

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\\t')
95             else:
96                 print("_", end='\\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
Python 3.8.3 (default, Jul 2 2020, 17:30:36) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.16.1 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/rutaz/Desktop/Lab3.py', wdir='C:/Users/rutaz/Desktop')
_ 2 3
1 4 6
7 5 8

1 2 3
7 4 6
_ 5 8

1 2 3
4 _ 6
7 5 8

-----
Depth - 1 -> False
-----

_ 2 3
1 4 6
7 5 8

1 2 3
7 4 6
_ 5 8
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 12:59 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
1  2  3
7  4  6
_  5  8

1  2  3
4  _  6
7  5  8

-----

_  2  3
1  4  6
7  5  8

2  _  3
1  4  6
7  5  8

-----

1  2  3
7  4  6
_  5  8

1  2  3
7  4  6
5  _  8
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 12:59 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97         print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
-----
1  2  3
4  _  6
7  5  8

1  _  3
4  2  6
7  5  8

1  2  3
4  5  6
7  _  8

1  2  3
4  6  _
7  5  8

-----
Depth -  2  ->  False
-----
_  2  3
1  4  6
7  5  8

1  2  3
7  4  6
_  5  8
-----
```

Python console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 12:59 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97             print()
98     #print("Move: ", move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
-----
_  2  3
1  4  6
7  5  8

1  2  3
7  4  6
_  5  8

1  2  3
4  _  6
7  5  8

-----

_  2  3
1  4  6
7  5  8

2  _  3
1  4  6
7  5  8

-----

1  2  3
7  4  6
_  5  8

1  2  3
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 12:59 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop\lab3.py

lab3.py

```
74         allPossibleMoves.append(temp4)
75         moving.append("Left")
76         return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87         return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111         print("Depth - ",i," -> ", val)
112         print("-----")
113     main()
```

Source Console Object

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
1 2 3
7 4 6
_ 5 8

1 2 3
7 4 6
5 _ 8

-----

1 2 3
4 _ 6
7 5 8

1 _ 3
4 2 6
7 5 8

1 2 3
4 5 6
7 _ 8

1 2 3
4 6 _
7 5 8

-----

_ 2 3
```

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 12:59 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
1  2  3
-----
1  4  6
7  5  8

2  _  3
1  4  6
7  5  8

2  4  3
1  _  6
7  5  8

2  3  _
1  4  6
7  5  8

-----
1  2  3
7  4  6
_  5  8

1  2  3
7  4  6
_  5  8
```

Python console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 01:00 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87         return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\t')
95             else:
96                 print("_", end='\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111         print("Depth - ",i," -> ", val)
112         print("-----")
113     main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
-----
1  2  3
7  4  6
_  5  8

1  2  3
7  4  6
5  _  8

1  2  3
7  _  6
5  4  8

1  2  3
7  4  6
5  8  _

-----
1  2  3
4  _  6
7  5  8

1  _  3
4  2  6
7  5  8

1  3  _
```

Python console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 01:00 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\Desktop\lab3.py

```
74     allPossibleMoves.append(temp4)
75     moving.append("Left")
76     return ([move for move in allPossibleMoves if move not in visited_states], moving)
77
78
79
80 def iddfs(src,target,depth):
81     for i in range(depth):
82         visited_states = []
83         if dfs(src,target,i+1,visited_states):
84             #for move in visited_states:
85                 #display(move)
86             return True
87     return False
88
89 def display(state,move):
90
91     for i in range(3):
92         for j in range(3):
93             if state[i][j]!=-1 :
94                 print(state[i][j], end='\\t')
95             else:
96                 print("_", end='\\t')
97             print()
98     #print("Move: " , move)
99     print()
100    print()
101
102 def main():
103     for i in range(1, 100):
104         val = iddfs(src,target,i)
105         if val == True:
106             #val = iddfs(src,target,i)
107             print("-----")
108             print("Depth - ",i," -> ", val)
109             print("-----")
110             break
111     print("Depth - ",i," -> ", val)
112     print("-----")
113 main()
```

