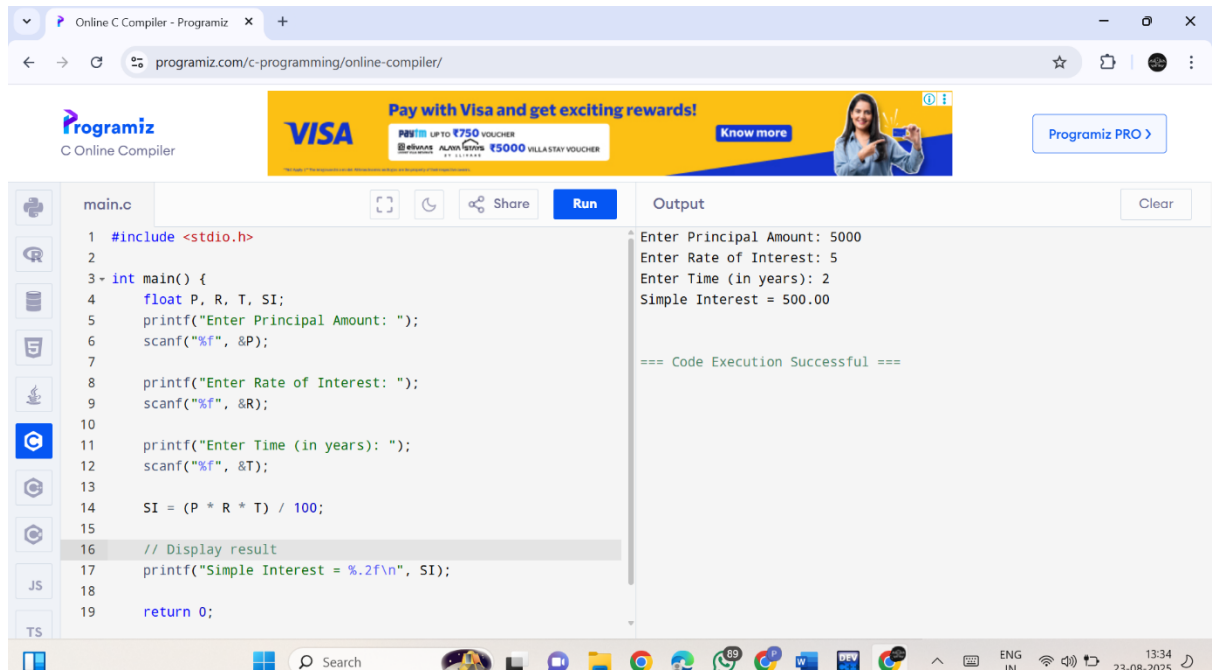


# Lab experiments outputs/Screenshots

## Unit-1:

1. Flowchart / Algorithm for calculating Simple Interest.
2. Write a C program to calculate area and perimeter of rectangle/circle.



