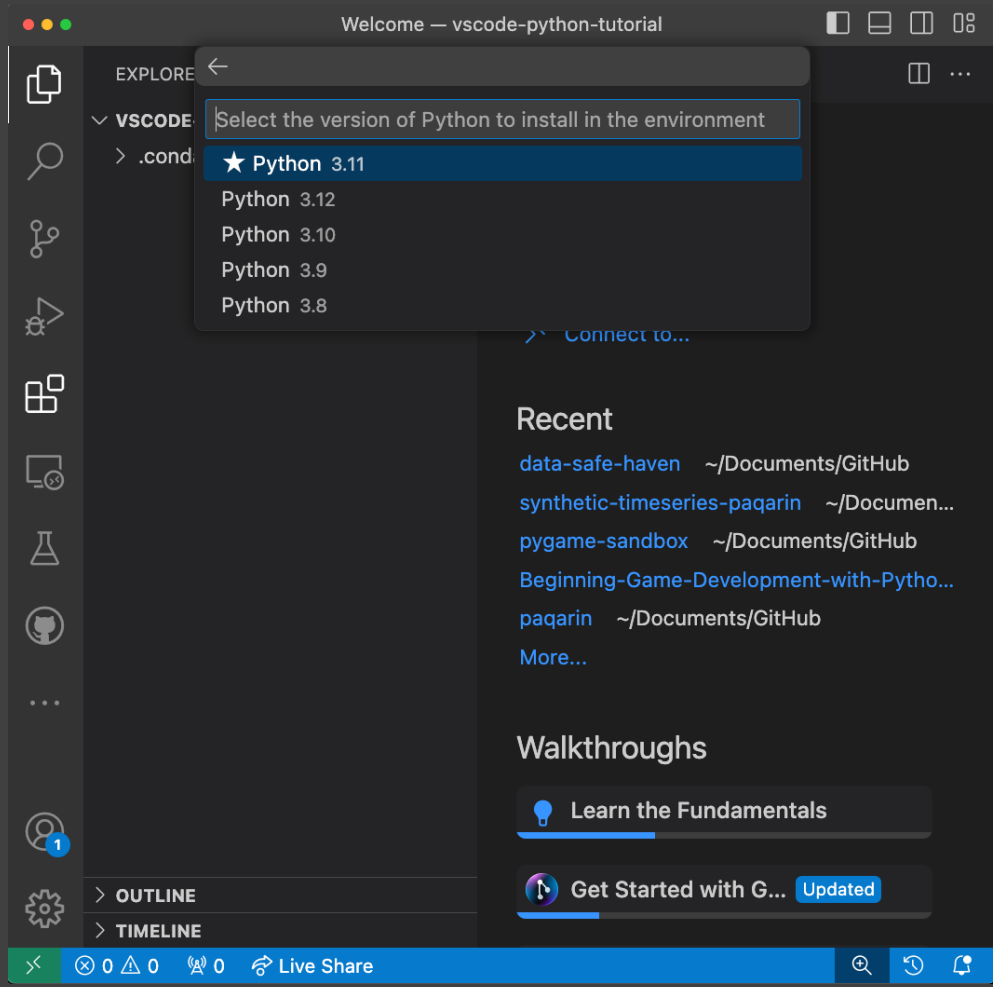
Getting Started with Python

File > Open Folder > Workspace Folder

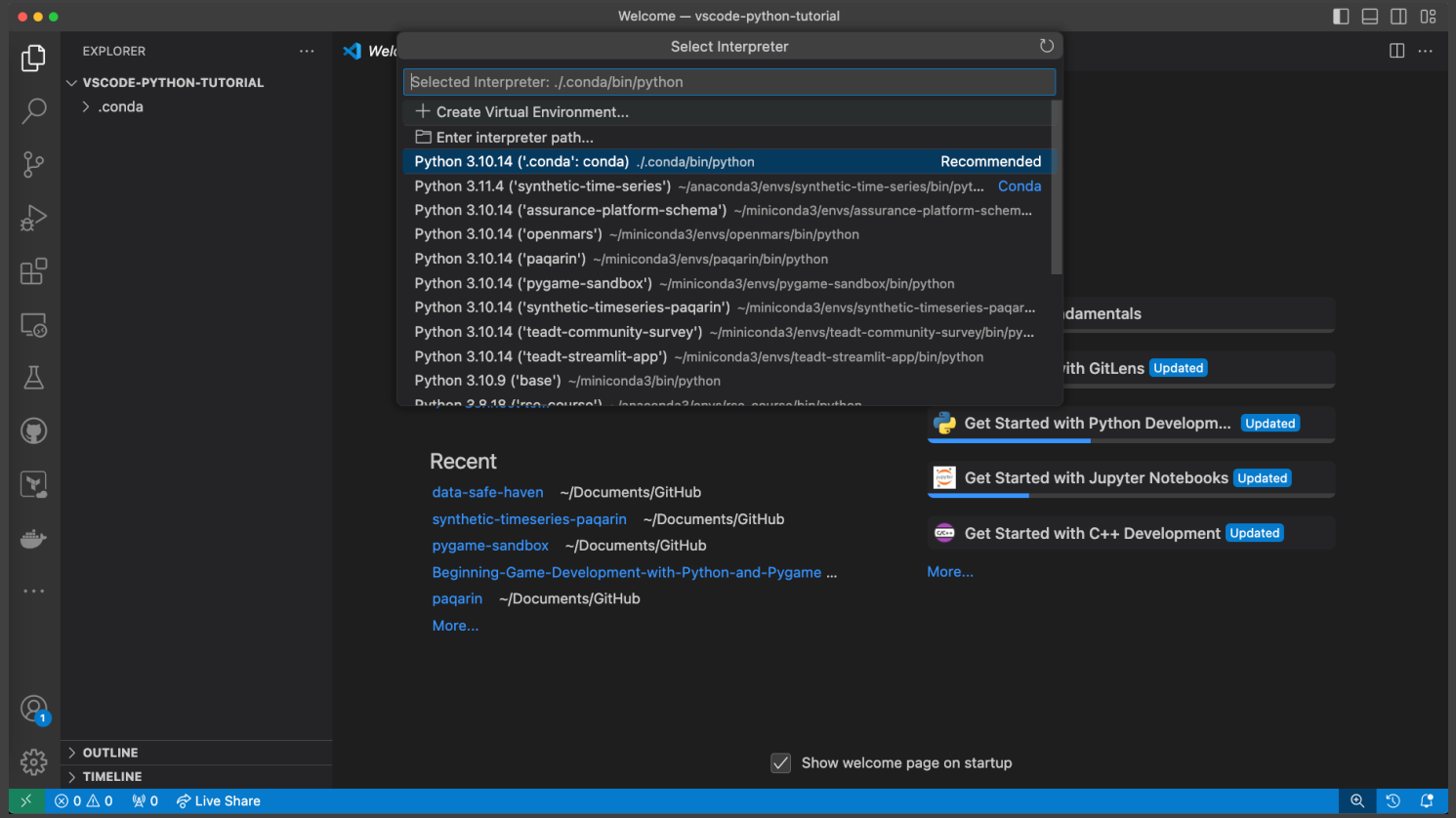


Python: Create Environment

1. Create a Conda Environment.
2. Install Python 3.10 in the environment.



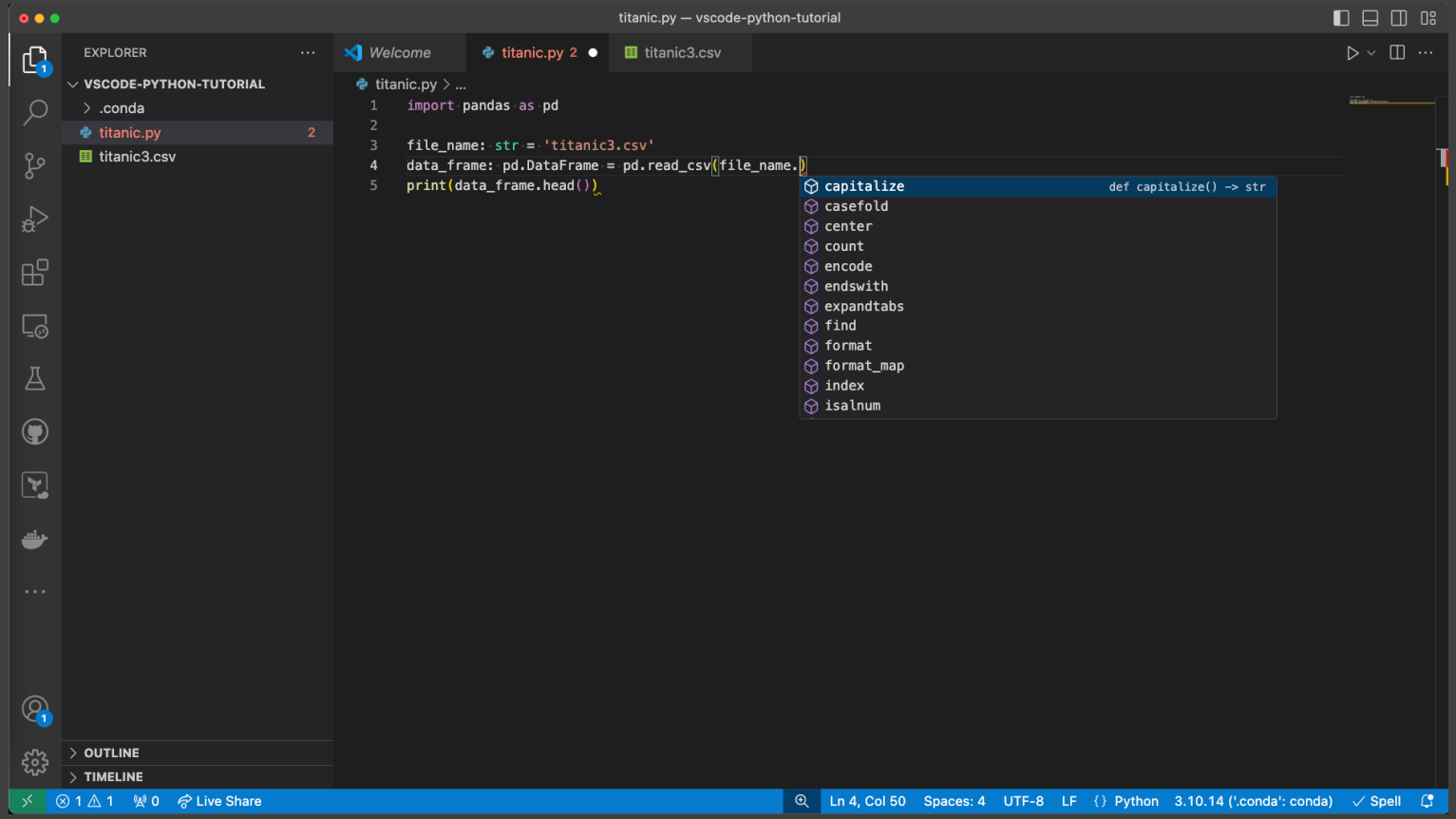
Command> Python: Select Interpreter



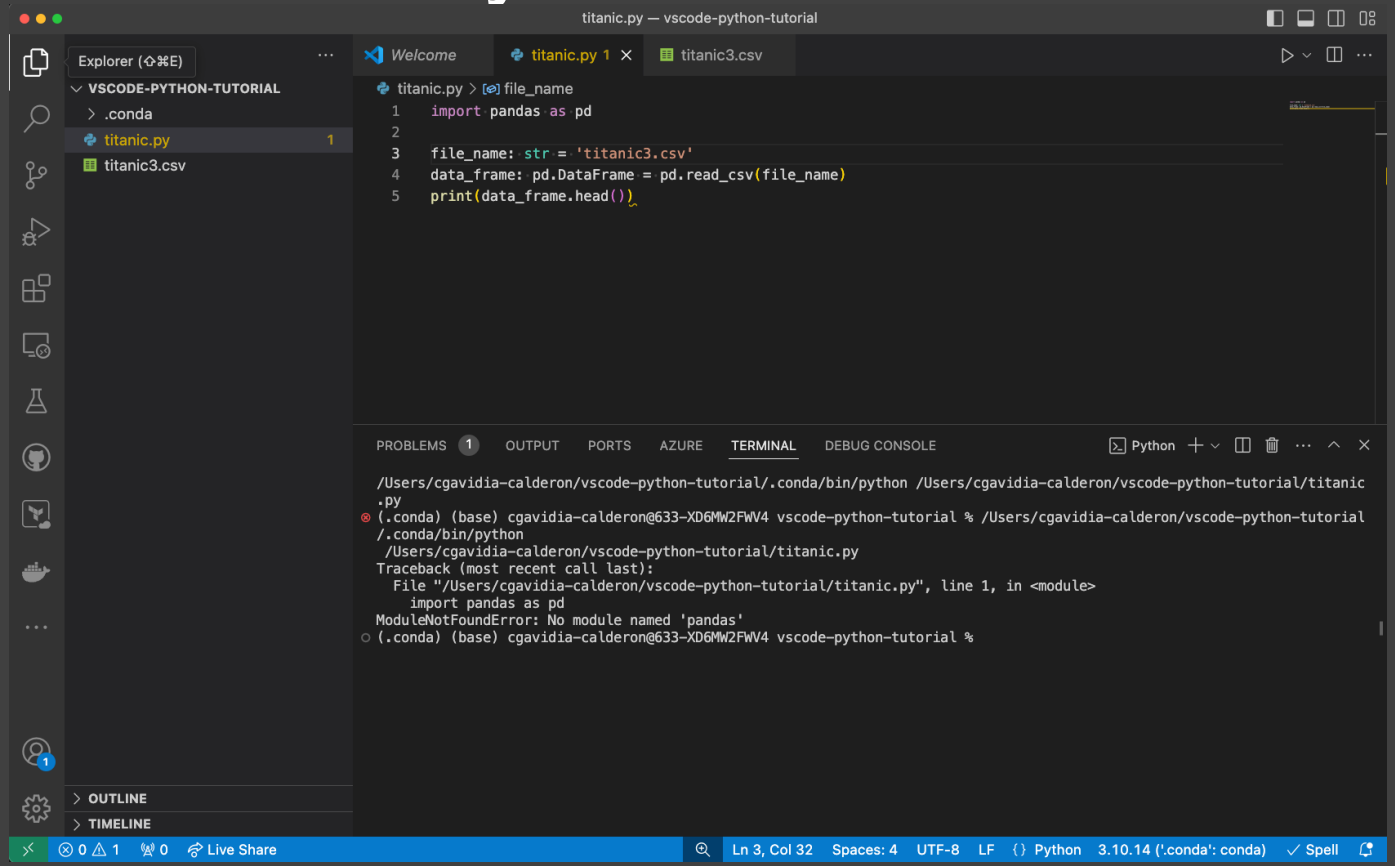
Python: Reading a CSV file

```
import pandas as pd

file_name: str = "~/data/titanic3.csv"
data_frame: pd.DataFrame = pd.read_csv(file_name)

print(data_frame.head())
```

