

Assignment 11 | Advance Algorithms

CE-092

Assignment submission for Advance Algorithms subject week 11.

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Task 1:

Set cover using approximate methods.

Code:

```
# -*- coding: utf-8 -*-
# @Author: nevil11
# @Date: 2020-10-25 17:57:51
# @Last Modified by: nevil11
# @Last Modified time: 2020-10-25 18:24:19
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()))
    n = int(input("Enter number of subsets\n"))
    edge = []
    for _ in range(n):
        temp = list(map(int, input().split()))
        edge.append(temp)

    result = set_cover(lst, edge)
    print(result)

```

Output:

```

nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ python3 set\ cover.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
[[4, 5, 6, 7, 8, 9], [1, 2, 3, 4, 5]]
nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ |

```

```

nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ python3 set\ cover.py
1 2 3 4 5 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], [3, 6, 9, 10, 11, 12, 13, 14]]
nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ |

```

```
nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ python3 set\ cover.py
1 2 3 4 5 6 7 8 9 10 11 12
Enter number of subsets
6
1 2 3 4 5 6
5 6 8 9
1 4 7 10
2 5 7 8 11
3 6 9 12
10 11
[[1, 2, 3, 4, 5, 6], [2, 5, 7, 8, 11], [3, 6, 9, 12], [1, 4, 7, 10]]
nevil11@me:/media/nevil11/Nevil New/Third Year/AA/LABS/L11$ |
```

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