The screenshot shows the Programiz Online C Compiler interface. The code editor contains a C program for calculating Simple Interest. The output window shows the program's execution with the following input and output:

```
#include <stdio.h>

int main() {
    float P, R, T, SI;
    printf("Enter Principal Amount: ");
    scanf("%f", &P);

    printf("Enter Rate of Interest: ");
    scanf("%f", &R);

    printf("Enter Time (in years): ");
    scanf("%f", &T);

    SI = (P * R * T) / 100;

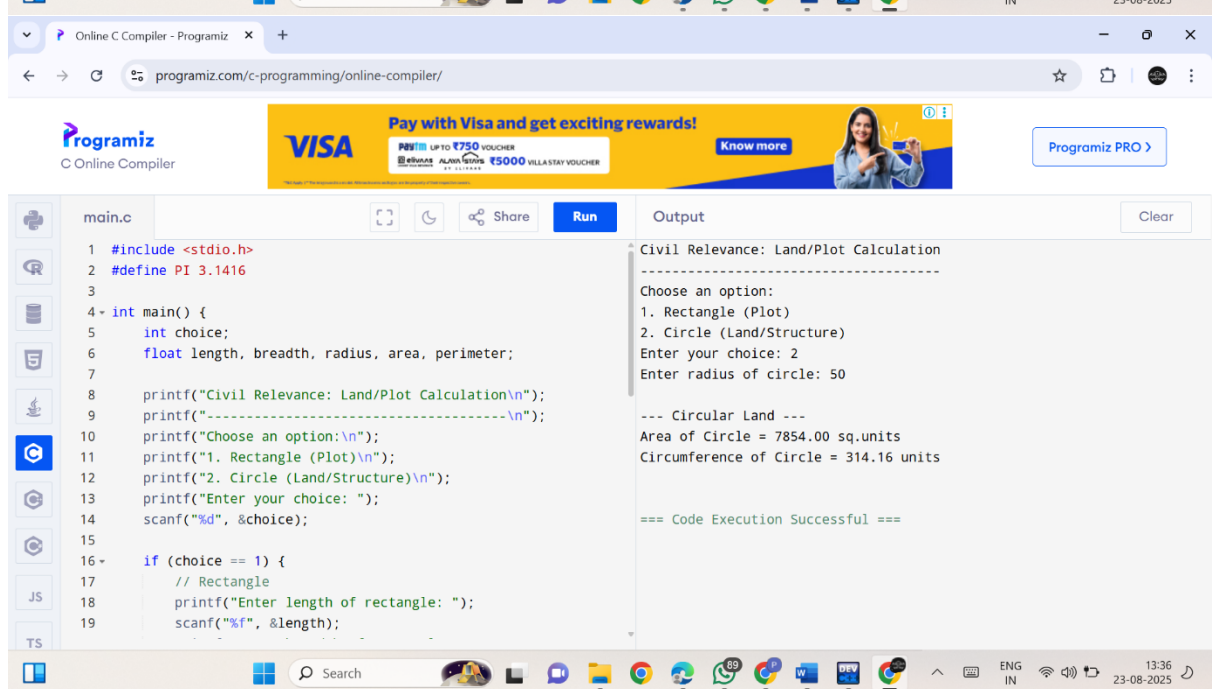
    // Display result
    printf("Simple Interest = %.2f\n", SI);

    return 0;
}
```

Output:

```
Enter Principal Amount: 5000
Enter Rate of Interest: 5
Enter Time (in years): 2
Simple Interest = 500.00

=== Code Execution Successful ===
```



The screenshot shows the Programiz Online C Compiler interface. The code editor contains a C program for calculating the area and perimeter of a rectangle or circle. The output window shows the program's execution with the following input and output:

```
#include <stdio.h>
#define PI 3.1416

int main() {
    int choice;
    float length, breadth, radius, area, perimeter;

    printf("Civil Relevance: Land/Plot Calculation\n");
    printf("-----\n");
    printf("Choose an option:\n");
    printf("1. Rectangle (Plot)\n");
    printf("2. Circle (Land/Structure)\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    if (choice == 1) {
        // Rectangle
        printf("Enter length of rectangle: ");
        scanf("%f", &length);
    }
}
```