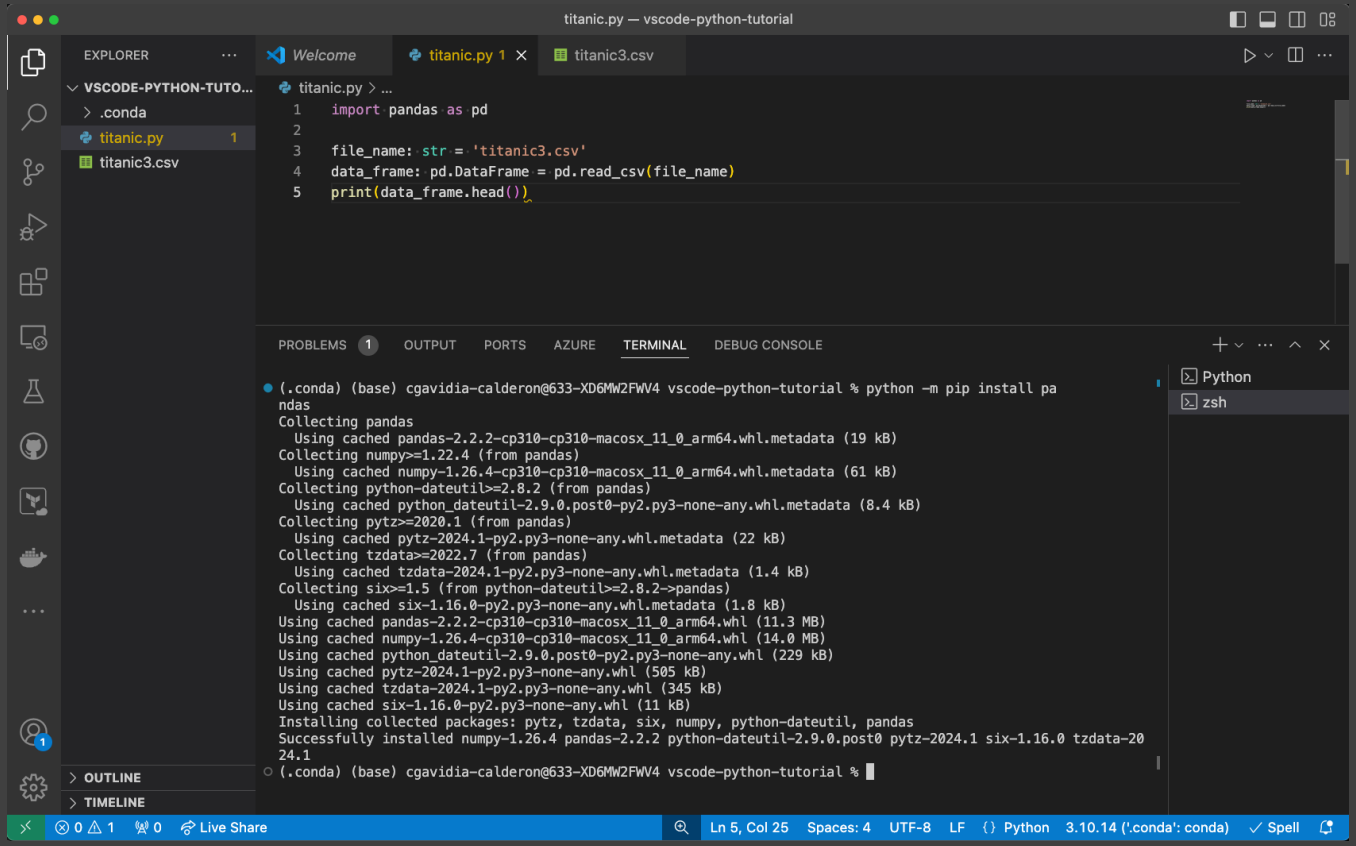
File > New File



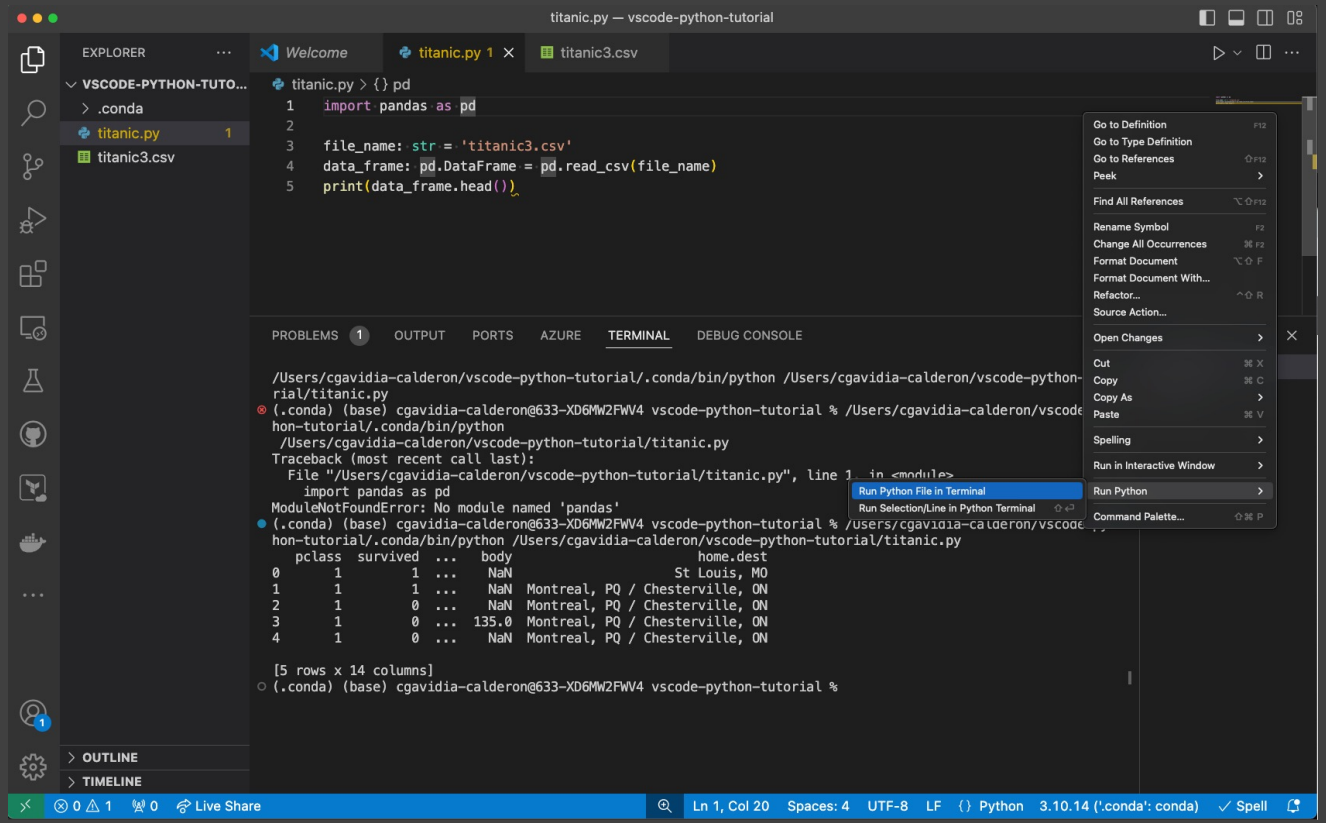
Click the ”Run Python File” button



Command> Terminal: Create New Terminal



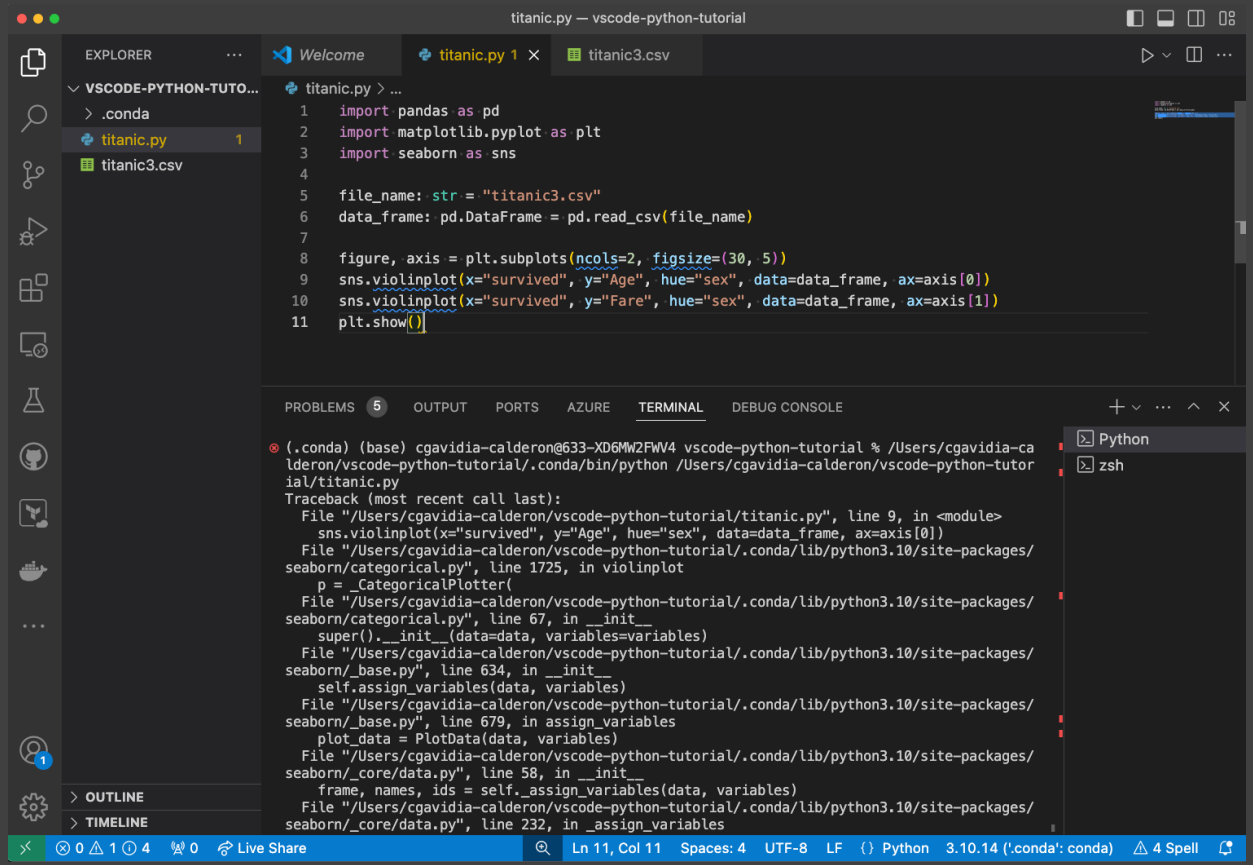
Right Click > Run Python



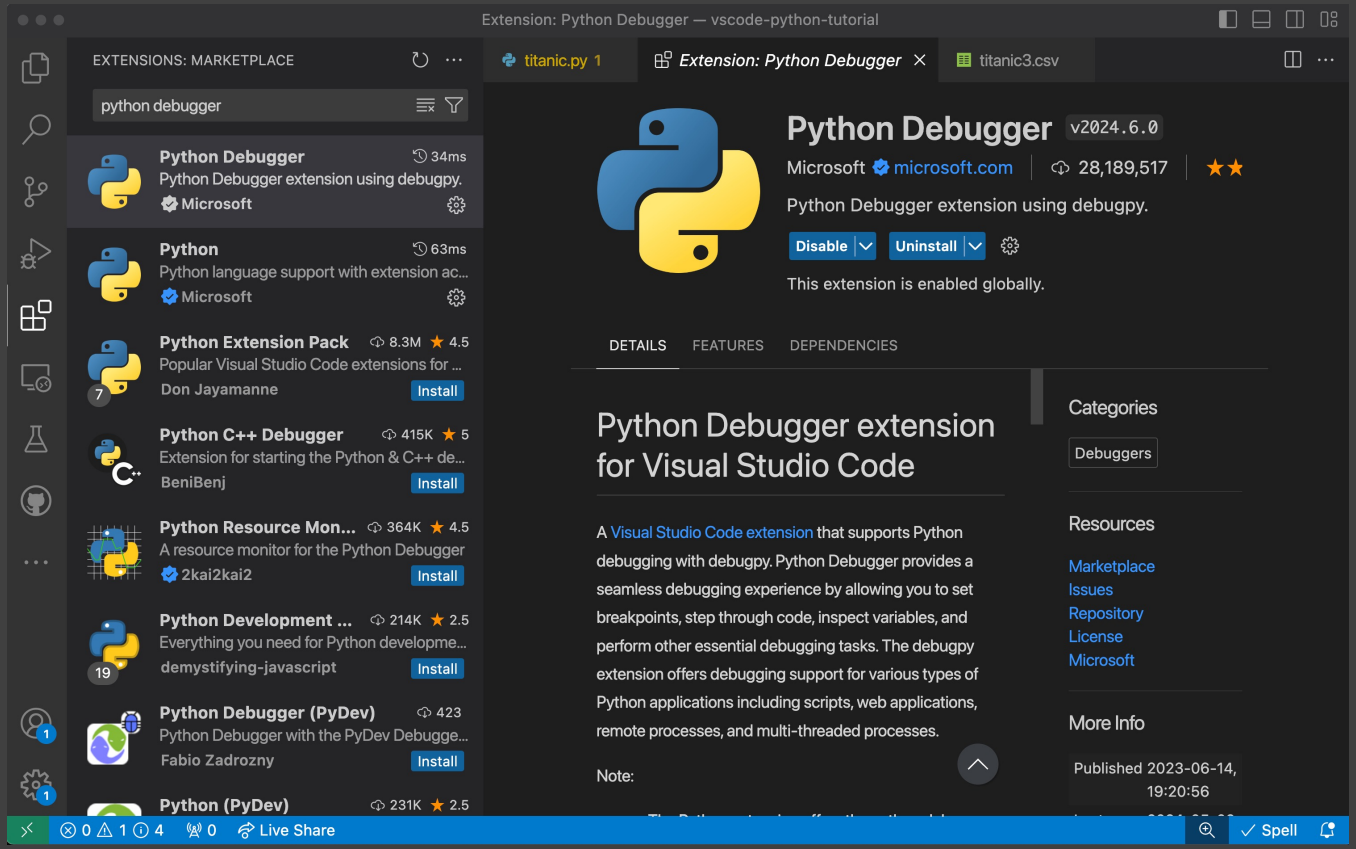
Python: Plotting Survivors by Age and Fare

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

file_name: str = "~/data/titanic3.csv"
data_frame: pd.DataFrame = pd.read_csv(file_name)

figure, axis = plt.subplots(ncols=2, figure=(30, 5))
sns.violinplot(x="survived", y=”Age", hue="sex", data=data_frame,
ax=axis[0])
sns.violinplot(x="survived", y=”Fare", hue="sex", data=data_frame,
ax=axis[1])

