Started on	Friday, 11 April 2025, 10:22 AM
State	Finished
Completed on	Friday, 11 April 2025, 12:44 PM
Time taken	2 hours 22 mins
Overdue	22 mins 7 secs
Grade	**80.00** out of 100.00

Question **1**

Correct

Mark 20.00 out of 20.00

Write a python program to implement merge sort using iterative approach on the given list of float values.

For example:

Test	Input	Result

`Merge_Sort(S)`	5
	10.2
	21.3
	3.5
	7.8
	9.8
		`The Original array is:  [10.2, 21.3, 3.5, 7.8, 9.8]`
		`Array after sorting is:  [3.5, 7.8, 9.8, 10.2, 21.3]`

`Merge_Sort(S)`	6
	20.3
	41.2
	5.3
	6.2
	8.1
	65.2
		`The Original array is:  [20.3, 41.2, 5.3, 6.2, 8.1, 65.2]`
		`Array after sorting is:  [5.3, 6.2, 8.1, 20.3, 41.2, 65.2]`

Answer: (penalty regime: 0 %)

```python
def Merge_Sort(S):
    if len(S) > 1:
        mid = len(S) // 2
        L = S[:mid]
        R = S[mid:]

        Merge_Sort(L)
        Merge_Sort(R)

        i = j = k = 0


        while i < len(L) and j < len(R):
            if L[i] < R[j]:
                S[k] = L[i]
                i += 1
            else:
                S[k] = R[j]
                j += 1
            k += 1


```

	Test	Input	Expected	Got	

✓	`Merge_Sort(S)`	5
		10.2
		21.3
		3.5
		7.8
		9.8
			`The Original array is:  [10.2, 21.3, 3.5, 7.8, 9.8]`
			`Array after sorting is:  [3.5, 7.8, 9.8, 10.2, 21.3]`
				`The Original array is:  [10.2, 21.3, 3.5, 7.8, 9.8]`
				`Array after sorting is:  [3.5, 7.8, 9.8, 10.2, 21.3]`
					✓

	Test	Input	Expected	Got	
✓	Merge_Sort(S)	6 20.3 41.2 5.3 6.2 8.1 65.2	The Original array is: [20.3, 41.2, 5.3, 6.2, 8.1, 65.2] Array after sorting is: [5.3, 6.2, 8.1, 20.3, 41.2, 65.2]	The Original array is: [20.3, 41.2, 5.3, 6.2, 8.1, 65.2] Array after sorting is: [5.3, 6.2, 8.1, 20.3, 41.2, 65.2]	✓
✓	Merge_Sort(S)	4 2.3 6.1 4.5 96.5	The Original array is: [2.3, 6.1, 4.5, 96.5] Array after sorting is: [2.3, 4.5, 6.1, 96.5]	The Original array is: [2.3, 6.1, 4.5, 96.5] Array after sorting is: [2.3, 4.5, 6.1, 96.5]	✓

Passed all tests! ✓

Correct

Marks for this submission: 20.00/20.00.

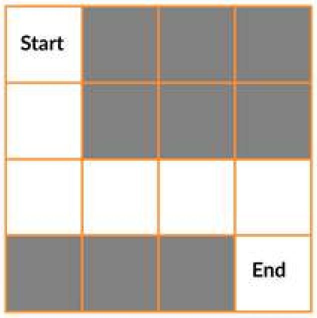
Question **2**

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 * 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.



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

```python
N = 4
def printSolution( sol ):
    for i in sol:
        for j in i:
            print(str(j) + " ", end ="")
        print("")

def isSafe( maze, x, y ):
    if x >= 0 and x < N and y >= 0 and y < N and maze[x][y] == 1:
        return True
    return False

def solveMaze( maze ):
    sol = [ [ 0 for j in range(4) ] for i in range(4) ]
    if solveMazeUtil(maze, 0, 0, sol) == False:
        print("Solution doesn't exist");
        return False
    printSolution(sol)
    return True

def solveMazeUtil(maze, x, y, sol):
    if x == N - 1 and y == N - 1:
```

	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.

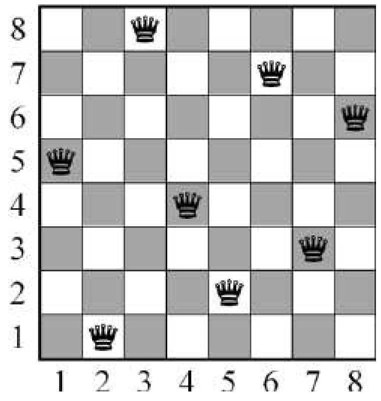
Question **3**

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 8

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

5	1 0 0 0 0
	0 0 0 1 0
	0 1 0 0 0
	0 0 0 0 1
	0 0 1 0 0

Answer: (penalty regime: 0 %)

