

Programming Fundamentals

Lab – 8

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BS. Software Eng. - 01B

Q1 – Sequence of Prime Number.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

● Apples-MacBook-Pro:Lab-08 apple$ gcc -o output 3103-Q1.c && ./output
Enter the start of the range: 1
Enter the end of the range: 15
Prime numbers between 1 and 15 are:
2 3 5 7 11 13
○ Apples-MacBook-Pro:Lab-08 apple$ █
```

Q2 – Pattern of Odd Numbers

```
● Apples-MacBook-Pro:Lab-08 apple$ gcc -o output 3103-Q2.c && ./output
Enter an odd number to start the pattern: 13
13 11 9 7 5 3 1
11 9 7 5 3 1
9 7 5 3 1
7 5 3 1
5 3 1
3 1
1
○ Apples-MacBook-Pro:Lab-08 apple$ █
```

Q3 – Find Saddle Point.

```
● Apples-MacBook-Pro:Lab-08 apple$ gcc -o output 3103-Q3.c && ./output
Enter elements of the 3x3 matrix:
Element [0][0]: 1
Element [0][1]: 2
Element [0][2]: 3
Element [1][0]: 4
Element [1][1]: 5
Element [1][2]: 6
Element [2][0]: 7
Element [2][1]: 8
Element [2][2]: 9
Saddle point found at [2][0]: 7
○ Apples-MacBook-Pro:Lab-08 apple$ █
```

Q4 – Matrix Multiplication.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

● Apples-MacBook-Pro:Lab-08 apple$ gcc -o output 3103-Q4.c && ./output
Enter elements of the first 3x3 matrix:
Element [0][0]: 1
Element [0][1]: 2
Element [0][2]: 3
Element [1][0]: 4
Element [1][1]: 5
Element [1][2]: 6
Element [2][0]: 7
Element [2][1]: 8
Element [2][2]: 9
Enter elements of the second 3x3 matrix:
Element [0][0]: 11
Element [0][1]: 2
Element [0][2]: 5
Element [1][0]: 6
Element [1][1]: 8
Element [1][2]: 9
Element [2][0]: 13
Element [2][1]: 6
Element [2][2]: 4
Resultant matrix after multiplication:
62 36 35
152 84 89
242 132 143
○ Apples-MacBook-Pro:Lab-08 apple$ █
```

Q5 – Diamond Pattern.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

● Apples-MacBook-Pro:Lab-08 apple$ gcc -o output 3103-Q5.c && ./output
Enter the number of rows for the upper half of the diamond: 3
  *
 ***
*****
 ***
  *
○ Apples-MacBook-Pro:Lab-08 apple$ █
```

Q6 – Number Pattern.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

- Apples-MacBook-Pro:Lab-08 apple\$ gcc -o output 3103-Q6.c && ./output
1
1 2
1 2 3
1 2 3 4
- Apples-MacBook-Pro:Lab-08 apple\$ █

Q7 – 2D Array Transpose.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

- Apples-MacBook-Pro:Lab-08 apple\$ gcc -o output 3103-Q7.c && ./output
Enter the size of the matrix (e.g., 3 for a 3x3 matrix): 3
Enter elements of the 3x3 matrix:
Element [0][0]: 1
Element [0][1]: 2
Element [0][2]: 3
Element [1][0]: 4
Element [1][1]: 5
Element [1][2]: 6
Element [2][0]: 7
Element [2][1]: 8
Element [2][2]: 9
Transpose of the matrix:
1 4 7
2 5 8
3 6 9
- Apples-MacBook-Pro:Lab-08 apple\$ █

Q8 – Sum of 3D Array.

```
4
5 // Defining a 3D array as 2 pages of 3x3 matrix
6 int array[2][3][3] = {
7     { {1, 2, 3}, {4, 5, 6}, {7, 11, 9} }, // Page 0
8     { {9, 8, 7}, {6, 5, 4}, {3, 2, 1} } // Page 1
9 };
10
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

- Apples-MacBook-Pro:Lab-08 apple\$ gcc -o output 3103-Q8.c && ./output
Sum of elements on Page 0: 48
Sum of elements on Page 1: 45
- Apples-MacBook-Pro:Lab-08 apple\$ █

Q9 – Check Occurences of Numbers.

```
2
3 int main() {
4     int arr[5] = {2, 3, 1, 2, 3}; // Input array
5     int size = 5;

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

- Apples-MacBook-Pro:Lab-08 apple\$ gcc -o output 3103-Q9.c && ./output
Elements occurring more than once: 2 3
- Apples-MacBook-Pro:Lab-08 apple\$ █

Q10 – Pascal's Triangle.

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

● Apples-MacBook-Pro:Lab-08 apple\$ gcc -o output 3103-Q10.c && ./output

Enter the number of rows: 5

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

○ Apples-MacBook-Pro:Lab-08 apple\$ █