plt.show()
```

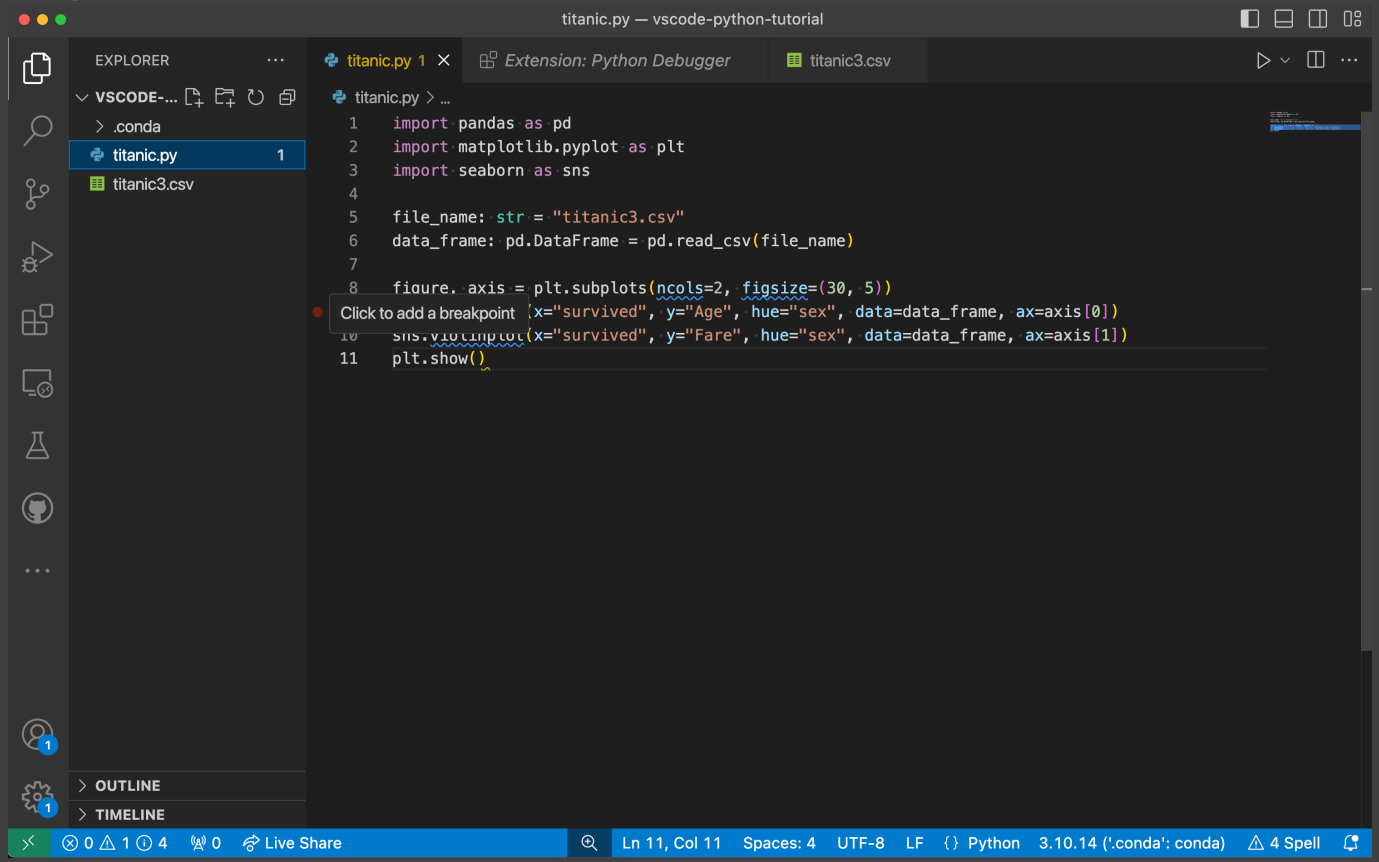
A Buggy Python Script



The Python Debugger Extension

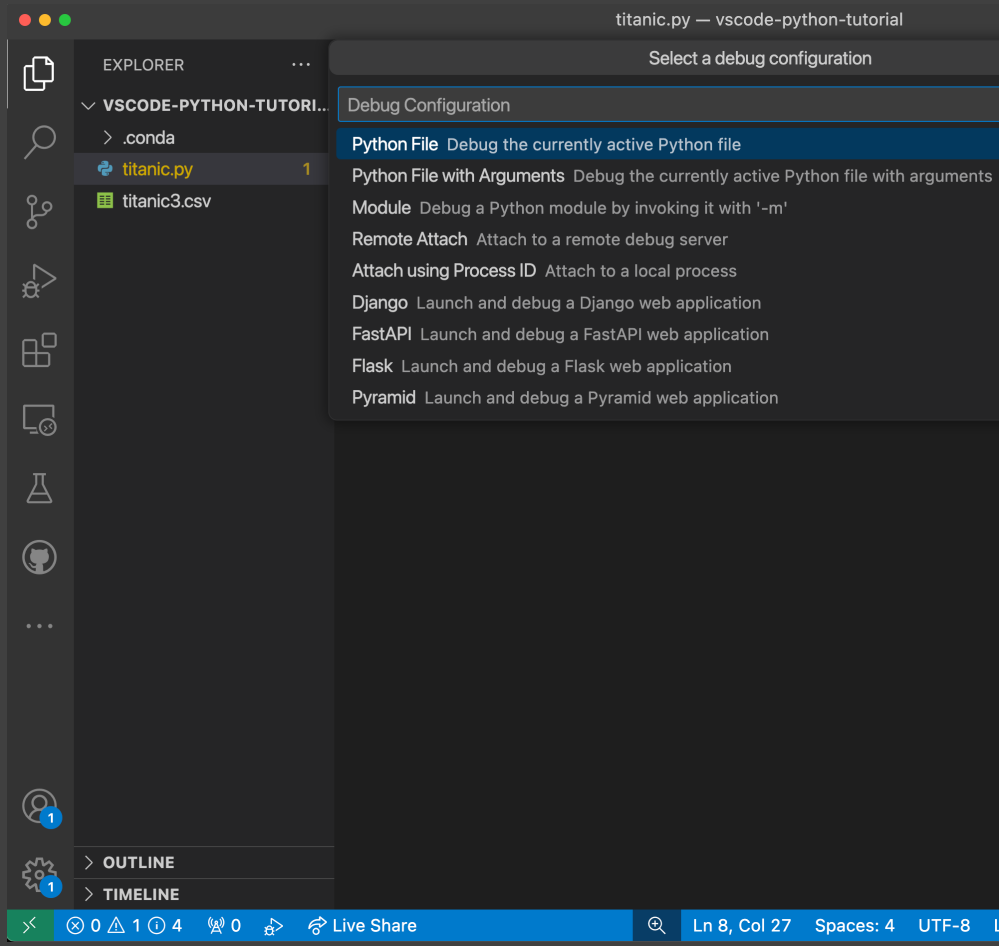


Adding a Breakpoint

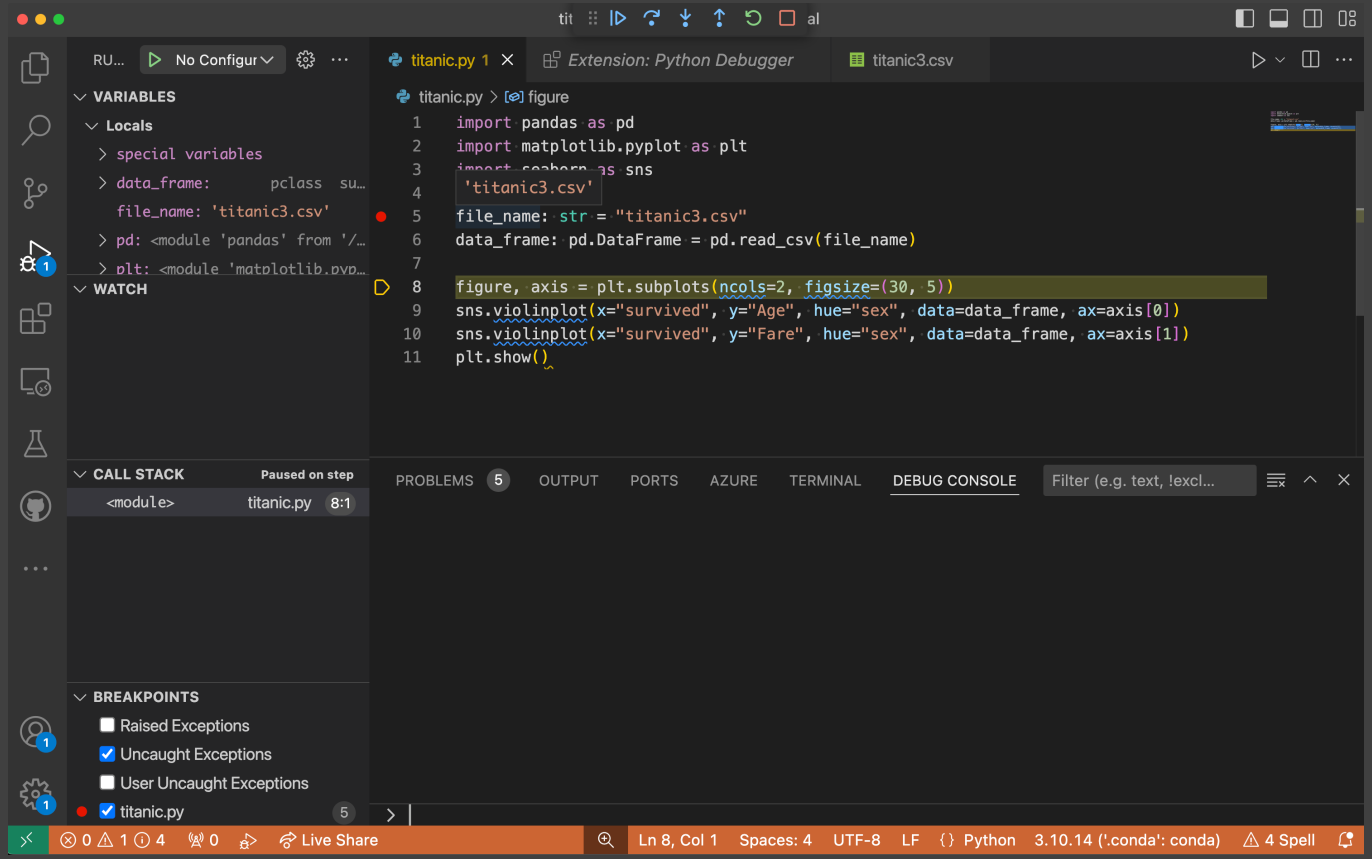


Initialize the Debugger

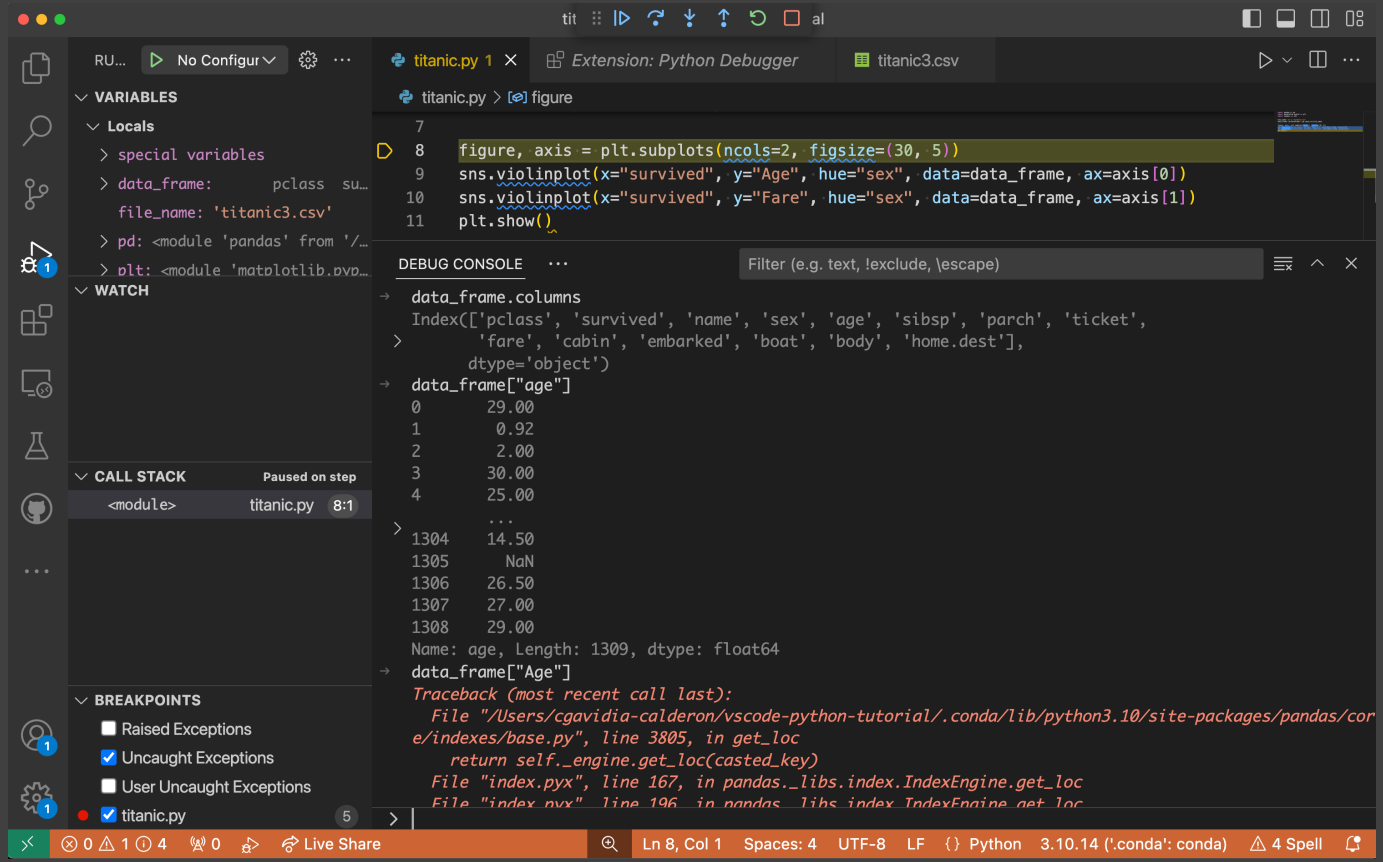
