Creating a Python Package

Estimated time needed: **30** minutes

Objectives

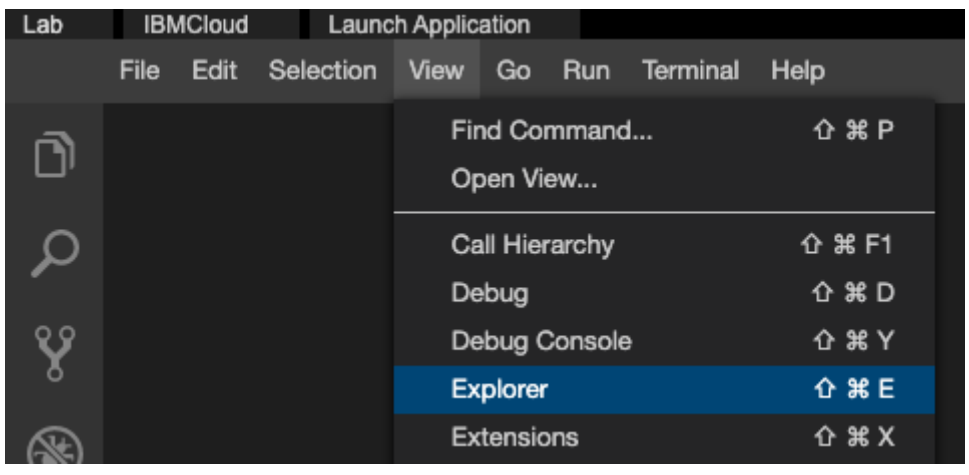
In this lab you will :

- Create a module named basic
- Add two functions to the module basic
- Create a module named stats
- Add two functions to the module stats
- Create a python package named mymath
- Verify that the package is working

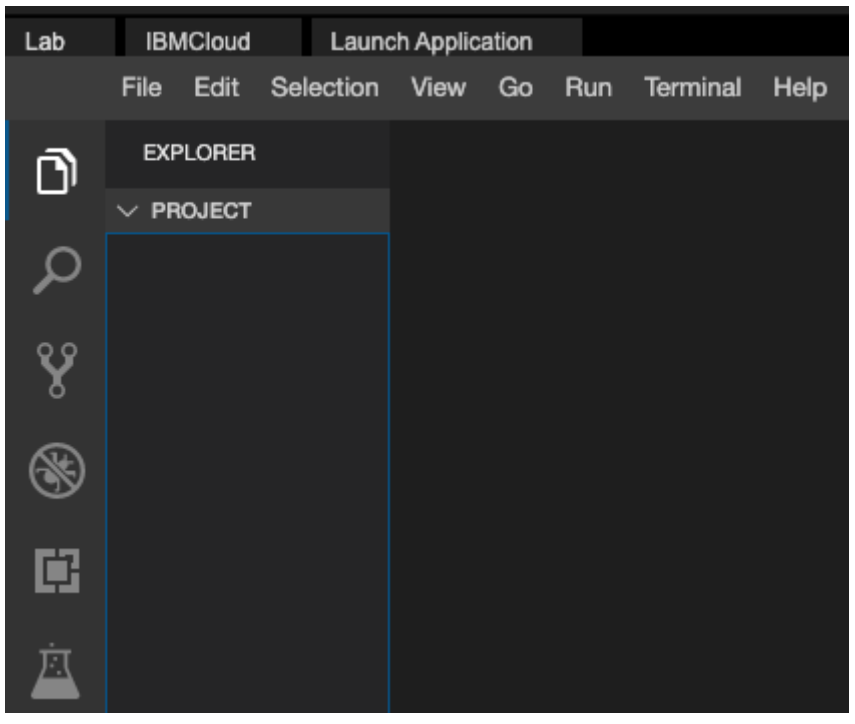
Lab

Create Package

- On the window to the right, click on the **View** menu and select **Explorer** option, as shown in the image below.

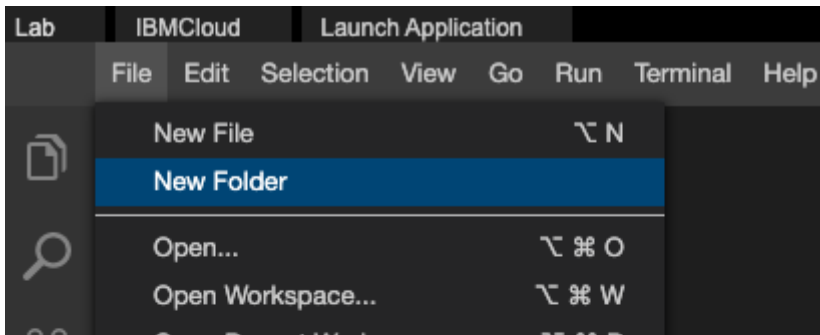


- Your IDE now should look like the image below.



- On the window to the right, click on the **File** menu and select **New Folder** option, as shown in the image below.

- Enter **mymath** and click OK as shown in the image below.



Create the first module

- Create a python module named basic

Create a file named **basic.py**.

Copy and paste the below code into basic.py

```
def square(number):
    """
    This function returns the square of a given number
    """
    return number ** 2


def double(number):
    """
    This function returns twice the value of a given number
    """
    return number * 2

def add(a, b):
    """
    This function returns the sum of given numbers
    """
    return a + b
```

You should see a screen like this now.

Save the file **basic.py**

Create the second module

- Create a module named stats

Create a file named **stats.py**.

Copy and paste the below code into stats.py

```
def mean(numbers):
    """
    This function returns the mean of the given list of numbers
    """
    return sum(numbers)/len(numbers)


def median(numbers):
    """
    This function returns median of the given list of numbers
    """
    numbers.sort()

        if len(numbers) % 2 == 0:
           median1 = numbers[len(numbers) // 2]
           median2 = numbers[len(numbers) // 2 - 1]
           mymedian = (median1 + median2) / 2
        else:
           mymedian = numbers[len(numbers) // 2]
        return mymedian
```

You should see a screen like this now.

Save the file **stats.py**

Create init.py

- Create the file `__init__.py`

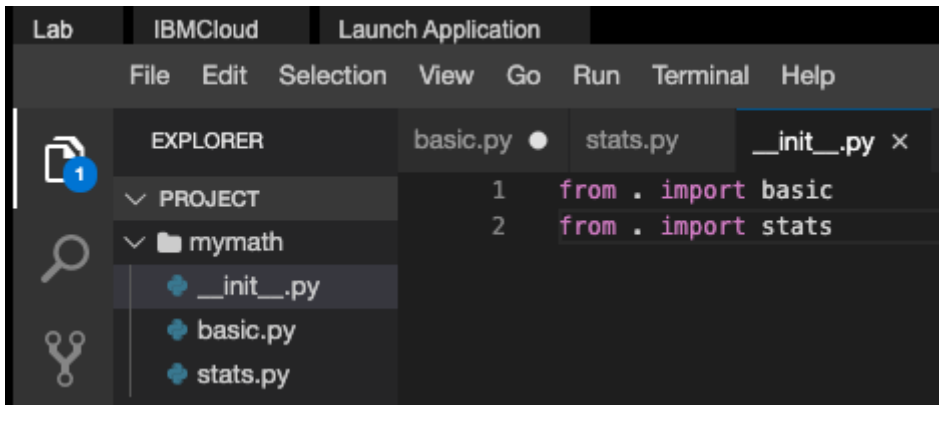
Copy and paste the below code into `__init__.py`

```
from . import basic
from . import stats
```

Save the file `__init__.py`

Now your directory structure should look like

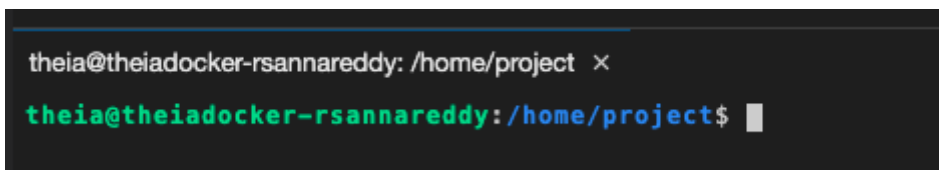
```
mymath
mymath/__init__.py
mymath/basic.py
mymath/statistics.py
```



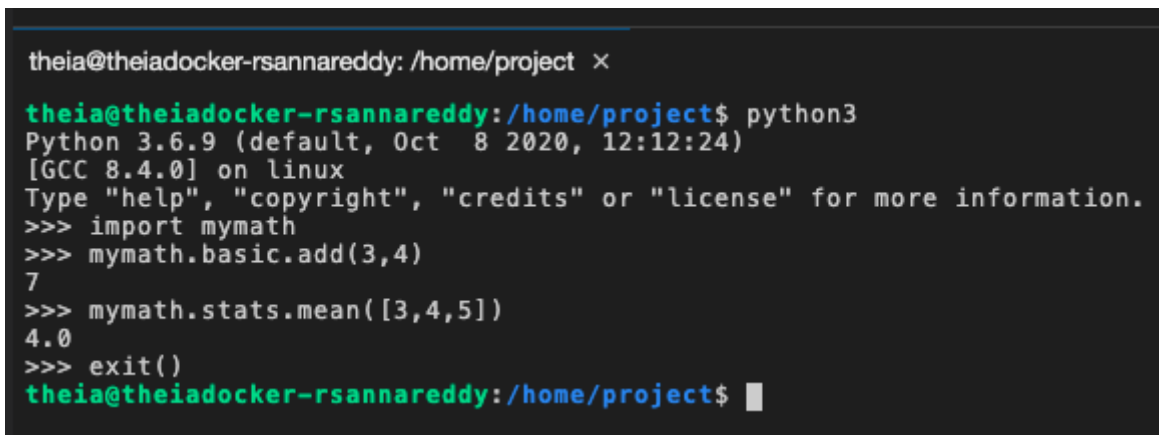
You are done creating a package

Verify the package

- On the window to the right, click on the **Terminal** menu and select **New Terminal** option, as shown in the image below.
- You will see a terminal open up on the bottom of the screen like the one in the image below.



- At the terminal type **python3** to invoke python interpreter.
- Once the python interpreter is loaded.
- At the python prompt type **import mymath**
- If the above command runs without errors, it is an indication that the mymath package is successfully loaded.
- At the python prompt type **mymath.basic.add(3,4)**
- You should see an output *7* on the screen.
- At the python prompt type **mymath.stats.mean([3,4,5])**
- You should see an output *4.0* on the screen.
- Type **exit()** to quit python interpreter.



Create a new module named geometry and add to the mymath package.

- Create a module name geometry
- Add a function named `area_of_rectangle` that takes length and breadth as input and returns the area of a rectangle.
- Add a function named `area_of_circle` that takes radius as input and returns the area of a circle.
- Modify the `__init__.py` to include this module.
- Import and test the function `area_of_circle` from python terminal.

Authors

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Other Contributors

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Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2020-11-25	0.1	Ramesh Sannareddy	Created initial version of the lab