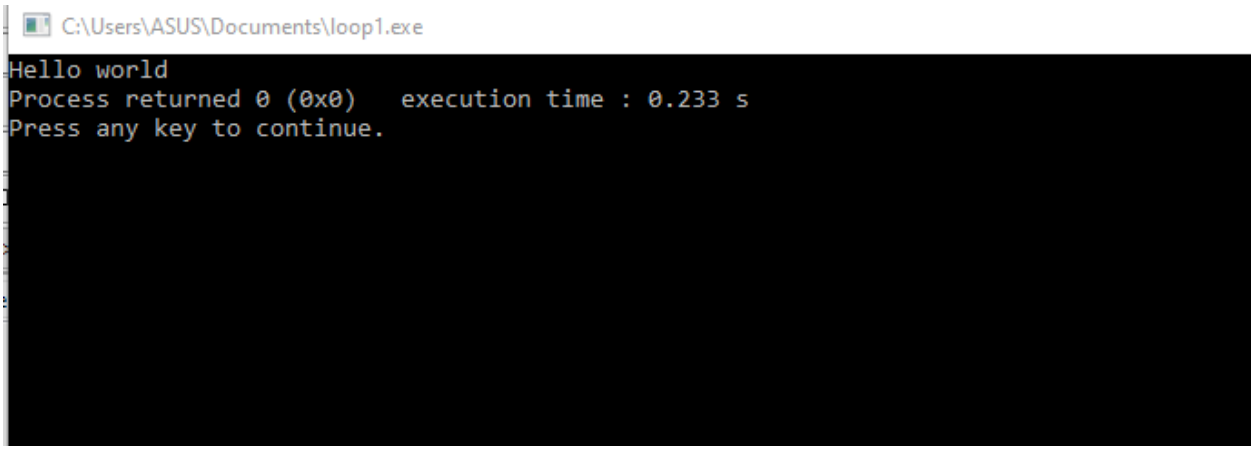
Perimilnary realted C Problem

1. Write a program to print “Hello World!

Input:

```
#include<stdio.h>
int main()
{
  printf("Hello world");
  return 0;

}
```

Output:



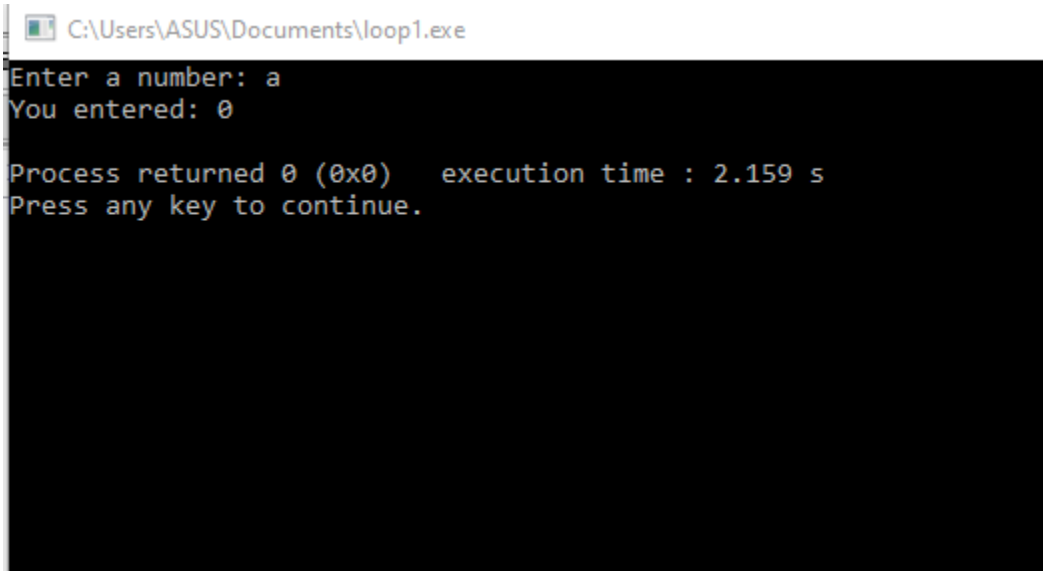
2. Write a program to take input from the keyboard

Input:

```
#include <stdio.h>
```

```
int main() {
    // Declare a variable to store the input
    int userInput;

    // Prompt the user to enter a value
    printf("Enter a number: ");

    // Read the input from the keyboard
    scanf("%d", &userInput);

    // Display the entered value
    printf("You entered: %d\n", userInput);

    return 0;
}
```

Output:



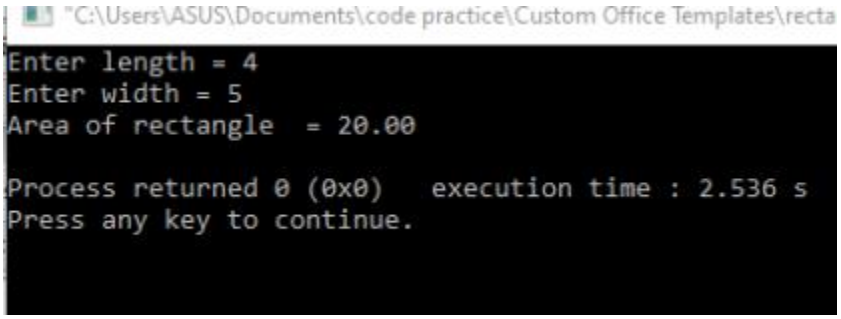
3. The length and height of a rectangle are input through the keyboard. Write a program to find the area & perimeter of the rectangle.

Input:

```
#include<stdio.h>

int main()

{

float length,width,area;

printf("Enter length = ");

scanf("%f",&length);

printf("Enter width = ");

scanf("%f",&width);

area = length * width;

printf("Area of rectangle = %.2f\n",area);
```

}

Output:



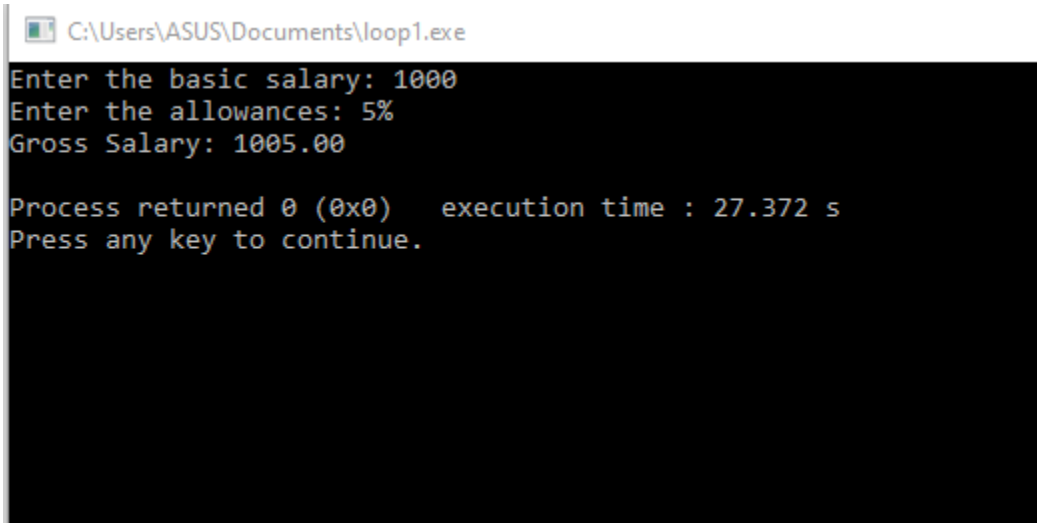
4. Rahim's basic salary is input through the keyboard. His House rent allowance is 30% of his basic salary and his medical allowance is 5% of his basic salary. He gets an extra 1000 tk as a technical allowance. Write a program to calculate his gross salary and print the result.

Input:

```
#include <stdio.h>

int main() {
    // Declare variables
    float basicSalary, allowances, grossSalary;

    // Prompt the user to enter basic salary
    printf("Enter the basic salary: ");
    scanf("%f", &basicSalary);
```

```
    // Prompt the user to enter allowances
    printf("Enter the allowances: ");
    scanf("%f", &allowances);

    // Calculate gross salary
    grossSalary = basicSalary + allowances;

    // Display the result
    printf("Gross Salary: %.2f\n", grossSalary);

    return 0;
}
```

Output:

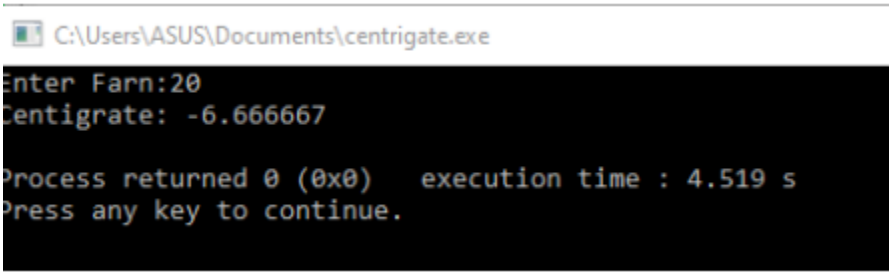


5. The temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into centigrade degrees.

Input:

```
#include<stdio.h>

int main()

{

float c,F;

printf("Enter Centregrade=");

scanf("%f",&c);

F = (C * 1.8)/5

printf("%f",A);

}
```

