

Started on	Monday, 5 May 2025, 9:08 AM
State	Finished
Completed on	Monday, 5 May 2025, 11:58 AM
Time taken	2 hours 49 mins
Overdue	49 mins 26 secs
Grade	80.00 out of 100.00

Question 1

Correct

Mark 20.00 out of 20.00

Write a python program to implement quick sort on the given array values.

For example:

Input	Result
5	left: []
21	right: []
40	left: []
50	right: []
30	left: []
13	right: []
	left: [30]
	right: [50]
	left: [13]
	right: [30, 40, 50]
	[13, 21, 30, 40, 50]
6	left: []
7	right: []
5	left: [4]
21	right: []
63	left: []
4	right: []
9	left: []
	right: []
	left: [9]
	right: [63]
	left: [4, 5]
	right: [9, 21, 63]
	[4, 5, 7, 9, 21, 63]

Answer: (penalty regime: 0 %)

```

1 def quick(l):
2     if l==[]:
3         return []
4     pivot=l[0:1]
5     left=quick([x for x in l[1:] if x<l[0]])
6     right=quick([x for x in l[1:] if x>=l[0]])
7     print("left: ",left)
8     print("right: ",right)
9     return left+pivot+right
10 a=[]
11 n=int(input())
12 for i in range(n):
13     a.append(int(input()))
14 print(quick(a))

```

	Input	Expected	Got	
✓	5 21 40 50 30 13	left: [] right: [] left: [] right: [] left: [] right: [] left: [30] right: [50] left: [13] right: [30, 40, 50] [13, 21, 30, 40, 50]	left: [] right: [] left: [] right: [] left: [] right: [] left: [30] right: [50] left: [13] right: [30, 40, 50] [13, 21, 30, 40, 50]	✓
✓	6 7 5 21 63 4 9	left: [] right: [] left: [4] right: [] left: [] right: [] left: [] right: [] left: [9] right: [63] left: [4, 5] right: [9, 21, 63] [4, 5, 7, 9, 21, 63]	left: [] right: [] left: [4] right: [] left: [] right: [] left: [] right: [] left: [9] right: [63] left: [4, 5] right: [9, 21, 63] [4, 5, 7, 9, 21, 63]	✓
✓	4 20 35 60 12	left: [] right: [] left: [] right: [] left: [] right: [60] left: [12] right: [35, 60] [12, 20, 35, 60]	left: [] right: [] left: [] right: [] left: [] right: [60] left: [12] right: [35, 60] [12, 20, 35, 60]	✓

Passed all tests! ✓

Correct

Marks for this submission: 20.00/20.00.

Question **2**

Correct

Mark 20.00 out of 20.00

Rat In A Maze Problem

You are given a maze in the form of a matrix of size $n \times n$. Each cell is either clear or blocked denoted by 1 and 0 respectively. A rat sits at the top-left cell and there exists a block of cheese at the bottom-right cell. Both these cells are guaranteed to be clear. You need to find if the rat can get the cheese if it can move only in one of the two directions - down and right. It can't move to blocked cells.

Source			
			Dest.

Provide the solution for the above problem Consider $n=4$)

The output (Solution matrix) must be 4×4 matrix with value "1" which indicates the path to destination and "0" for the cell indicating the absence of the path to destination.

Answer: (penalty regime: 0 %)

Reset answer

```

1 N = 4
2
3 def printSolution( sol ):
4
5     for i in sol:
6         for j in i:
7             print(str(j) + " ", end = "")
8             print("")
9
10
11 def isSafe( maze, x, y ):
12
13     if x >= 0 and x < N and y >= 0 and y < N and maze[x][y] == 1:
14         return True
15
16     return False
17
18
19 def solveMaze( maze ):
20
21     # Creating a 4 * 4 2-D list
22     sol = [ [ 0 for j in range(4) ] for i in range(4) ]

```

	Expected	Got	
✓	1 0 0 0 1 1 0 0 0 1 0 0 0 1 1 1	1 0 0 0 1 1 0 0 0 1 0 0 0 1 1 1	✓

Passed all tests! ✓

Correct

Marks for this submission: 20.00/20.00.

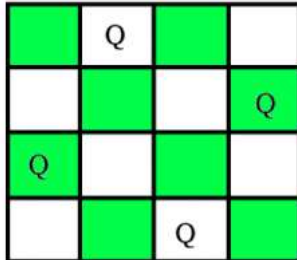
Question **3**

Correct

Mark 20.00 out of 20.00

You are given an integer **N**. For a given **N x N** chessboard, find a way to place '**N**' queens such that no queen can attack any other queen on the chessboard.

