

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

File Edit Search Source Run **Debug** Consoles Projects Tools View Help

Debug
Step Ctrl+F5
Step Into Ctrl+F10
Step Return Ctrl+F11
Continue Ctrl+Shift+F11
Stop 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

Editor - /home/me/Desktop/Teaching/
L02_App_Debug.py

```
1#!/usr/bin/env python3
2# -*- coding: utf-8 -*-
3"""
4Created on Tuesday, 12/11/2024
5
6@author:
7"""
8
9a = [[i+2 * j for j in range(1,6)] for i in range(1,6)]
10ans = [[] for i in range(len(a))]
11for 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
18print(ans)
19
20import numpy as np
21a_arr = np.array(a)
22np_result = a_arr.dot(a_arr)
23
24print(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

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)

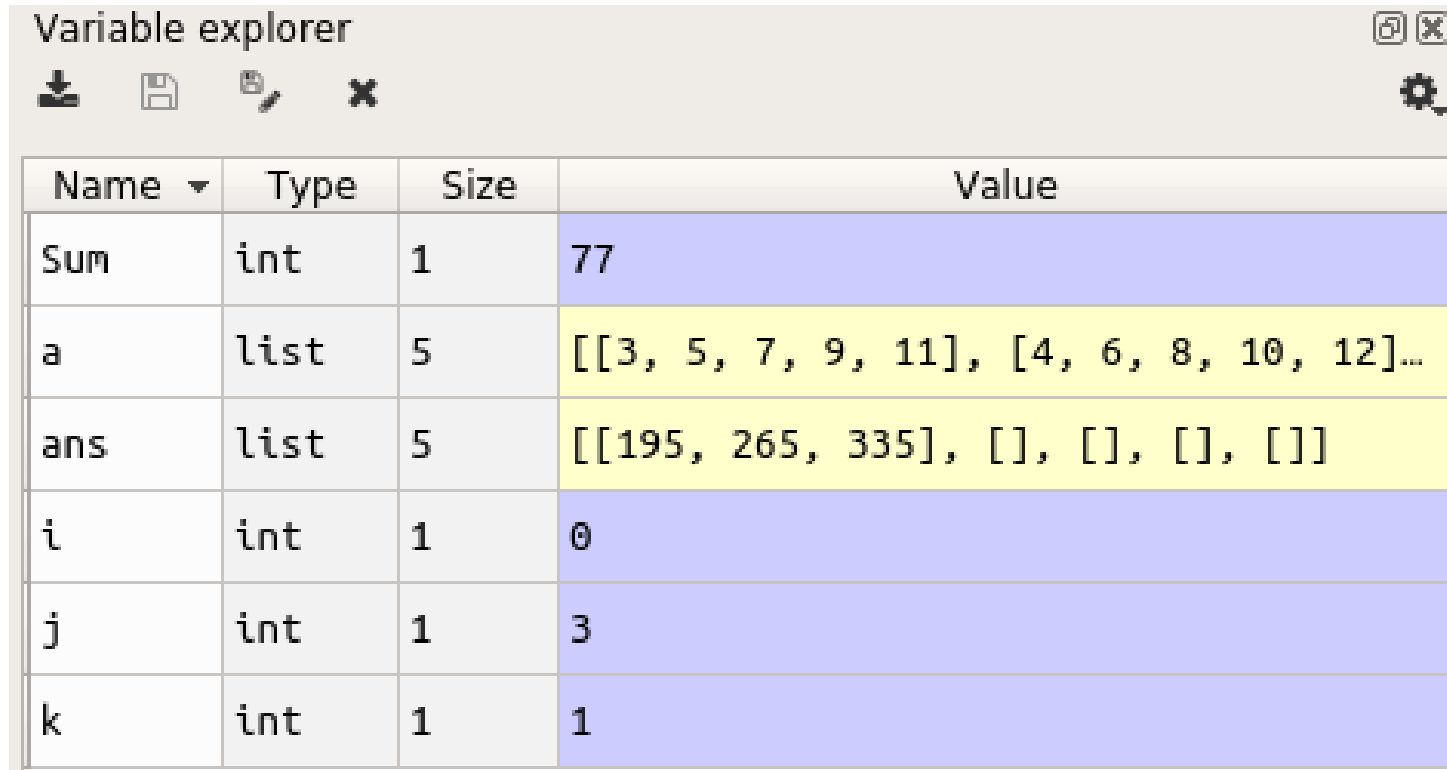
ipdb>
ipdb> ans
[[195, 265, 335], [], [], [], []]

ipdb>
```

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

Spyder Component

Variable Explorer Show Value in real time



The image shows the 'Variable explorer' window in Spyder. It has a title bar with standard window controls and a toolbar with icons for adding, saving, deleting, and refreshing variables. The main area is a table with four columns: 'Name', 'Type', 'Size', and 'Value'. The table lists six variables: 'Sum' (int, 1), 'a' (list, 5), 'ans' (list, 5), 'i' (int, 1), 'j' (int, 1), and 'k' (int, 1). The 'Value' column shows the current value of each variable. The rows for 'a' and 'ans' are highlighted in yellow, while the others are light blue.

Name ▼	Type	Size	Value
Sum	int	1	77
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k	int	1	1

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

```
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
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15             Sum = Sum + a[i][k] * a[k][j]
16             ans[i].append(Sum)
17
18 print(ans)
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20 import numpy as np
21 a_arr = np.array(a)
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