Output:



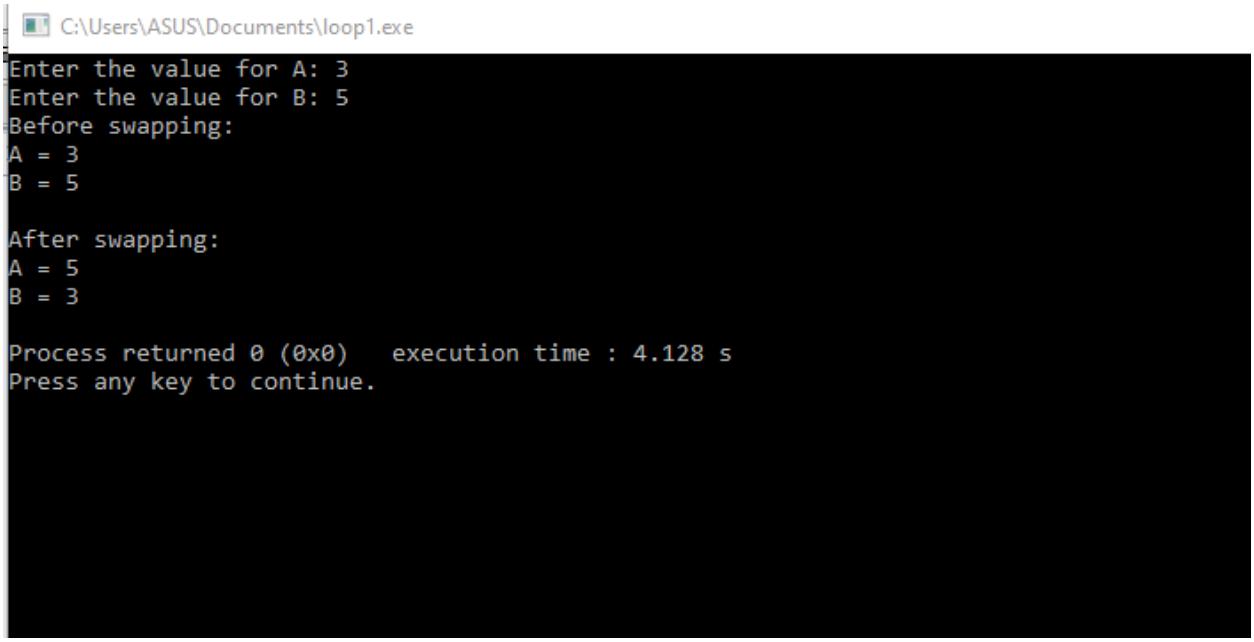
6. Two numbers are input through the keyboard into two locations A and B. Write a program to interchange the contents of A and B.

Input:

```
#include <stdio.h>

int main() {
    // Declare variables
    int A, B;

    // Prompt the user to enter values for A and B
    printf("Enter the value for A: ");
    scanf("%d", &A);

    printf("Enter the value for B: ");
    scanf("%d", &B);

    // Display the values before swapping
    printf("Before swapping:\n");
    printf("A = %d\n", A);
    printf("B = %d\n", B);

    // Swap the contents of A and B without using a temporary variable
```

```
    A = A + B;
    B = A - B;
    A = A - B;

    // Display the values after swapping
    printf("\nAfter swapping:\n");
    printf("A = %d\n", A);
    printf("B = %d\n", B);

    return 0;
}
```

Output:



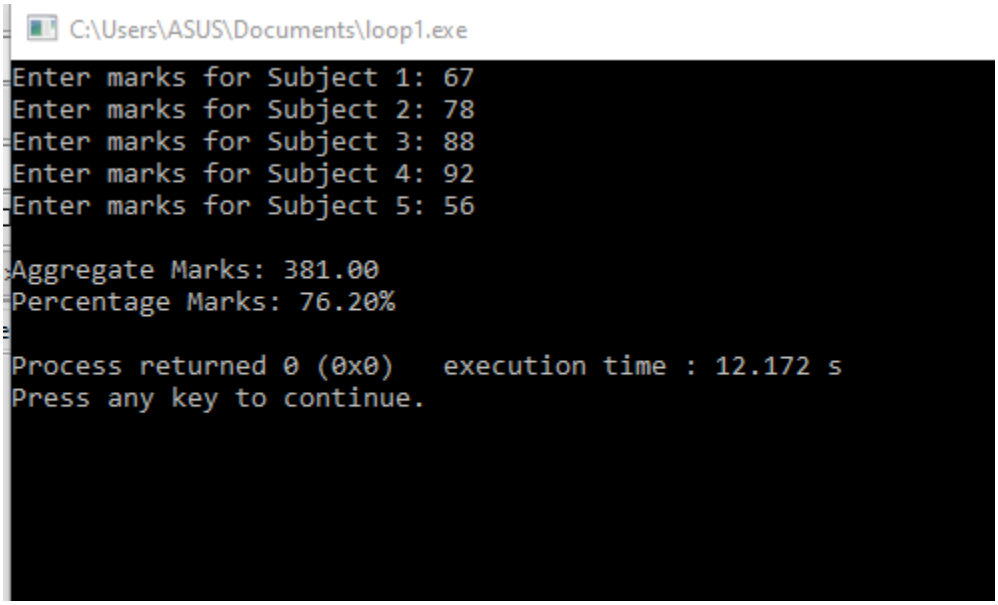
7. If marks obtained by a student in 5 different subjects are input from the keyboard, find out the aggregate marks and percentage marks obtained by the student.

Input:

```
#include <stdio.h>

int main() {
   // Declare variables
   float subjectMarks[5], aggregateMarks, percentage;

   // Prompt the user to enter marks for each subject
   for (int i = 0; i < 5; ++i) {
      printf("Enter marks for Subject %d: ", i + 1);
      scanf("%f", &subjectMarks[i]);
   }

   // Calculate aggregate marks
   aggregateMarks = subjectMarks[0] + subjectMarks[1] +
subjectMarks[2] + subjectMarks[3] + subjectMarks[4];

   // Calculate percentage
   percentage = (aggregateMarks / (5 * 100)) * 100;
```

```
    // Display the results
    printf("\nAggregate Marks: %.2f\n", aggregateMarks);
    printf("Percentage Marks: %.2f%%\n", percentage);

    return 0;
}
```

Output:



8. If a 5-digit number is input through the keyboard, write a program to calculate and print the sum of its digits. [Hint: Use the modulus operator '%']

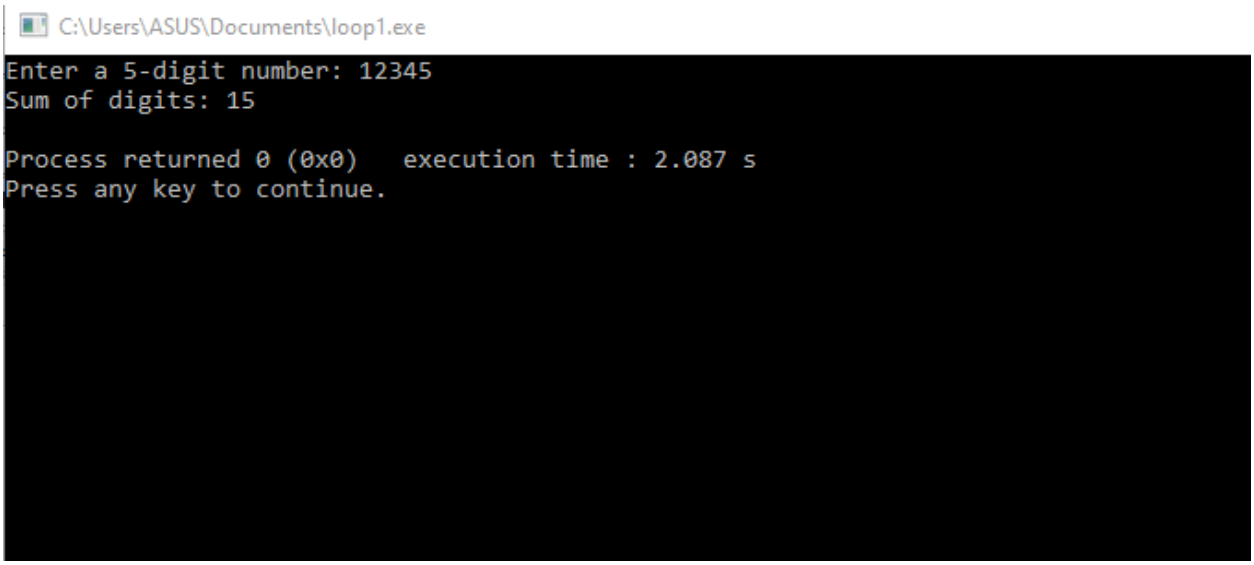
Input:

```
#include <stdio.h>
```

```
int main() {
    // Declare variables
    int number, digit, sum = 0;

    // Prompt the user to enter a 5-digit number
    printf("Enter a 5-digit number: ");
    scanf("%d", &number);

    // Validate if the entered number is 5 digits
    if (number < 10000 || number > 99999) {
        printf("Please enter a valid 5-digit number.\n");
        return 1; // Exit the program with an error code
    }

    // Calculate the sum of digits
    while (number > 0) {
        digit = number % 10; // Get the last digit
        sum += digit; // Add the digit to the sum
        number /= 10; // Remove the last digit
    }

    // Display the sum of digits
```

```
    printf("Sum of digits: %d\n", sum);


    return 0;
}
```