Usage

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

Variable explorer Help Plots Files

Console 3/A

```
4  _  6
7  5  8

1  _  3
4  2  6
7  5  8

1  3  _
4  2  6
7  5  8

_  1  3
4  2  6
7  5  8

-----

1  2  3
4  5  6
7  _  8

1  2  3
4  5  6
7  8  _

-----

Depth - 3 -> True
-----
```

Python console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 90%

Desktop 01:00 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\untitled0.py

```
1 # -*- coding: utf-8 -*-
2 """
3 @author: rutaz
4 """
5
6 import random as r
7
8 def randGenerator(n,m):
9     arr = []
10    for i in range(n):
11        array = []
12        for j in range(m):
13            array.append(r.choice([0,1]))
14        arr.append(array)
15    return arr
16
17 def printing(arr,n,m,a,b):
18     for i in range(n):
19         for j in range(m):
20             if a==i and b==j and b==0:
21                 if j==0:
22                     print("", end="")
23                     print("<",end="")
24                     print(arr[i][j], end="> ")
25
26             elif a == i and b == j+1:
27                 if j==0:
28                     print(" ", end="")
29                     print(arr[i][j], end=" <")
30             elif a == i and b == j:
31                 if j==0:
32                     print(" ", end="")
33                     print(arr[i][j], end="> ")
34             else:
35                 if j==0:
36                     print(" ", end="")
37                     print(arr[i][j], end=" ")
38         print()
39
40 def cleaner(arr,n,m):
41     pos = 0;
42     for i in range(n):
```

Usage

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

Variable explorer Help Plots Files

Console 1/A

```
Python 3.8.3 (default, Jul 2 2020, 17:30:36) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.16.1 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/rutaz/untitled0.py', wdir='C:/Users/rutaz')
Enter the values of:

N = 4

M = 5
<1> 0 0 0 0
1 1 0 1 0
0 1 1 0 1
0 1 0 1 1
Perceiving Dirt...Cleaning...moving ahead
0 <0> 0 0 0
1 1 0 1 0
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 <0> 0 0
1 1 0 1 0
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 0 <0> 0
1 1 0 1 0
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 0 0 <0>
1 1 0 1 0
0 1 1 0 1
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 86%

Desktop 01:06 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\untitled0.py

```
1 # -*- coding: utf-8 -*-
2 """
3 @author: rutaz
4 """
5
6 import random as r
7
8 def randGenerator(n,m):
9     arr = []
10    for i in range(n):
11        array = []
12        for j in range(m):
13            array.append(r.choice([0,1]))
14        arr.append(array)
15    return arr
16
17 def printing(arr,n,m,a,b):
18     for i in range(n):
19         for j in range(m):
20             if a==i and b==j and b==0:
21                 if j==0:
22                     print("", end="")
23                     print("<",end="")
24                     print(arr[i][j], end="> ")
25
26             elif a == i and b == j+1:
27                 if j==0:
28                     print(" ", end="")
29                     print(arr[i][j], end=" <")
30             elif a == i and b == j:
31                 if j==0:
32                     print(" ", end="")
33                     print(arr[i][j], end="> ")
34             else:
35                 if j==0:
36                     print(" ", end="")
37                     print(arr[i][j], end=" ")
38         print()
39
40 def cleaner(arr,n,m):
41     pos = 0;
42     for i in range(n):
```

Usage

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

Variable explorer Help Plots Files

Console 1/A

