

Visual Studio Code interface showing a Python file named `simAnnealing.py` with the following code:

```
1 import math
2 import random
3 def init():
4     l=[2, 1, 5, 0, 8, 4, 10, 0, 20, 10]
5     return l
6 def calc_cost(l):
7     la = l
8     cost = 0
9     for i in range(len(la)):
10         l1=l[(i+1) : len(l)]
11         ls = [j for j in l1 if la[i]>j ]
12         cost = cost + len(ls)
13     return cost
14
15
16 def state_generation(current_state, current_state_cost):
17     min_cost = current_state_cost
18     sli_state = current_state.copy()
19     for i in range(len(current_state)-1):
20         for j in range(i+1,len(current_state)):
21             sli_state[i],sli_state[j] = sli_state[j],sli_state[i]
22             new_cost = calc_cost(sli_state)
23             if(new_cost < min_cost):
24                 min_cost = new_cost
25                 min_state = sli_state.copy()
26                 sli_state = current_state.copy()
27
28 if(min_cost < current_state_cost):
```

The Explorer sidebar shows the file structure with `simAnnealing.py` selected. The status bar at the bottom indicates Python 3.9.6 64-bit, 0 errors/warnings, and 3 lines. The system tray shows the date and time as 8:53 AM on 8/31/2021.

FileEditSelectionViewGoRunTerminalHelp

simAnnealing.py - Assignment 02 - Visual Studio Code

EXPLORER

ASSIGN...
Screenshot
simAnnealin... 3
steepest.py

OUTLINE

simAnnealing.py 3

simAnnealing.py > ...

```
29         return min_state,min_cost
30     elif(min_cost>current_state_cost):
31
32         del_E=current_state_cost - new_cost
33         check=move_or_not(del_E)
34
35     else :
36         del_E=-1
37         check2=move_or_not(del_E)
38
39     return current_state,None
40
41 def move_or_not(del_E):
42
43     cal=pow(math.e, del_E)
44     n = random. randint(0,1)
45     if(n>=0 and n<= cal):
46         return min_state,min_cost
47     else:
48         return current_state,None
49
50
51 def goal_test(state):
52     if calc_cost(state) == 0 :
53         return True
54     else:
55         return False
56
```

Python 3.9.6 64-bit 0 3

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

90°F Light rain 8:54 AM 8/31/2021

FileEditSelectionViewGoRunTerminalHelp

simAnnealing.py - Assignment 02 - Visual Studio Code

EXPLORER

ASSIGN...

Screenshot

simAnnealin... 3

steepest.py

OUTLINE

simAnnealing.py 3

simAnnealing.py > ...

```
59
60
61 def main():
62     # state = [int(s) for s in input().split()]
63     state=init()
64     cost = calc_cost(state)
65     while(not goal_test(state)):
66         state, cost = state_generation(state, cost)
67         if cost is None:
68             print(state)
69             return
70     print(state)
71     return
72
73 if __name__ == '__main__':
74     main()
```

Python 3.9.6 64-bit 0 3

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

Windows Search

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FileEditSelectionViewGoRunTerminalHelpsteeppest.py - Assignment02EnvVisual Studio Code

EXPLORER

ASSIGN...
simAnnealing.py
steeppest.py

steeppest.py x

steeppest.py

```
1 def init():
2     l=[2, 1, 5, 0, 8, 4, 10, 0, 20, 10]
3     return l
4 def calc_cost(l):
5     la = l
6     cost = 0
7     for i in range(len(la)):
8         l1=l[(i+1) : len(l)]
9         ls = [j for j in l1 if la[i]>j ]
10        cost = cost + len(ls)
11    return cost
12
13
14 def state_generation(current_state, current_state_cost):
15     min_cost = current_state_cost
16     sli_state = current_state.copy()
17     for i in range(len(current_state)-1):
18         for j in range(i+1,len(current_state)):
19             sli_state[i],sli_state[j] = sli_state[j],sli_state[i]
20             eitar_cost = calc_cost(sli_state)
21             if(eitar_cost < min_cost):
22                 min_cost = eitar_cost
23                 min_state = sli_state.copy()
24                 sli_state = current_state.copy()
25
26     if(min_cost < current_state_cost):
27         return min_state,min_cost
28     else:
```

Python 3.9.6 64-bit 0 0 0Ln 1, Col 1Spaces: 4UTF-8CRLFPython

Windows taskbar with search bar, icons, and system tray showing 90°F, Light rain, and 8:52 AM 8/31/2021.

FileEditSelectionViewGoRunTerminalHelpsteeppest.py - Assignment02 - Python 3.9.6

EXPLORER

ASSIGN...
Screenshot
simAnnealing.py
steeppest.py

OUTLINE

steeppest.py

```
28     else:
29         return current_state, None
30
31 def goal_test(state):
32     if calc_cost(state) == 0 :
33         return True
34     else:
35         return False
36
37
38
39
40
41 def main():
42     # state = [int(s) for s in input().split()]
43     state=init()
44     cost = calc_cost(state)
45     while(not goal_test(state)):
46         state, cost = state_generation(state, cost)
47         if cost is None:
48             print(state)
49             return
50     print(state)
51     return
52
53 if __name__ == '__main__':
54     main()
```

Python 3.9.6 64-bit 0 0 0Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

Windows Search

90°F Light rain 8:53 AM 8/31/2021