Output:



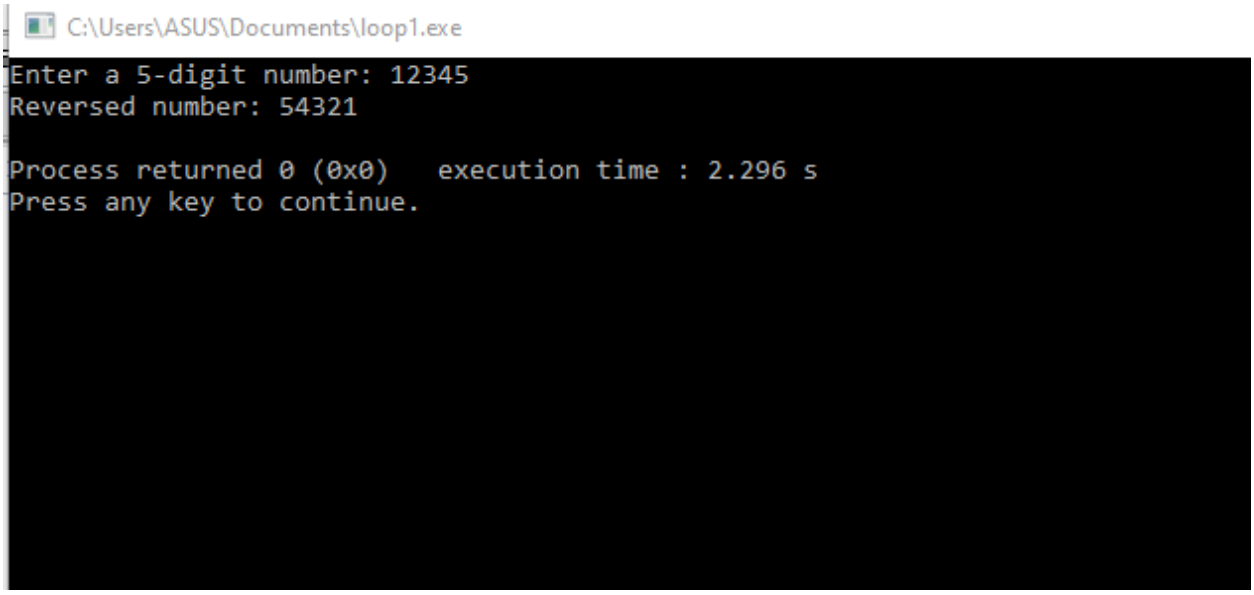
9. If a 5-digit number is input through the keyboard, write a program to reverse the number.

Input:

```
#include <stdio.h>


int main() {
    // Declare variables
    int number, reversedNumber = 0;
```

```
    // Prompt the user to enter a 5-digit number
    printf("Enter a 5-digit number: ");
    scanf("%d", &number);

    // Validate if the entered number is 5 digits
    if (number < 10000 || number > 99999) {
        printf("Please enter a valid 5-digit number.\n");
        return 1; // Exit the program with an error code
    }

    // Reverse the number
    while (number > 0) {
        reversedNumber = reversedNumber * 10 + number % 10; //
Reverse the number
        number /= 10; // Remove the last digit
    }

    // Display the reversed number
    printf("Reversed number: %d\n", reversedNumber);

    return 0;
}
```

Output:



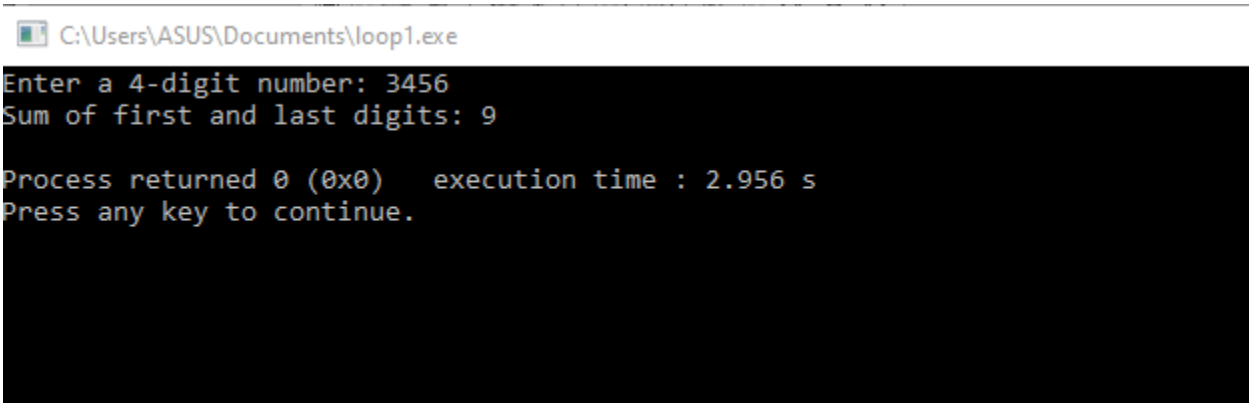
10. If a 4-digit number is input through the keyboard, write a program to obtain the sum of the first and last digits of this number.

Input:

```
#include <stdio.h>


int main() {
    // Declare variables
    int number, firstDigit, lastDigit, sum;


    // Prompt the user to enter a 4-digit number
    printf("Enter a 4-digit number: ");
    scanf("%d", &number);
```

```
    // Validate if the entered number is 4 digits
    if (number < 1000 || number > 9999) {
        printf("Please enter a valid 4-digit number.\n");
        return 1; // Exit the program with an error code
    }

    // Extract the first and last digits
    lastDigit = number % 10; // Get the last digit
    firstDigit = number / 1000; // Get the first digit

    // Calculate the sum of the first and last digits
    sum = firstDigit + lastDigit;

    // Display the sum
    printf("Sum of first and last digits: %d\n", sum);

    return 0;
}
```

Output:



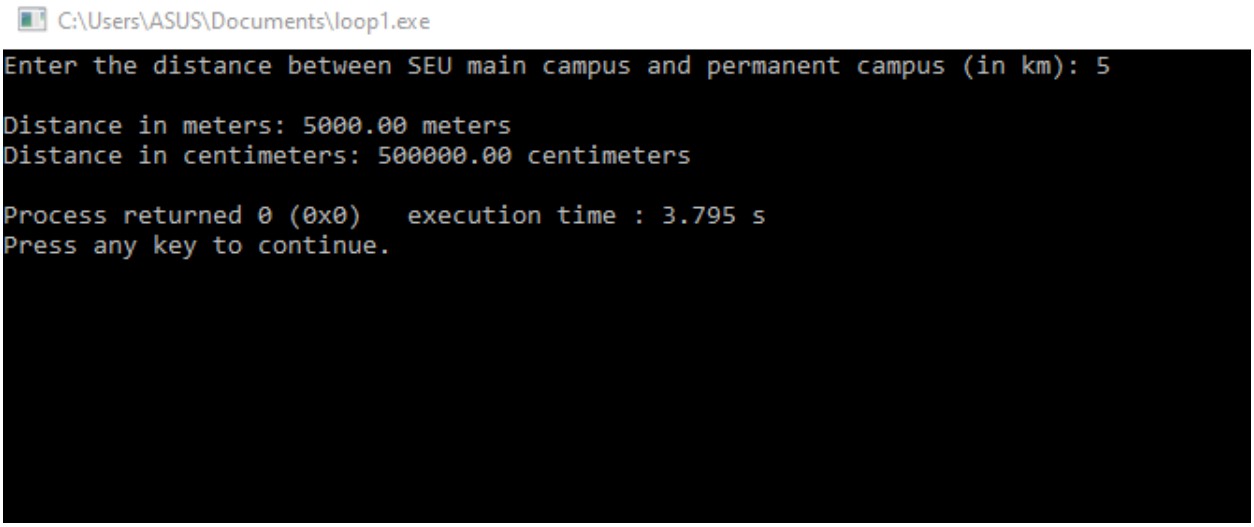
11. The distance between the SEU main campus and the SEU permanent campus (in km) is input through the keyboard. Write a program to convert and print this distance in meters and centimeters.