Reset answer

```
global N
N = int(input())

def printSolution(board):
    for i in range(N):
        for j in range(N):
            print(board[i][j], end = " ")
        print()



def isSafe(board, row, col):
    for i in range(col):
        if board[row][i] == 1:
            return False

    for i, j in zip(range(row, -1, -1), range(col, -1, -1)):
        if board[i][j] == 1:
            return False

    for i, j in zip(range(row, N, 1), range(col, -1, -1)):
        if board[i][j] == 1:
```

	Input	Expected	Got	

✓	5	`1 0 0 0 0`
		`0 0 0 1 0`
		`0 1 0 0 0`
		`0 0 0 0 1`
		`0 0 1 0 0`
			`1 0 0 0 0`
			`0 0 0 1 0`
			`0 1 0 0 0`
			`0 0 0 0 1`
			`0 0 1 0 0`
				✓

✓	2	`Solution does not exist`	`Solution does not exist`	✓

✓	8	`1 0 0 0 0 0 0 0`
		`0 0 0 0 0 0 1 0`
		`0 0 0 0 1 0 0 0`
		`0 0 0 0 0 0 0 1`
		`0 1 0 0 0 0 0 0`
		`0 0 0 1 0 0 0 0`
		`0 0 0 0 0 1 0 0`
		`0 0 1 0 0 0 0 0`
			`1 0 0 0 0 0 0 0`
			`0 0 0 0 0 0 1 0`
			`0 0 0 0 1 0 0 0`
			`0 0 0 0 0 0 0 1`
			`0 1 0 0 0 0 0 0`
			`0 0 0 1 0 0 0 0`
			`0 0 0 0 0 1 0 0`
			`0 0 1 0 0 0 0 0`
				✓

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

Given a set of positive integers, and a value sum, determine that the sum of the subset of a given set is equal to the given sum.

Write the program for subset sum problem.

INPUT

1.no of elements

2.Input the given elements

3.Get the target sum

OUTPUT

True , if subset with required sum is found

False , if subset with required sum is not found

For example:

Input	Result
5 4 16 5 23 12 9	4 16 5 23 12 True,subset found

Answer: (penalty regime: 0 %)

Reset answer

```python
def SubsetSum(a,i,sum,target,n):
    if i==n:
        return sum==target
    if sum==target:
        return False
    if sum>target:
        return True
    return SubsetSum(a,i+1,sum,target,n) or SubsetSum(a,i+1,sum+a[i],target,n)









a=[]
size=int(input())
for i in range(size):
    x=int(input())
    a.append(x)
```

	Input	Expected	Got	
✓	5 4 16 5 23 12 9	4 16 5 23 12 True,subset found	4 16 5 23 12 True,subset found	✓
✓	4 1 2 3 4 11	1 2 3 4 False,subset not found	1 2 3 4 False,subset not found	✓
✓	7 10 7 5 18 12 20 15 35	10 7 5 18 12 20 15 True,subset found	10 7 5 18 12 20 15 True,subset found	✓

Passed all tests! ✓

Correct

Marks for this submission: 20.00/20.00.

Question **5**

Incorrect

Mark 0.00 out of 20.00

Greedy coloring doesn't always use the minimum number of colors possible to color a graph. For a graph of maximum degree `x`, greedy coloring will use at most `x+1` color. Greedy coloring can be arbitrarily bad;

Create a python program to implement graph colouring using Greedy algorithm.

For example:

Test	Result

`colorGraph(graph, n)`	`Color assigned to vertex 0 is BLUE`
	`Color assigned to vertex 1 is GREEN`
	`Color assigned to vertex 2 is BLUE`
	`Color assigned to vertex 3 is RED`
	`Color assigned to vertex 4 is RED`
	`Color assigned to vertex 5 is GREEN`

Answer: (penalty regime: 0 %)

Reset answer

```python
class Graph:
    def __init__(self, edges, n):
        self.adjList = [[] for _ in range(n)]

        # add edges to the undirected graph
        for (src, dest) in edges:
            self.adjList[src].append(dest)
            self.adjList[dest].append(src)
def colorGraph(graph, n):
    ############ Add your code here ##############
if __name__ == '__main__':
    colors = ['', 'BLUE', 'GREEN', 'RED', 'YELLOW', 'ORANGE', 'PINK',
              'BLACK', 'BROWN', 'WHITE', 'PURPLE', 'VOILET']
    edges = [(0, 1), (0, 4), (0, 5), (4, 5), (1, 4), (1, 3), (2, 3), (2, 4)]
    n = 6
    graph = Graph(edges, n)
    colorGraph(graph, n)
```

Syntax Error(s)

```
Sorry: IndentationError: expected an indented block (__tester__.python3, line 11)
```

Incorrect

Marks for this submission: 0.00/20.00.