1. Press F5.
2. Select “Python Debugger”.
3. Select “Python File”.



Using the Debugger



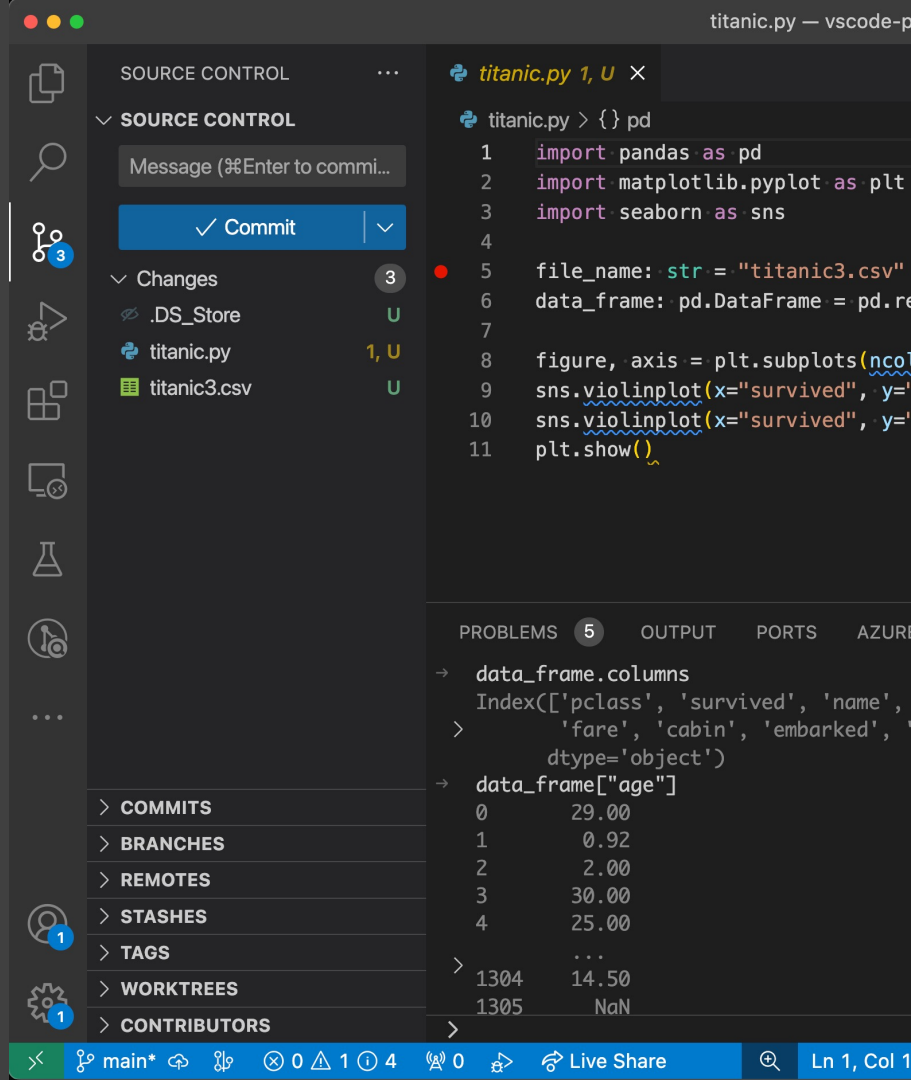
The Debug Console



Using Git

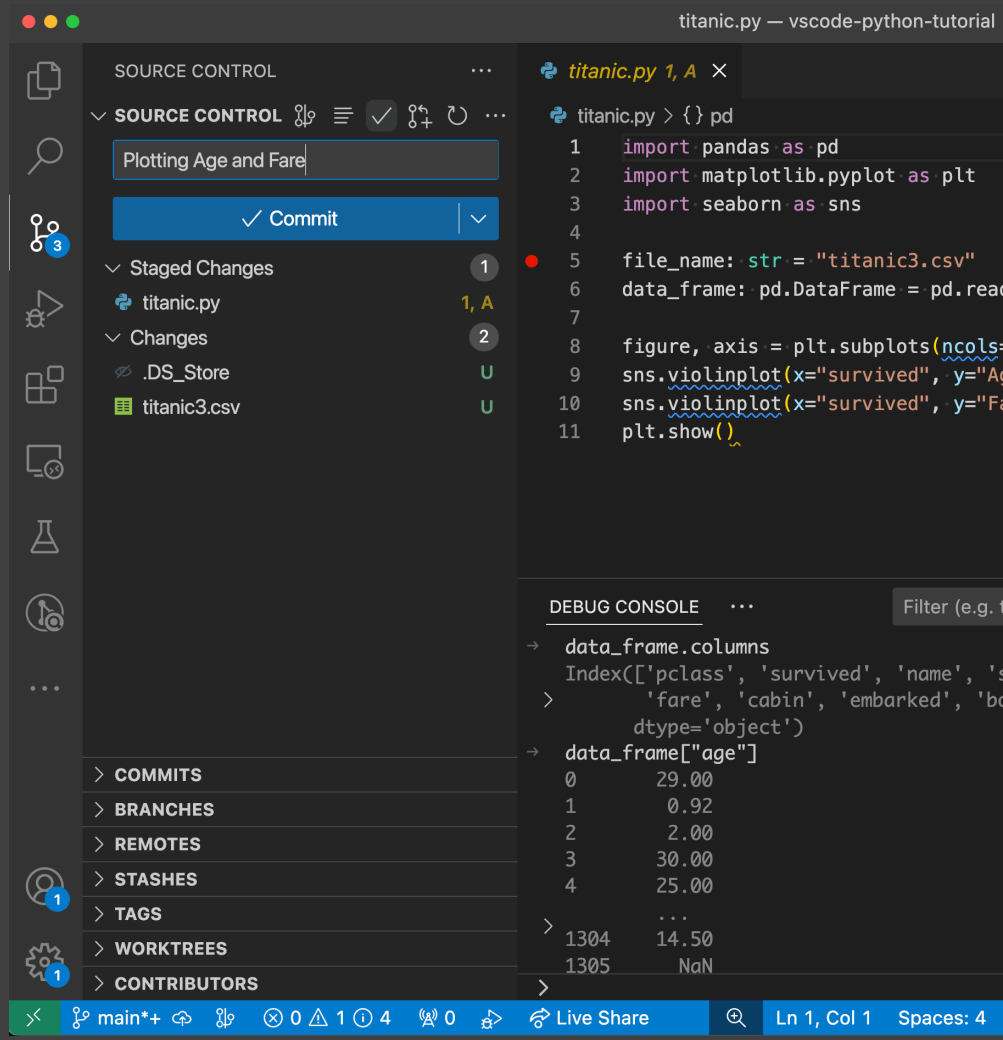
Initialize Repository

1. Click on ”Source Control”.