Input:

```
#include <stdio.h>


int main() {
   // Declare variables
   float distanceInKm, distanceInMeters, distanceInCentimeters;


   // Prompt the user to enter the distance in kilometers
   printf("Enter the distance between SEU main campus and permanent campus (in km): ");
   scanf("%f", &distanceInKm);
```

```
    // Convert distance to meters and centimeters
    distanceInMeters = distanceInKm * 1000; // 1 kilometer = 1000 meters
    distanceInCentimeters = distanceInKm * 100000; // 1 kilometer = 100000 centimeters


    // Display the converted distances
    printf("\nDistance in meters: %.2f meters\n", distanceInMeters);
    printf("Distance in centimeters: %.2f centimeters\n", distanceInCentimeters);


    return 0;
}
```

Output:



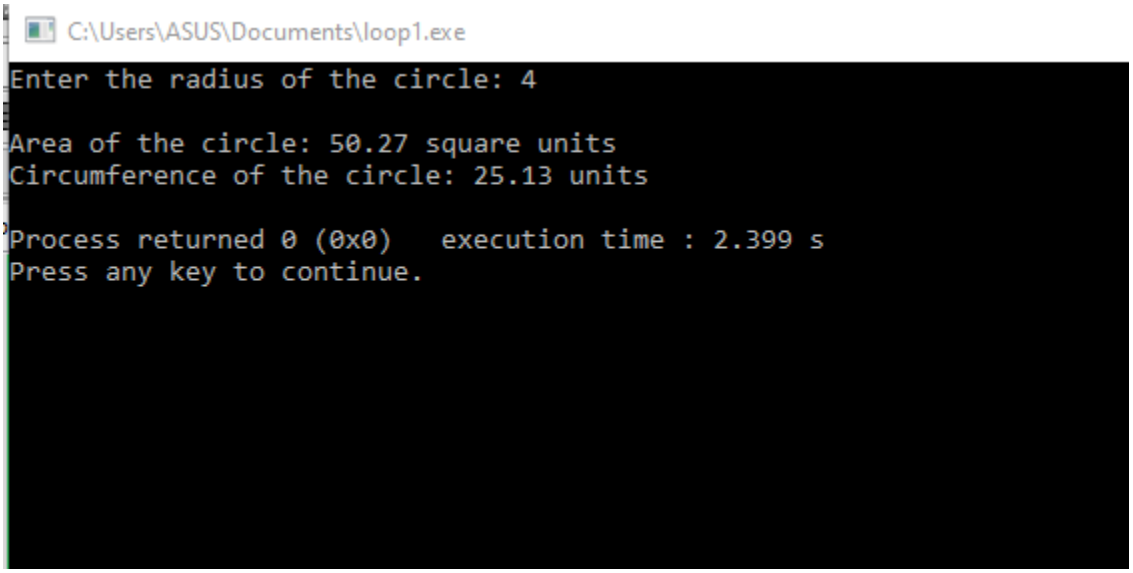
12. The radius of a circle is input through the keyboard. Write a program to find the area & circumference of the circle.

Input:

```
#include <stdio.h>

#include <math.h>


int main() {
   // Declare variables
   float radius, area, circumference;


   // Prompt the user to enter the radius of the circle
   printf("Enter the radius of the circle: ");
   scanf("%f", &radius);


   // Calculate area and circumference
   area = M_PI * pow(radius, 2); // Area = π * r^2
   circumference = 2 * M_PI * radius; // Circumference = 2 * π * r


   // Display the results
   printf("\nArea of the circle: %.2f square units\n", area);
   printf("Circumference of the circle: %.2f units\n", circumference);
```

```
    return 0;
}
```

Output:



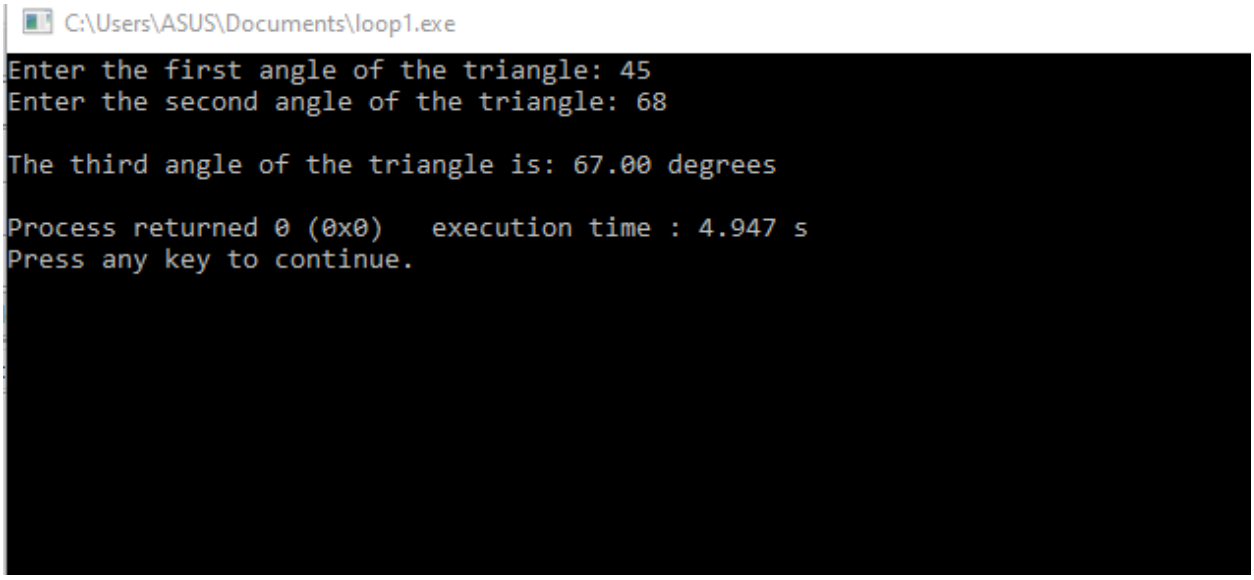
13. Two angles of a triangle are given as input through the keyboard. Write a program to calculate the third angle of the triangle