Output:

```
Civil Relevance: Land/Plot Calculation
-----
Choose an option:
1. Rectangle (Plot)
2. Circle (Land/Structure)
Enter your choice: 2
Enter radius of circle: 50

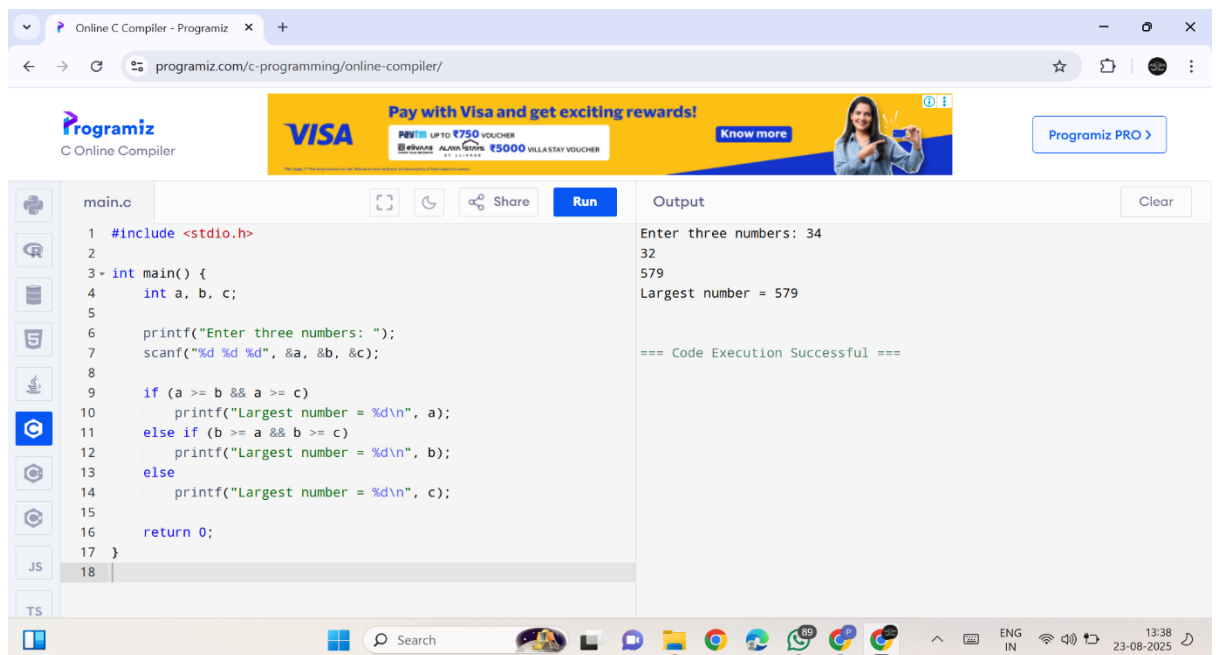
--- Circular Land ---
Area of Circle = 7854.00 sq.units
Circumference of Circle = 314.16 units

=== Code Execution Successful ===
```

## Unit-2:

1. C program to check if a given number is prime or not.
2. C program to find the largest of three numbers.
3. C program to calculate safe load = (Load / Factor of Safety).

4.



The screenshot displays the Programiz Online C Compiler web interface. The browser address bar shows the URL `programiz.com/c-programming/online-compiler/`. The page features a header with the Programiz logo, a Visa advertisement, and a 'Programiz PRO' button. The main workspace is divided into three sections: a file explorer on the left, a code editor in the center, and an output console on the right. The code editor contains a C program named `main.c` that finds the largest of three numbers. The output console shows the program's execution with the input numbers 34, 32, and 579, resulting in the output 'Largest number = 579' and a success message.

```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int a, b, c;
5
6     printf("Enter three numbers: ");
7     scanf("%d %d %d", &a, &b, &c);
8
9     if (a >= b && a >= c)
10        printf("Largest number = %d\n", a);
11    else if (b >= a && b >= c)
12        printf("Largest number = %d\n", b);
13    else
14        printf("Largest number = %d\n", c);
15
16    return 0;
17 }
18
```

Output

```
Enter three numbers: 34
32
579
Largest number = 579

=== Code Execution Successful ===
```

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```

main.c
1 #include <stdio.h>
2
3 int main() {
4     int num, i, isPrime = 1;
5
6     printf("Enter a number: ");
7     scanf("%d", &num);
8
9     if (num <= 1) {
10        isPrime = 0; // 0 and 1 are not prime
11    } else {
12        for (i = 2; i <= num / 2; i++) {
13            if (num % i == 0) {
14                isPrime = 0;
15                break;
16            }
17        }
18    }
19 }

```

Output

Enter a number: 67  
67 is a Prime number.

=== Code Execution Successful ===

13:37 23-08-2025

Programiz C Online Compiler

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```

main.c
1 #include <stdio.h>
2
3 int main() {
4     float load, fos, safeLoad;
5
6     printf("Civil Relevance: Safe Load Calculation\n");
7     printf("-----\n");
8     printf("Enter Load (in kN): ");
9     scanf("%f", &load);
10    printf("Enter Factor of Safety: ");
11    scanf("%f", &fos);
12
13    if (fos > 0) {
14        safeLoad = load / fos;
15        printf("Safe Load = %.2f kN\n", safeLoad);
16    } else {
17        printf("Factor of Safety must be greater than zero!\n");
18    }
19 }

```

Output

Civil Relevance: Safe Load Calculation  
-----  
Enter Load (in kN): 234  
Enter Factor of Safety: 4  
Safe Load = 58.50 kN

=== Code Execution Successful ===

13:39 23-08-2025

### Unit-3:

1. C program to print Fibonacci series up to n terms.
2. C program to generate multiplication tables.
3. C program to calculate factorial of a number.

