

AA_LAB_11_Assignment

CE_054

Aim :- Greedy approach of set cover algorithm.

1. Greedy Set Cover Algorithm in python.

Code :-

```
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def set_cover(lst, edge):

    U = lst.copy()
    all = []
    while len(U) != 0:
        s = findIntersection(edge, U)
        edge.remove(s)
        U = [x for x in U if x not in s]
        all.append(s)
    return all

def findIntersection(edge, u):

    index, max = 0, 0
    for i in range(len(edge)):
        temp = set(edge[i]).intersection(set(u))
        if len(temp) > max:
            max = len(temp)
            index = i
    return edge[index]

if __name__ == "__main__":

    lst = list(map(int, input().split()))
    subsets = int(input("Enter number of subsets\n"))
    edge = []
    for _ in range(subsets):
        temp = list(map(int, input().split()))
        edge.append(temp)
        result = set_cover(lst, edge)
    print(result)
```

Output :-

The screenshot displays an IDE interface with a dark theme. The main editor window shows a Python script named `temp.py` located at `D:\c\lg2021\AA\lab11`. The script prompts the user to "Enter number of subsets" and then prints a list of all possible subsets of the numbers 1 through 14. The output is displayed in the console area below the editor.

```
D:\c\lg2021\AA\lab11>python temp.py
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Enter number of subsets
8
1 2 3 4 5 6 7 8 9
5 6 7 8
2 5 7 8 11 13
3 6 9 10 11 12 13 14
10 11
1 4 7 10
1 5 8 9 14
4 5 6
[[1, 2, 3, 4, 5, 6, 7, 8, 9], [5, 6, 7, 8], [2, 5, 7, 8, 11, 13], [3, 6, 9, 10, 11, 12, 13, 14]]

D:\c\lg2021\AA\lab11>
```

The IDE interface includes a sidebar on the left with icons for a file explorer, a search icon, a terminal icon, and a settings icon. The bottom panel shows a list of tabs: "OUTLINE", "NPM SCRIPTS", "ACTION COMMENTS", and "MAVEN".

The image shows a screenshot of a Visual Studio Code editor window. The editor is dark-themed. On the left side, there is a sidebar with several icons: a person icon (top), a checkmark icon, a 'N' icon, a magnifying glass icon, and a gear icon (bottom). The main editor area displays a Python script named `temp.py`. The script's content is as follows:

```
D:\c1g2021\AA\lab11>python temp.py
1 2 3 4 5 6 7 8 9
Enter number of subsets
4
1 2 3 4 5
5 6 7
8 9
4 5 6 7 8 9
[[1, 2, 3, 4, 5], [5, 6, 7], [8, 9]]
```

Below the script, the terminal output is visible, showing the same commands and results as the script content. The terminal is located at the bottom of the editor window, with the prompt `D:\c1g2021\AA\lab11>` visible.