2. Click on ”Initialize Repository”



Committing Files

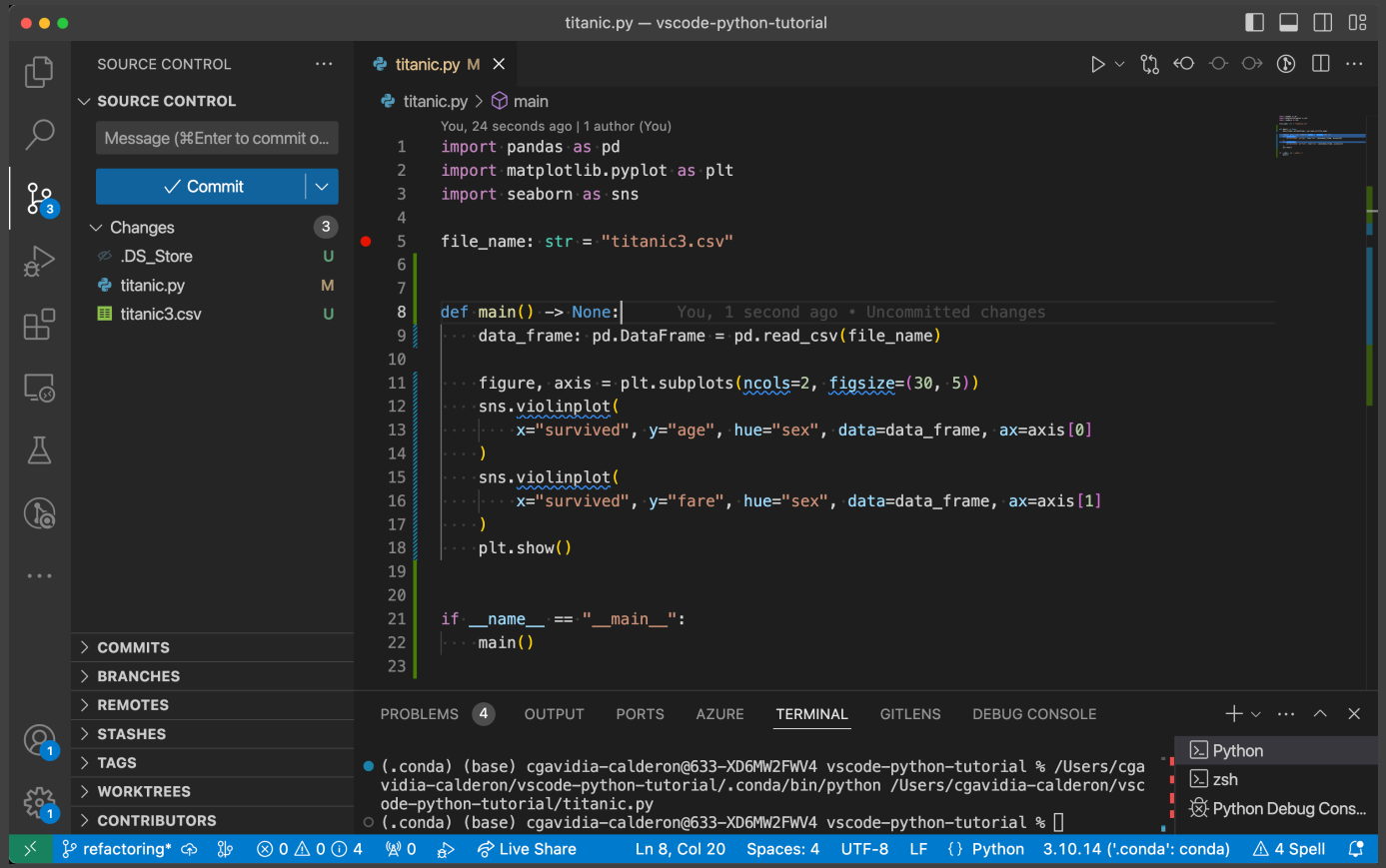
1. Stage the files you want to commit.
2. Add a commit message.
3. Click the “Commit” button.



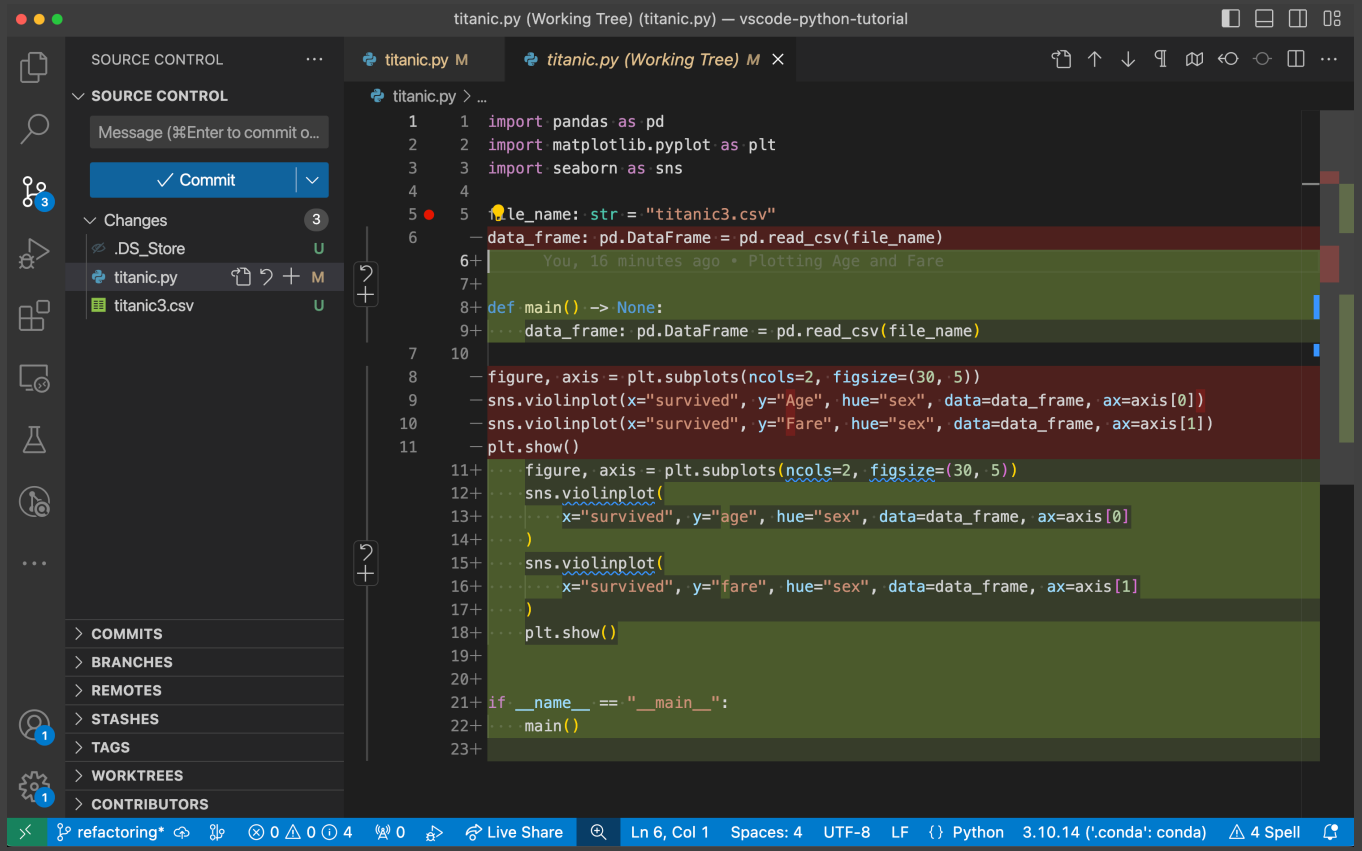
Python: Refactoring Plotting Logic

