Quick way to debug .py script

➢Use Spyder to open .py file

➢F12 to add break point, then run step-by-step

➢Ctrl + F5 to start debug

➢Ctrl + F10 to move step by step

➢The highlight purple line indicates the current step

Debug   Ctrl+F5
Step   **Ctrl+F10**
Step Into   Ctrl+F11
Step Return   Ctrl+Shift+F11
Continue   Ctrl+F12
Stop   Ctrl+Shift+F12
● Set/Clear breakpoint   F12
❓ Set/Edit conditional breakpoint Shift+F12
Clear breakpoints in all files
List breakpoints
Debug with winpdb

/home/me

Editor - /home/me/Desktop/Teaching/

L02_App_Debug.py

```python
1 #!/usr/bin/en
2 # -*- coding:
3 """
4 Created on Tu
5
6 @author:
7 """
8
9 a = [[i+2 * j for j in range(1,6)] for i in range(1,6)]
10 ans = [[] for i in range(len(a))]
11 for i in range(len(a)):
12     for j in range(len(a)):
13         Sum = 0
14         for k in range(len(a)):
15             Sum = Sum + a[i][k] * a[k][j]
16         ans[i].append(Sum)
17
18 print(ans)
19
20 import numpy as np
21 a_arr = np.array(a)
22 np_result = a_arr.dot(a_arr)
23
24 print(np_result)
```

Variable explorer

Name	Type	Size	Value
Sum	int	1	77
a	list	5	[[3, 5, 7, 9, 11], [4, 6, 8, 10, 12]...
ans	list	5	[[195, 265, 335], [], [], [], []]
i	int	1	0
j	int	1	3
k	int	1	1

Help

Source   Console   Object

Usage

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

Help can also be shown automatically

Help   File explorer

IPython console

Console 1/A

```
range(len(a)):
4    15          Sum = Sum +
a[i][k] * a[k][j]
    16              ans[i].append(Sum)

ipdb> > /home/me/Desktop/Teaching/
5313_Fall17/
L02_App_Debug.py(15)<module>()
    13          Sum = 0
    14          for k in
range(len(a)):
4--> 15          Sum = Sum +
a[i][k] * a[k][j]
    16              ans[i].append(Sum)
    17

> /home/me/Desktop/Teaching/
5313_Fall17/
L02_App_Debug.py(14)<module>()
    12      for j in range(len(a)):
    13          Sum = 0
---> 14          for k in
range(len(a)):
4    15          Sum = Sum +
a[i][k] * a[k][j]
    16              ans[i].append(Sum)

ipdb>
ipdb> ans
[[195, 265, 335], [], [], [], []]

ipdb>
```
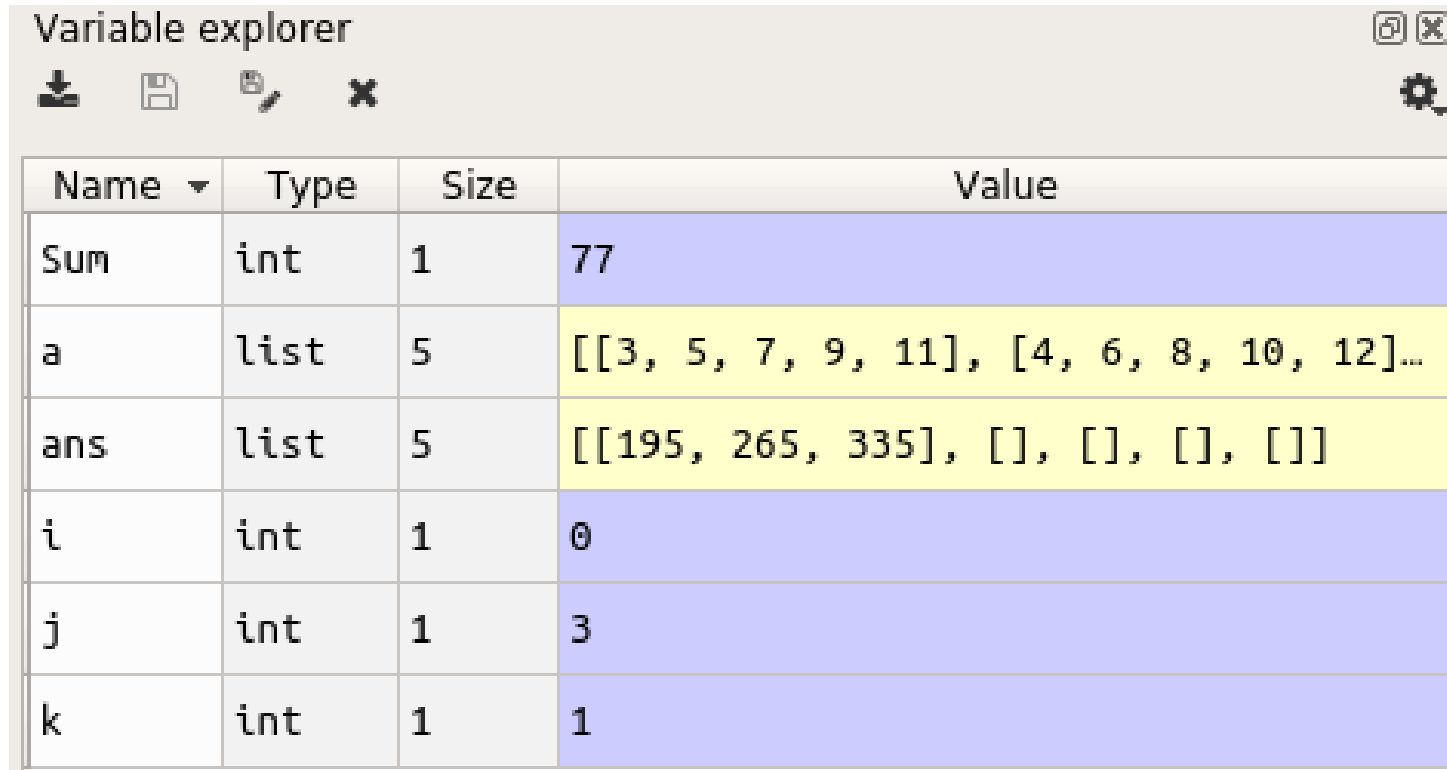
IPython console   History log

Run current line   Permissions: **RW**   End-of-lines: **LF**   Encoding: **UTF-8**   Line: **14**   Column: **1**   Memory: **22 %**

Spyder Component
Variable Explorer Show Value in real time

Variable explorer

Name ▼	Type	Size	Value
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Spyder Component

Type script in ipdb> to help in debug

➢Ex: type "ans" make python to show the detail of variable ans

```
L02_App_Debug.py(14)<module>()
     12        for j in range(len(a)):
     13            Sum = 0
---> 14            for k in
range(len(a)):
4      15                Sum = Sum +
a[i][k] * a[k][j]
     16            ans[i].append(Sum)


ipdb>
ipdb> ans
[[195, 265, 335], [], [], [], []]

ipdb>
```

IPython console | History log

Debugging Tips

Check

➢Location of sum = 0

➢Initialization

➢Limit of loop

➢Data type

Help debug by

➢Print everything out

➢Debug small part first

➢Make code clean

```python
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