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```
1 #include <stdio.h>
2
3 int main() {
4     int num, i;
5
6     printf("Enter a number to generate its multiplication table:
7 ");
8     scanf("%d", &num);
9
10    printf("\nMultiplication Table of %d:\n", num);
11    for (i = 1; i <= 10; i++) {
12        printf("%d x %d = %d\n", num, i, num * i);
13    }
14    return 0;
15 }
```

Output

Clear

Enter a number to generate its multiplication table: 6

Multiplication Table of 6:

6 x 1 = 6

6 x 2 = 12

6 x 3 = 18

6 x 4 = 24

6 x 5 = 30

6 x 6 = 36

6 x 7 = 42

6 x 8 = 48

6 x 9 = 54

6 x 10 = 60

=== Code Execution Successful ===

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13:40

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```
1 #include <stdio.h>
2
3 int main() {
4     int n, i;
5     long long first = 0, second = 1, next;
6
7     printf("Enter number of terms: ");
8     scanf("%d", &n);
9
10    printf("Fibonacci Series: ");
11
12    for (i = 1; i <= n; i++) {
13        printf("%lld ", first);
14        next = first + second;
15        first = second;
16        second = next;
17    }
18
19    printf("\n");
20 }
```

Output

Clear

Enter number of terms: 8

Fibonacci Series: 0 1 1 2 3 5 8 13

=== Code Execution Successful ===

Search

ENG IN

13:39

23-08-2025

The screenshot shows the Programiz Online C Compiler interface. The code in `main.c` is as follows:

```
1 #include <stdio.h>
2
3 int main() {
4     int n, i;
5     long long fact = 1;
6
7     printf("Enter a number: ");
8     scanf("%d", &n);
9
10    if (n < 0) {
11        printf("Factorial is not defined for negative numbers\n");
12    } else {
13        for (i = 1; i <= n; i++) {
14            fact *= i;
15        }
16        printf("Factorial of %d = %lld\n", n, fact);
17    }
18 }
```

The output shows the user entered 5, and the program calculated the factorial of 5 as 120. The execution was successful.

## UNIT-4:

1. C program to calculate average marks of n students using arrays.
2. C program to reverse a string.
3. C program to compute matrix addition / multiplication

The screenshot shows the Programiz Online C Compiler interface. The code in `main.c` is as follows:

```
36
37 else if (choice == 2) {
38     // Matrix Multiplication
39     printf("Enter rows and columns of Matrix A: ");
40     scanf("%d %d", &r1, &c1);
41     printf("Enter rows and columns of Matrix B: ");
42     scanf("%d %d", &r2, &c2);
43
44     if (c1 != r2) {
45         printf("Matrix multiplication not possible!\n");
46         return 0;
47     }
48
49     printf("Enter elements of Matrix A:\n");
50     for (i = 0; i < r1; i++)
51         for (j = 0; j < c1; j++)
52             scanf("%d", &A[i][j]);
53
54     printf("Enter elements of Matrix B:\n");
55     for (i = 0; i < r2; i++)
```

The output shows the user chose operation 2 (Matrix Multiplication). They entered rows and columns for Matrix A (1, 2) and Matrix B (2, 2). The program prompts for the elements of Matrix A and Matrix B.