```
0 1 0 1 1
Already clean...moving ahead
0 0 0 0 <0>
1 1 0 1 0
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 0 0 0
1 1 0 1 <0>
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 0 0 0
1 1 <0> 0 0
0 1 1 0 1
0 1 0 1 1
Percepting Dirt...Cleaning...moving ahead
0 0 0 0 0
1 1 <0> 0 0
0 1 1 0 1
0 1 0 1 1
Already clean...moving ahead
0 0 0 0 0
1 <1> 0 0 0
0 1 1 0 1
0 1 0 1 1
Percepting Dirt...Cleaning...moving ahead
0 0 0 0 0
<1> 0 0 0 0
0 1 1 0 1
0 1 0 1 1
Percepting Dirt...Cleaning...moving ahead
0 0 0 0 0
0 0 0 0 0
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 86%

Desktop 01:06 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\untitled0.py

```
1 # -*- coding: utf-8 -*-
2 """
3 @author: rutaz
4 """
5
6 import random as r
7
8 def randGenerator(n,m):
9     arr = []
10    for i in range(n):
11        array = []
12        for j in range(m):
13            array.append(r.choice([0,1]))
14        arr.append(array)
15    return arr
16
17 def printing(arr,n,m,a,b):
18     for i in range(n):
19         for j in range(m):
20             if a==i and b==j and b==0:
21                 if j==0:
22                     print("", end="")
23                     print("<",end="")
24                     print(arr[i][j], end="> ")
25
26             elif a == i and b == j+1:
27                 if j==0:
28                     print(" ", end="")
29                     print(arr[i][j], end=" <")
30             elif a == i and b == j:
31                 if j==0:
32                     print(" ", end="")
33                     print(arr[i][j], end="> ")
34             else:
35                 if j==0:
36                     print(" ", end="")
37                     print(arr[i][j], end=" ")
38         print()
39
40 def cleaner(arr,n,m):
41     pos = 0;
42     for i in range(n):
```

Usage

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

Variable explorer Help Plots Files

Console 1/A

```
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
<1> 0 0 0 0
0 1 1 0 1
0 1 0 1 1
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
<0> 1 1 0 1
0 1 0 1 1
Already clean....moving ahead
0 0 0 0 0
0 0 0 0 0
0 <1> 1 0 1
0 1 0 1 1
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 <1> 0 1
0 1 0 1 1
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 <0> 1
0 1 0 1 1
Already clean....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 <1>
0 1 0 1 1
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 83%

Desktop 01:06 PM 13-11-2020

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\rutaz\untitled0.py

```
1 # -*- coding: utf-8 -*-
2 """
3 @author: rutaz
4 """
5
6 import random as r
7
8 def randGenerator(n,m):
9     arr = []
10    for i in range(n):
11        array = []
12        for j in range(m):
13            array.append(r.choice([0,1]))
14        arr.append(array)
15    return arr
16
17 def printing(arr,n,m,a,b):
18     for i in range(n):
19         for j in range(m):
20             if a==i and b==j and b==0:
21                 if j==0:
22                     print("", end="")
23                     print("<",end="")
24                     print(arr[i][j], end="> ")
25
26             elif a == i and b == j+1:
27                 if j==0:
28                     print(" ", end="")
29                     print(arr[i][j], end=" <")
30             elif a == i and b == j:
31                 if j==0:
32                     print(" ", end="")
33                     print(arr[i][j], end="> ")
34             else:
35                 if j==0:
36                     print(" ", end="")
37                     print(arr[i][j], end=" ")
38         print()
39
40 def cleaner(arr,n,m):
41     pos = 0;
42     for i in range(n):
```

Usage

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

Variable explorer Help Plots Files

Console 1/A

```
0 0 0 0 <1>
0 1 0 1 1
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 1 0 1 <1>
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 1 0 <1> 0
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 1 <0> 0 0
Already clean....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 <1> 0 0 0
Percepting Dirt....Cleaning....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
<0> 0 0 0 0
Already clean....moving ahead
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
Everything Cleaned
```

IPython console History

LSP Python: ready conda: base (Python 3.8.3) Line 3, Col 15 UTF-8 CRLF RW Mem 83%

Desktop 01:06 PM 13-11-2020