

EEE-103: Computer Programming

Topic: Practice Problems (Tracing + Control Statements)

Q1. Trace the output of the following code with proper tracing table

```
1 #include <stdio.h>
2 int main()
3 {
4     int end = 5;
5     int i = 1;
6     while (i <= end) {
7         printf("\n");
8         int j = 1;
9         while (j <= i) {
10            printf("%d ", j);
11            j = j + 1;
12        }
13        i = i + 1;
14    }
15    return 0;
16 }
```

Q2. Trace the output of the following code with proper tracing table

```
1 #include <stdio.h>
2 int main()
3 {
4     int i = 0;
5     for (int i = 0; i < 5; i++)
6     {
7         for (int j = 0; j < 3; j++)
8         {
9             if (i == 3)
10                break;
11            printf("%d", i);
12        }
13        printf("\n");
14    }
15    return 0;
16 }
```

Q3. Trace the output of the following code with proper tracing table

```
1 #include <stdio.h>
2 int main()
3 {
4     int i = 0;
5     for (int i = 0; i < 5; i++)
6     {
7         for (int j = 0; j < 3; j++)
8         {
9             if (j==2)
10                continue;
11             printf("%d ",i);
12         }
13         printf("\n");
14     }
15     return 0;
16 }
```

Q4. EMI Calculation Program

Write a program in C that calculates the monthly EMI for a loan. Take input for principal P , annual interest rate R (in %), and loan tenure N (months). Use the formula:

$$\text{EMI} = \frac{P \cdot r \cdot (1 + r)^N}{(1 + r)^N - 1}, \quad r = \frac{R}{12 \cdot 100}$$

Print the EMI rounded to 2 decimal places.

Q5. Height Comparison Program

Write a program that takes the height of two persons (A and B) in feet and inches. Determine who is taller and by how many feet and inches.

Example:

Person A

ft:5

in:9

Person B

ft:6

in:2

Output: Person B is taller than Person A by 0 ft 5 in

Q6. Palindrome Number Program

A palindrome number remains the same when its digits are reversed. Write a program using a for loop to check if a number is a palindrome.

Examples:

121 -> Palindrome
123 -> Not Palindrome

Q7. Largest of Three Numbers

Write a C program to take three numbers as input and determine the largest number.

Q8. Number Pattern Program

Print the following pattern:

```
....1
...22
..333
.4444
55555
```

Q9. Alphabet Pattern Program

Print the following pattern:

```
....A
...AB
..ABC
. ABCD
ABCDE
```