A queen can be attacked when it lies in the same row, column, or the same diagonal as any of the other queens. **You have to print one such configuration.**



Note :

Get the input from the user for **N** . The value of **N** must be from 1 to 4

If solution exists Print a binary matrix as output that has 1s for the cells where queens are placed

If there is no solution to the problem print "Solution does not exist"

For example:

Input	Result
4	0 0 1 0 1 0 0 0 0 0 0 1 0 1 0 0

Answer: (penalty regime: 0 %)

Reset answer

```

1 global N
2 N = int(input())
3
4 def printSolution(board):
5     for i in range(N):
6         for j in range(N):
7             print(board[i][j], end = " ")
8         print()
9
10 def isSafe(board, row, col):
11
12     # Check this row on left side
13     for i in range(col):
14         if board[row][i] == 1:
15             return False
16
17     # Check upper diagonal on left side
18     for i, j in zip(range(row, -1, -1),
19                     range(col, -1, -1)):
20         if board[i][j] == 1:
21             return False
22

```

	Input	Expected	Got	
✓	4	0 0 1 0 1 0 0 0 0 0 0 1 0 1 0 0	0 0 1 0 1 0 0 0 0 0 0 1 0 1 0 0	✓
✓	2	Solution does not exist	Solution does not exist	✓

Passed all tests! ✓

Correct

Marks for this submission: 20.00/20.00.

Question **4**

Correct

Mark 20.00 out of 20.00

SUBSET SUM PROBLEM**COUNT OF SUBSETS WITH SUM EQUAL TO X**

Given an array `arr[]` of length `N` and an integer `X`, the task is to find the number of subsets with a sum equal to `X`.

Examples:

Input: `arr[] = {1, 2, 3, 3}, X = 6`

Output: 3

All the possible subsets are {1, 2, 3},
{1, 2, 3} and {3, 3}

Input: `arr[] = {1, 1, 1, 1}, X = 1`

Output: 4

THE INPUT

1.No of numbers

2.Get the numbers

3.Sum Value

For example:

Input	Result
4 2 4 5 9 15	1
6 3 34 4 12 3 2 7	2

Answer: (penalty regime: 0 %)

Reset answer

```

1 def subsetSum(arr, n, i, sum, count):
2     #Write your code here
3     if i == n:
4         if sum == 0:
5             return count + 1
6         return count
7
8     # Include the current element in the subset
9     count = subsetSum(arr, n, i + 1, sum - arr[i], count)
10
11    # Exclude the current element from the subset
12    count = subsetSum(arr, n, i + 1, sum, count)
13
14    return count
15
16 arr=[]
17 size=int(input())
18 for j in range(size):
19     value=int(input())
20     arr.append(value)

```



```
21 | sum = int(input())
22 | n = len(arr)
```

	Input	Expected	Got	
✓	4 2 4 5 9 15	1	1	✓
✓	6 10 20 25 50 70 90 80	2	2	✓
✓	5 4 16 5 23 12 9	1	1	✓

Passed all tests! ✓

Correct

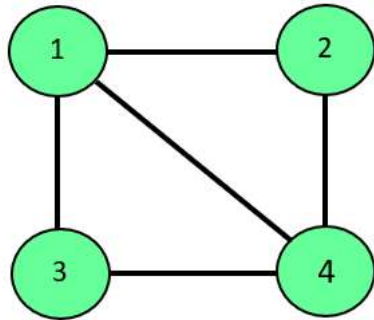
Marks for this submission: 20.00/20.00.

Question 5

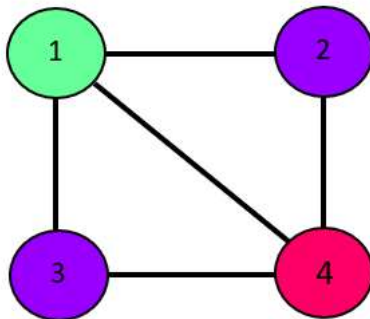
Not answered

Mark 0.00 out of 20.00

The m-coloring problem states, "We are given an undirected graph and m number of different colors. We have to check if we can assign colors to the vertices of the graphs in such a way that no two adjacent vertices have the same color."



0	1	1	1
1	0	0	1
1	0	0	1
1	1	1	0



Node 1 -> color 1
Node 2 -> color 2
Node 3 -> color 2
Node 4 -> color 3

For example:

Result

Solution Exists: Following are the assigned colors
 Vertex 1 is given color: 1
 Vertex 2 is given color: 2
 Vertex 3 is given color: 3
 Vertex 4 is given color: 2

Answer: (penalty regime: 0 %)

Reset answer

```

1 def isSafe(graph, color):
2     for i in range(4):
3         for j in range(i + 1, 4):
4             if (graph[i][j] and color[j] == color[i]):
5                 return False
6     return True
7
8 def graphColoring(graph, m, i, color):
9
10    ##### Add your code here #####
11 def display(color):
12     print("Solution Exists: " " Following are the assigned colors ")
13     for i in range(4):
14         print("Vertex", i+1, " is given color: ",color[i])
15 if __name__ == '__main__':
16     graph = [
17         [ 0, 1, 1, 1 ],
18         [ 1, 0, 1, 0 ],
19         [ 1, 1, 0, 1 ],
20         [ 1, 0, 1, 0 ],
21     ]
22     m = 3 # Number of colors

```