The top screenshot displays the Programiz Online C Compiler interface. The code in `main.c` is as follows:

```
3- int main() {
4-     int n, i;
5-     float marks[100], sum = 0, avg;
6-
7-     printf("Enter number of students: ");
8-     scanf("%d", &n);
9-
10-    for (i = 0; i < n; i++) {
11-        printf("Enter marks of student %d: ", i + 1);
12-        scanf("%f", &marks[i]);
13-        sum += marks[i];
14-    }
15-
16-    avg = sum / n;
17-    printf("Average Marks = %.2f\n", avg);
18-
19-    return 0;
20- }
```

The output shows the program execution with the following input and output:

```
* Enter number of students: 4
Enter marks of student 1: 98
Enter marks of student 2: 97
Enter marks of student 3: 79
Enter marks of student 4: 96
Average Marks = 92.50

=== Code Execution Successful ===
```

The bottom screenshot shows the same interface with a different C program. The code in `main.c` is as follows:

```
1 #include <stdio.h>
2 #include <string.h>
3
4- int main() {
5-     char str[100], rev[100];
6-     int i, len;
7-
8-     printf("Enter a string: ");
9-     fgets(str, sizeof(str), stdin);
10-
11-    // Remove newline if fgets stores it
12-    str[strcspn(str, "\n")] = '\0';
13-
14-    len = strlen(str);
15-
16-    for (i = 0; i < len; i++) {
17-        rev[i] = str[len - i - 1];
18-    }
19-    rev[len] = '\0';
```

The output shows the program execution with the following input and output:

```
* Enter a string: Problem solving skills
Reversed String: slliks gnivlos melborP

=== Code Execution Successful ===
```

## UNIT-5:

1. Write a C program to calculate cement, sand, aggregate requirement for concrete.
2. C program for student grade calculation system.
3. C program to calculate BMI of a person.

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```
main.c
1 #include <stdio.h>
2
3 int main() {
4     int n, i;
5     float marks[10], sum = 0, percentage;
6     char grade;
7
8     printf("CSE Relevance: Student Grade Calculation System\n");
9     printf("-----\n");
10
11    printf("Enter number of subjects: ");
12    scanf("%d", &n);
13
14    for (i = 0; i < n; i++) {
15        printf("Enter marks in subject %d: ", i + 1);
16        scanf("%f", &marks[i]);
17        sum += marks[i];
18    }
19 }
```

Output

CSE Relevance: Student Grade Calculation System  
-----  
Enter number of subjects: 3  
Enter marks in subject 1: 89  
Enter marks in subject 2: 87  
Enter marks in subject 3: 98  
Total Marks = 274.00  
Percentage = 91.33%  
Grade = A  
=== Code Execution Successful ===

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```
main.c
17 aggRatio = 3;
18 totalRatio = cementRatio + sandRatio + aggRatio;
19
20 // Calculate material requirements (approximate)
21 cement = (cementRatio / totalRatio) * volume * 1440; // kg
22    (density of cement ~1440 kg/m³)
23 sand = (sandRatio / totalRatio) * volume * 1600; // kg
24    (density of sand ~1600 kg/m³)
25 aggregate = (aggRatio / totalRatio) * volume * 1450; // kg
26    (density of aggregate ~1450 kg/m³)
27
28 printf("\nFor %.2f m³ of M20 concrete:\n", volume);
29 printf("Cement Required = %.2f kg\n", cement);
30 printf("Sand Required = %.2f kg\n", sand);
31 printf("Aggregate Required = %.2f kg\n", aggregate);
32
33 return 0;
34 }
```

Output

Civil Relevance: Concrete Mix Calculation  
-----  
Enter volume of concrete (in m³): 1  
For 1.00 m³ of M20 concrete:  
Cement Required = 261.82 kg  
Sand Required = 436.36 kg  
Aggregate Required = 790.91 kg  
=== Code Execution Successful ===

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Run

Clear

```
10 scanf("%f", &weight);
11 printf("Enter height (in meters): ");
12 scanf("%f", &height);
13
14 bmi = weight / (height * height);
15
16 printf("BMI = %.2f\n", bmi);
17
18 if (bmi < 18.5)
19     printf("Category: Underweight\n");
20 else if (bmi >= 18.5 && bmi < 24.9)
21     printf("Category: Normal weight\n");
22 else if (bmi >= 25 && bmi < 29.9)
23     printf("Category: Overweight\n");
24 else
25     printf("Category: Obese\n");
26
27 return 0;
28 }
```

Output

Common Application: BMI Calculator

-----

Enter weight (in kg):

5

Enter height (in meters): 5

BMI = 0.20

Category: Underweight

=== Code Execution Successful ===

Search

ENG IN

14:01

23-08-2025