```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns


def main() -> None:
    file_name: str = "~/data/titanic3.csv"
    data_frame: pd.DataFrame = pd.read_csv(file_name)

    figure, axis = plt.subplots(ncols=2, figure=(30, 5))
    sns.violinplot(
    x="survived", y="age", hue="sex", data=data_frame, ax=axis[0]
    )
    sns.violinplot(
    x="survived", y="fare", hue="sex", data=data_frame, ax=axis[1]
    )

    plt.show()


if __name__ == "__main__":
    main()
```

Command: Git: Create Branch

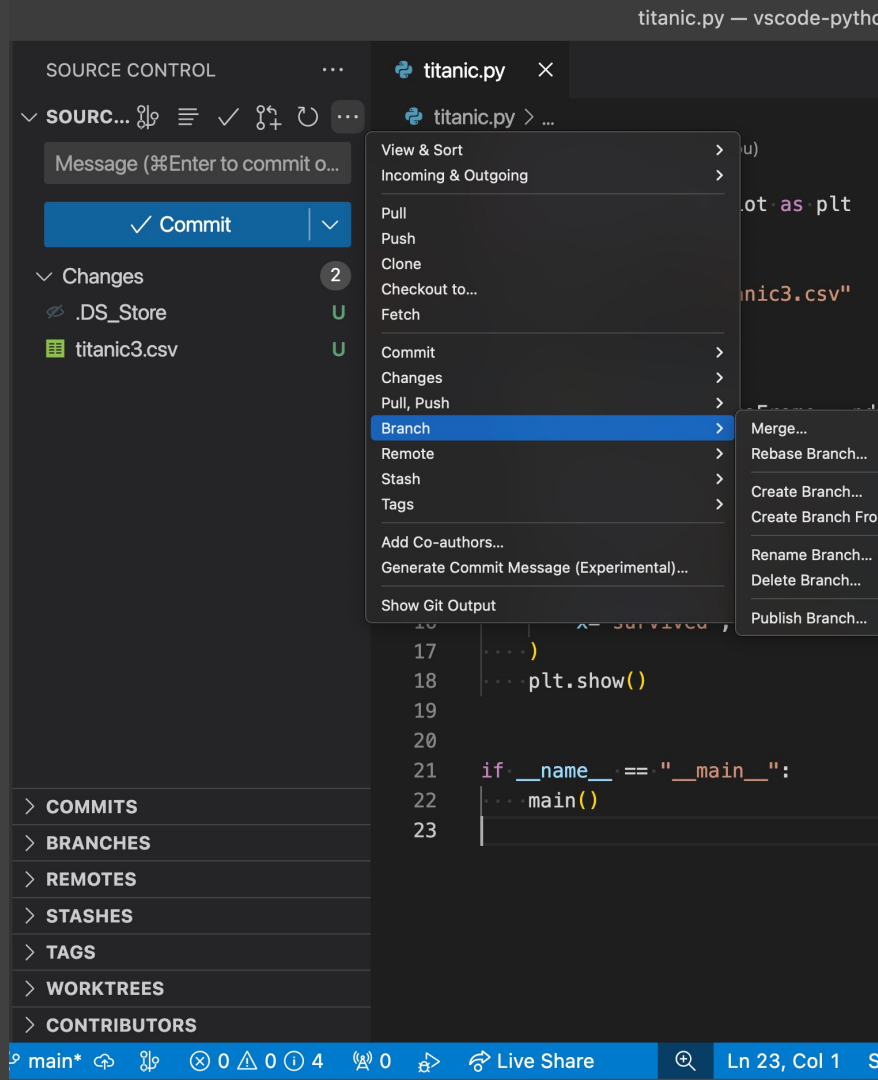


Comparing Files



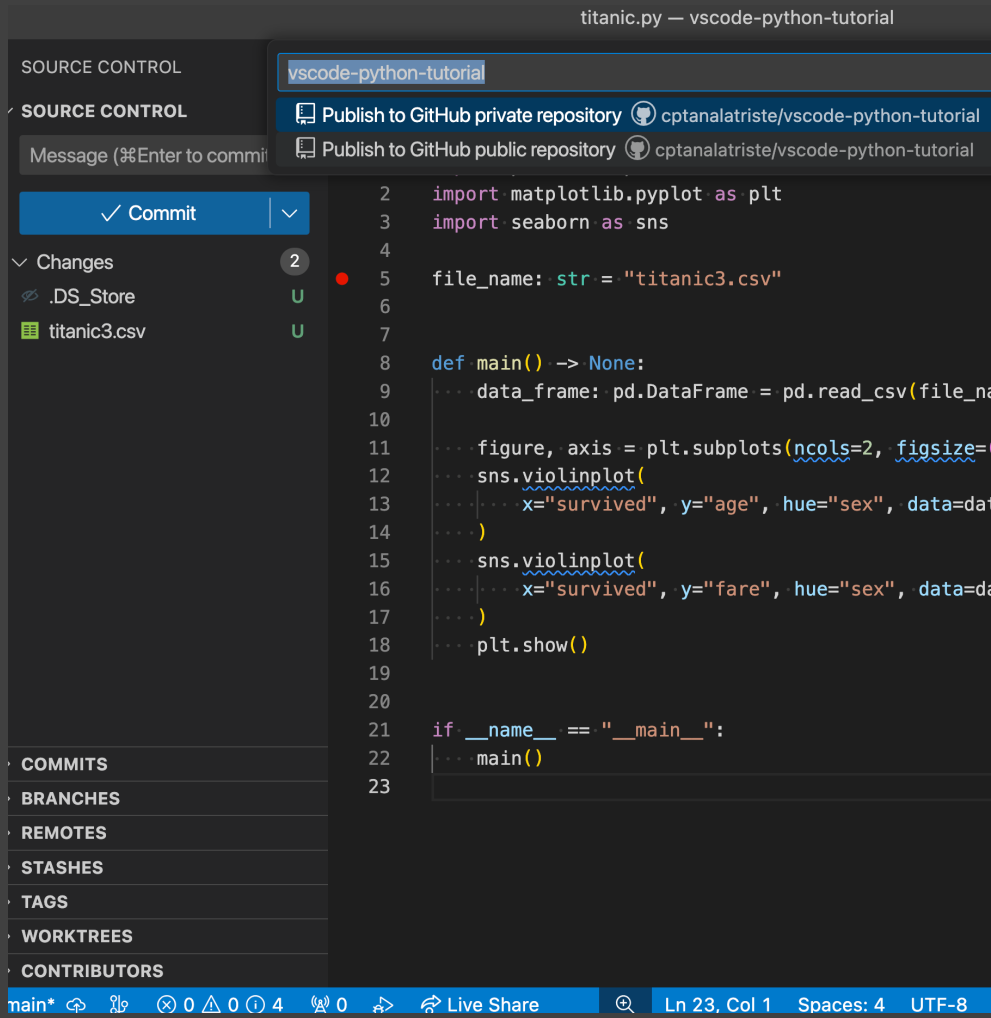
Merging Branches

1. From the destination branch: Branch > Merge …
2. Select the “refactoring” branch.



Publish a Branch

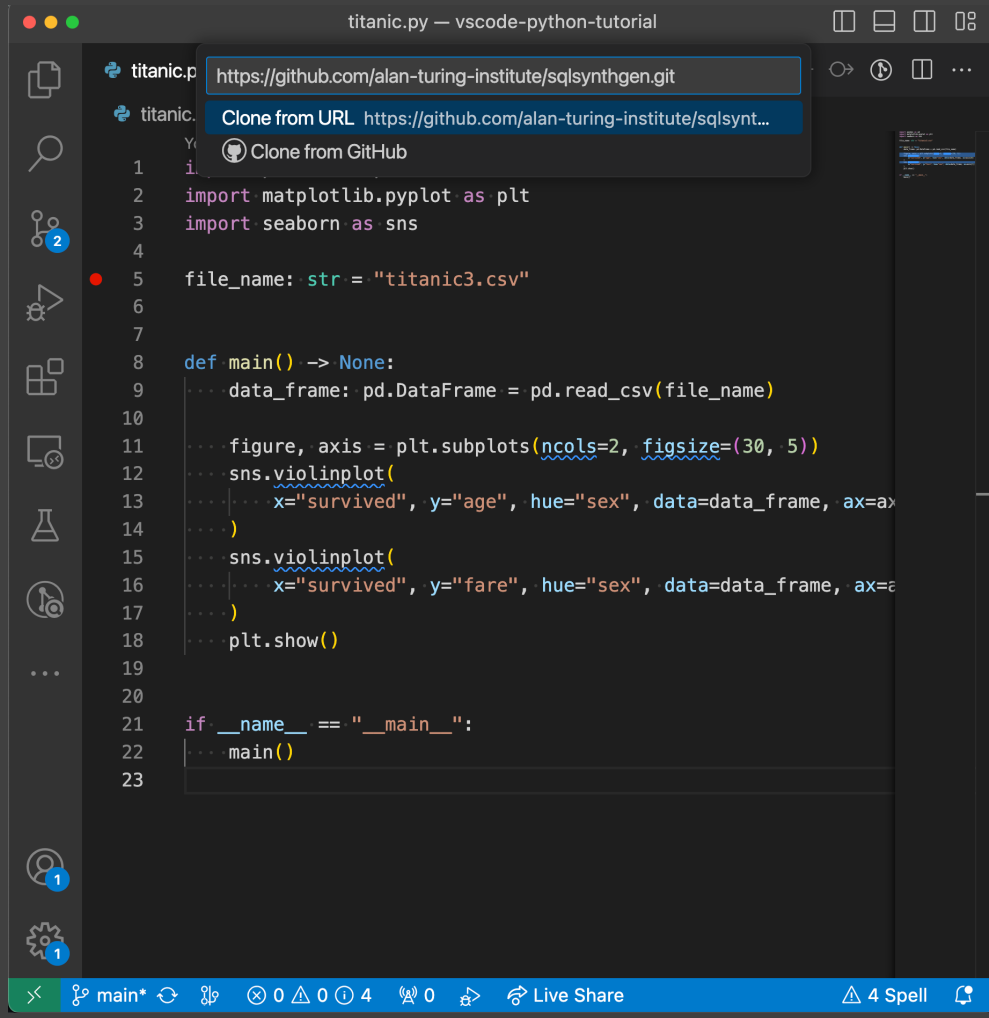
1. Select Branch > Publish Branch.
2. Authenticate to GitHub.
3. Select a public or private repository.



https://github.com/alan-turing-institute/sqlsynthgen

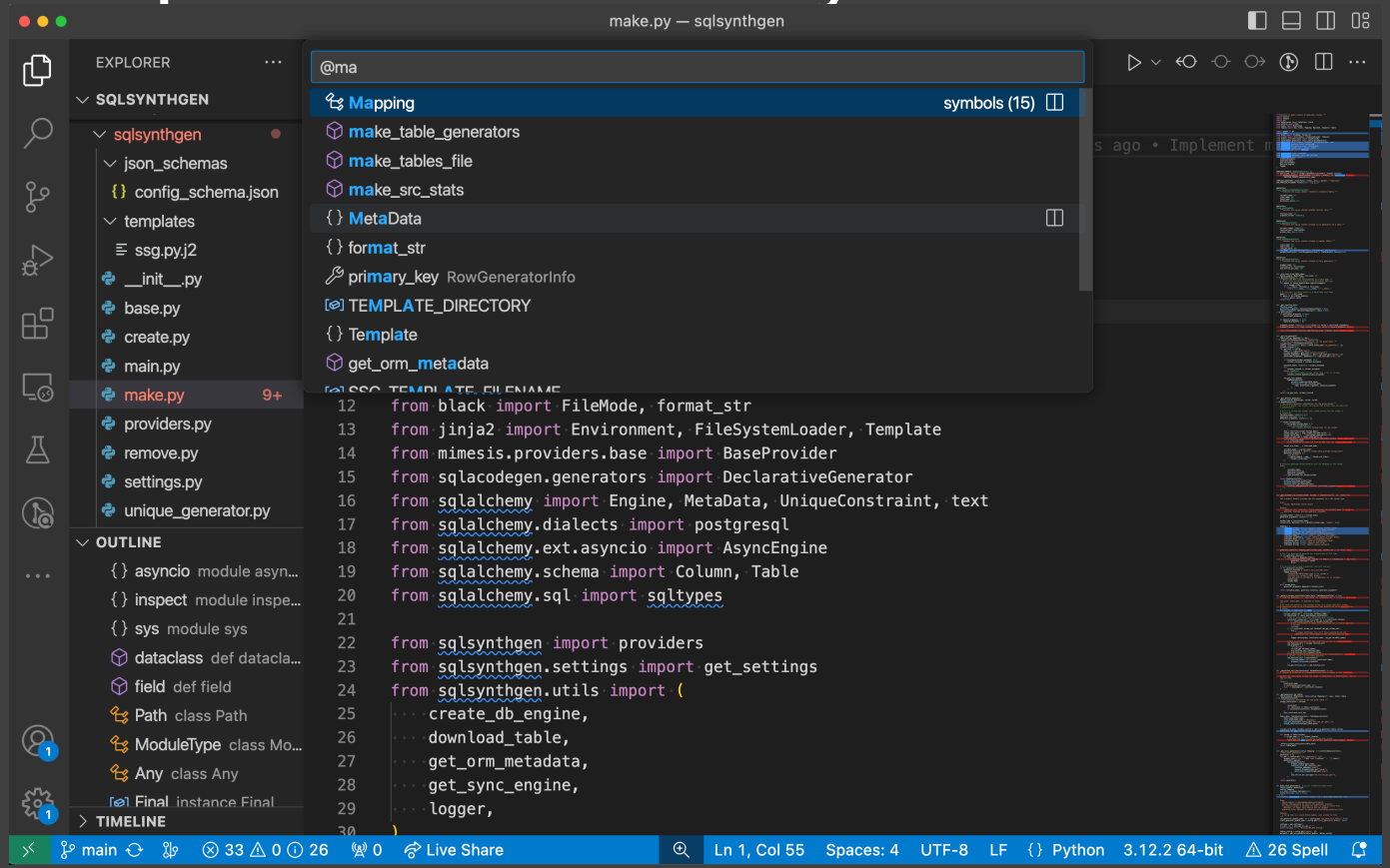
Cloning a Repository

1. Enter the “Git: Clone” command.
2. Select a repository destination.
3. Open the repository.

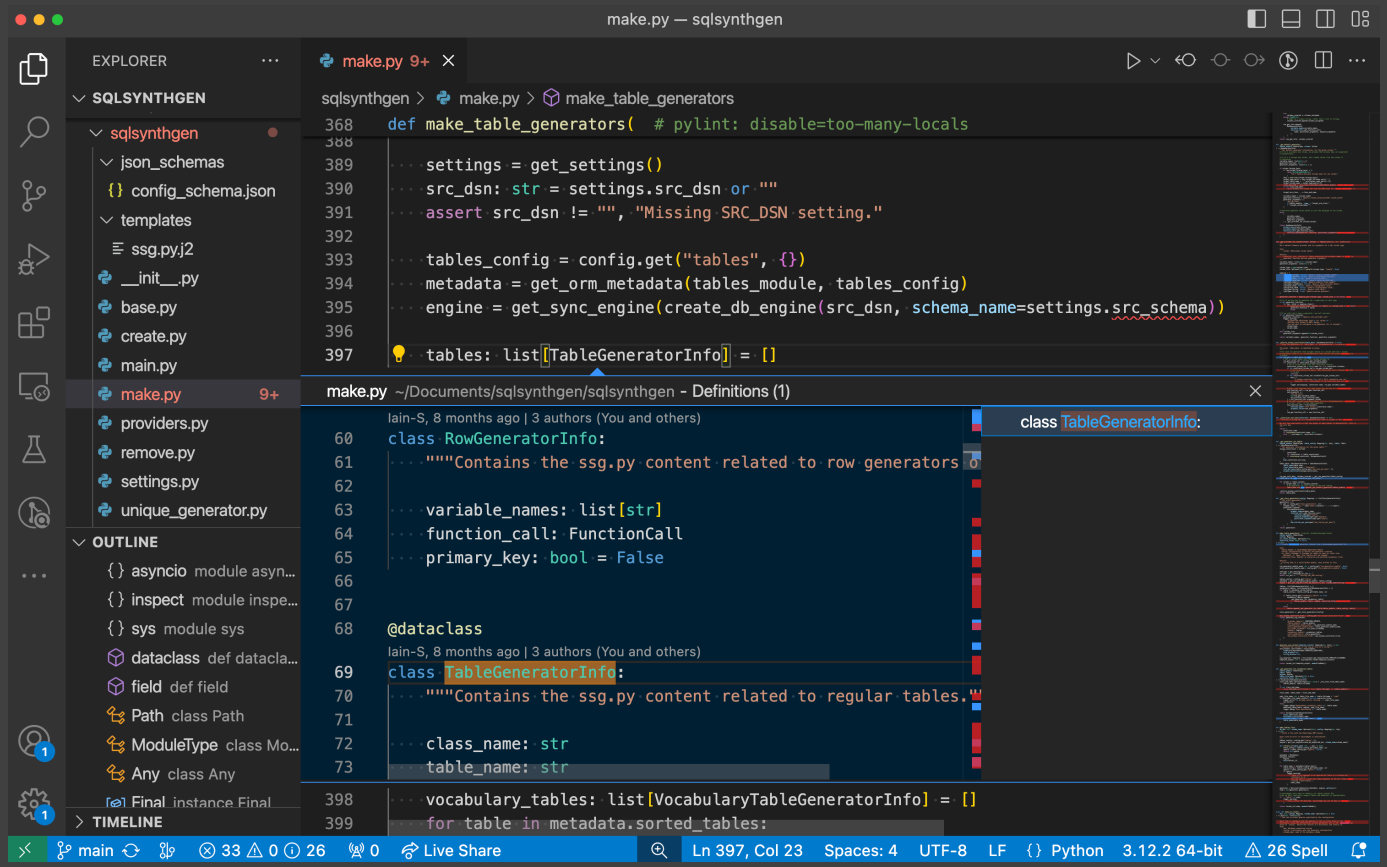


Code Navigation

Quick Open and Go to Symbol

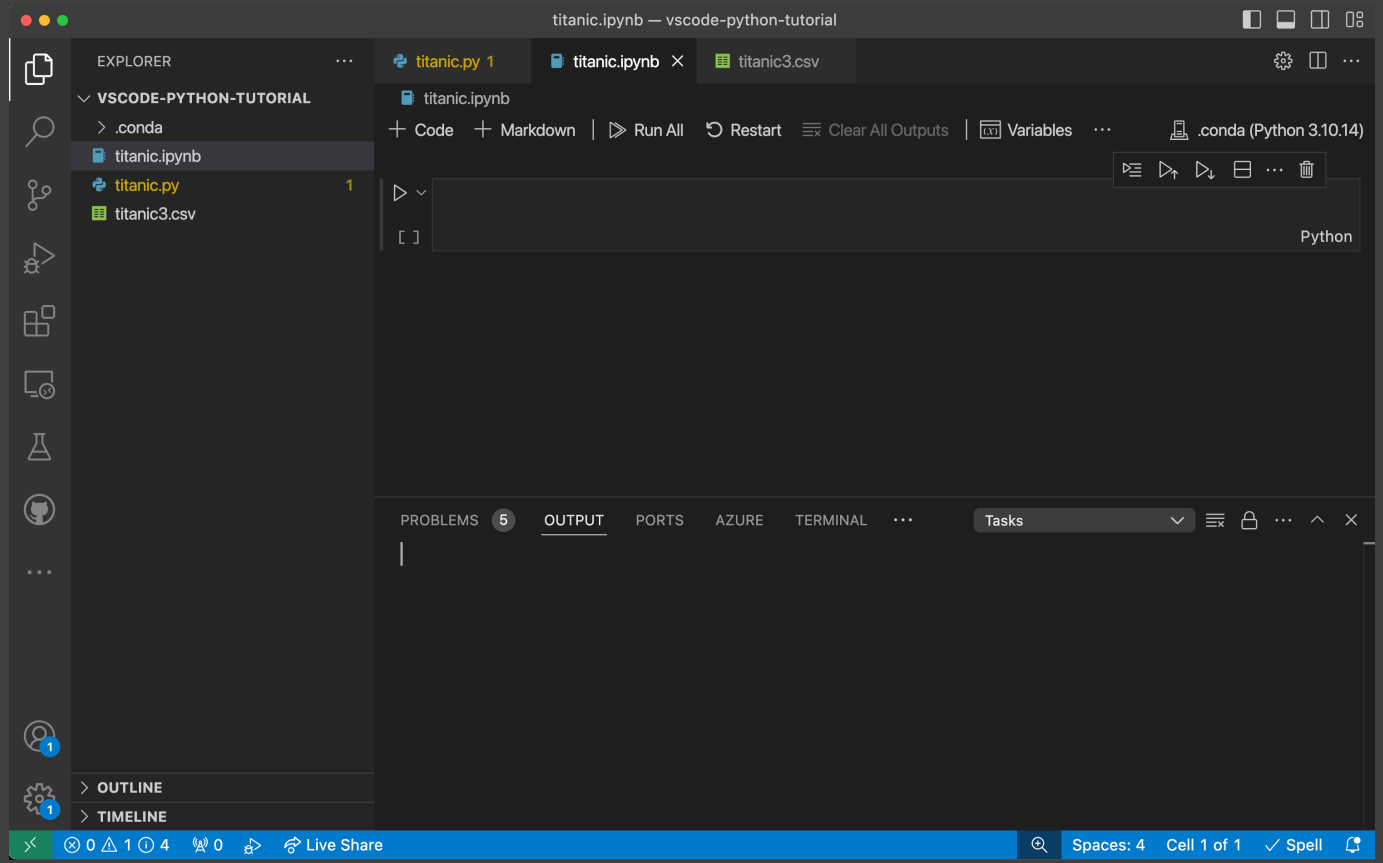


Peek and Go to Definitions



Using Jupyter Notebooks

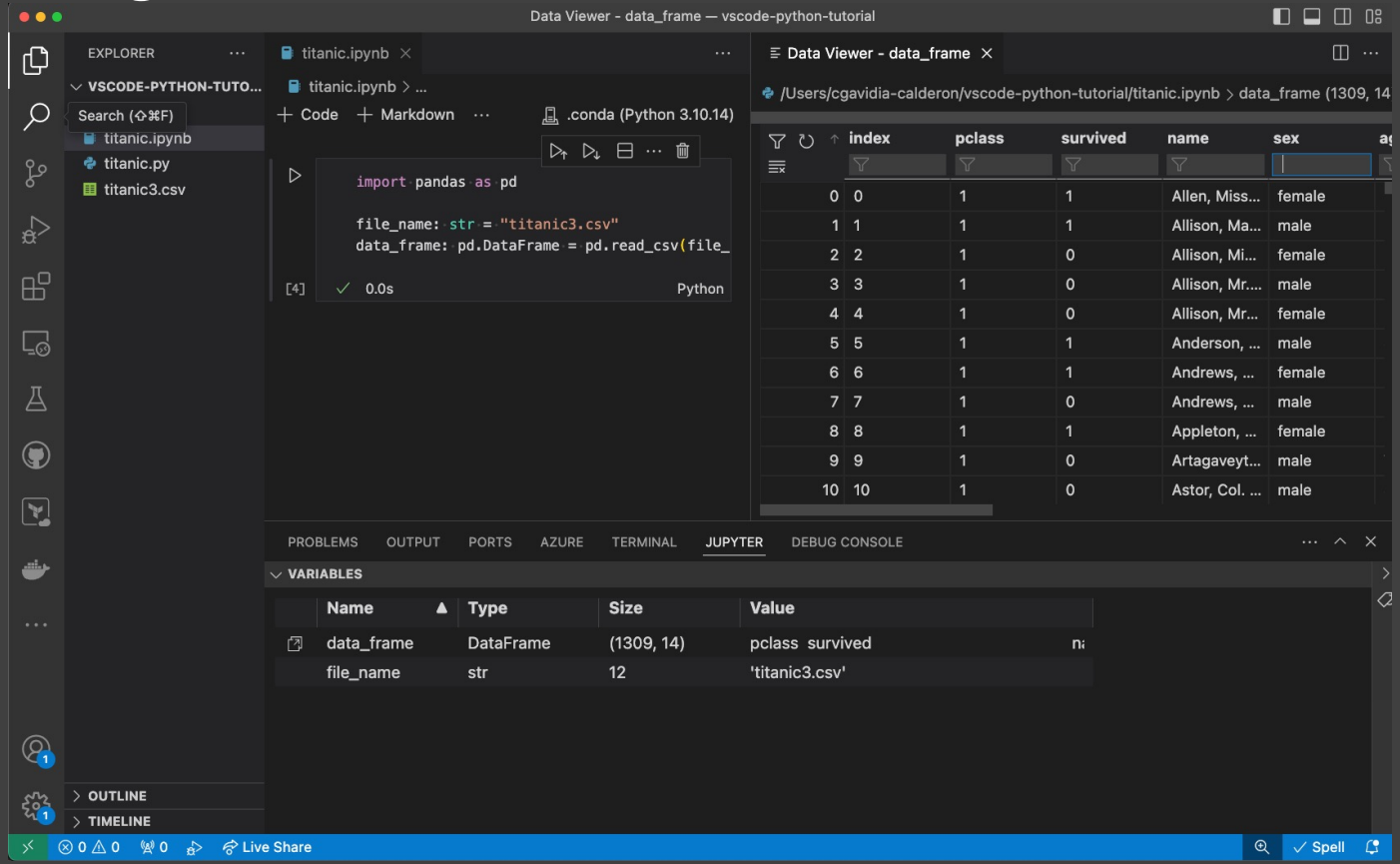
Create: New Jupyter Notebook



Python: Loading a DataFrame

```
import pandas as pd

file_name: str = "~/data/titanic3.csv"
data_frame: pd.DataFrame = pd.read_csv(file_name)
```

Running a Cell



Plotting Data

titanic.ipynb — vscode-python-tutorial

EXPLORER

VSCODE-PYTHON-TUTOR...

.conda

titanic.ipynb U

titanic.py

titanic3.csv U

titanic.py | titanic.ipynb U

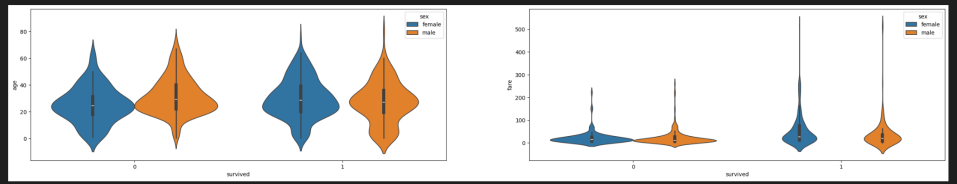
titanic.ipynb > ...

+ Code | + Markdown | Run All | Restart | Clear All Outputs | Variables | Outline | .conda (Python 3.10.14)

```
import matplotlib.pyplot as plt
import seaborn as sns

figure, axis = plt.subplots(ncols=2, figsize=(30, 5))
sns.violinplot(x="survived", y="age", hue="sex", data=data_frame, ax=axis[0])
sns.violinplot(x="survived", y="fare", hue="sex", data=data_frame, ax=axis[1])
```

[3] ✓ 2.0s Python

```
<Axes: xlabel='survived', ylabel='fare'>
```



OUTLINE

TIMELINE

main* 0 0 8 0 Live Share Spaces: 4 LF Cell 2 of 2 4 Spell

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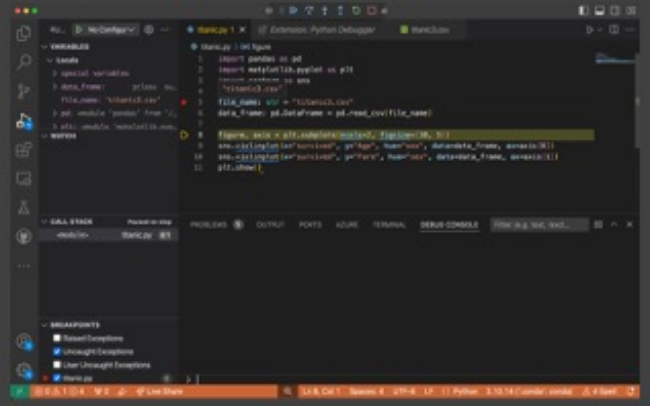
Visual Studio Code for Python Development

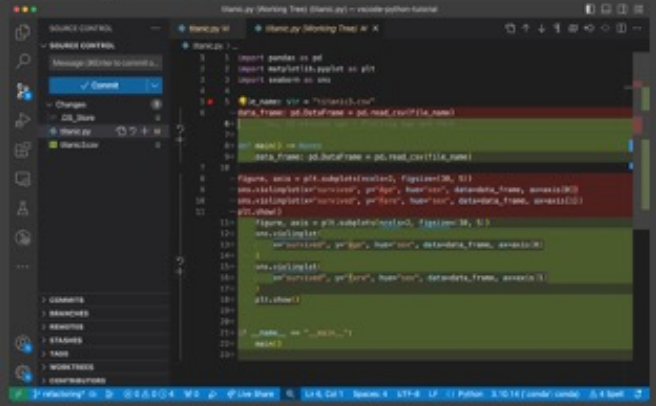
Carlos Gavidia-Calderon

Image: https://commons.wikimedia.org/wiki/File:The_Young_Snake_Charmer.jpg

Using the Debugger



Comparing Files



Plotting Data