Input:

```
#include <stdio.h>


int main() {
    // Declare variables
    float angle1, angle2, angle3;


    // Prompt the user to enter the first angle
```

```
    printf("Enter the first angle of the triangle: ");
    scanf("%f", &angle1);

    // Prompt the user to enter the second angle
    printf("Enter the second angle of the triangle: ");
    scanf("%f", &angle2);

    // Calculate the third angle
    angle3 = 180 - angle1 - angle2;

    // Display the result
    printf("\nThe third angle of the triangle is: %.2f degrees\n", angle3);

    return 0;
}
```

Output:



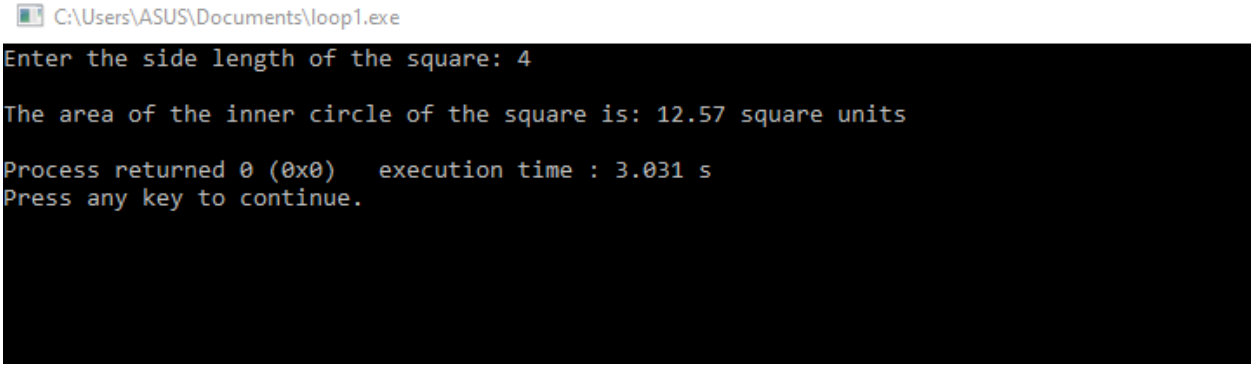
14. The length of a square is input through the keyboard. Write a program to calculate the area of the inner circle of the square.

Input:

```
#include <stdio.h>
#include <math.h>

int main() {
    // Declare variables
    float sideLength, radius, areaOfInnerCircle;

    // Prompt the user to enter the side length of the square
    printf("Enter the side length of the square: ");
    scanf("%f", &sideLength);
```

```
    // Calculate the radius of the inscribed circle
    radius = sideLength / 2;

    // Calculate the area of the inscribed circle
    areaOfInnerCircle = M_PI * pow(radius, 2);

    // Display the result
    printf("\nThe area of the inner circle of the square is: %.2f square units\n", areaOfInnerCircle);

    return 0;
}
```

Output:



15. Write a C program to input principle, time, and rate (P, T, R) from the user and find Simple Interest

Input:

```
#include <stdio.h>

int main() {
    // Declare variables
    float principle, time, rate, simpleInterest;

    // Prompt the user to enter principle amount
    printf("Enter the principle amount (P): ");
    scanf("%f", &principle);

    // Prompt the user to enter time in years
    printf("Enter the time in years (T): ");
    scanf("%f", &time);

    // Prompt the user to enter rate of interest
    printf("Enter the rate of interest (R): ");
    scanf("%f", &rate);

    // Calculate Simple Interest
```

```
    simpleInterest = (principle * time * rate) / 100;

    // Display the result
    printf("\nSimple Interest is: %.2f\n", simpleInterest);

    return 0;
}
```

Output: