

Perimilnary realted C Problem

1. Write a program to print "Hello World!"

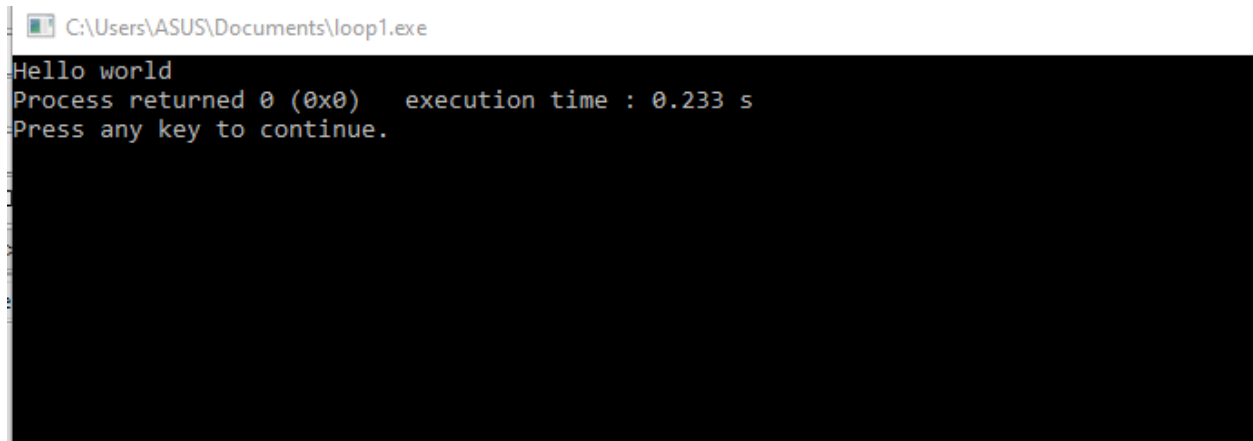
Input:

```
#include<stdio.h>

int main()
{
    printf("Hello world");
    return 0;

}
```

Output:



```
C:\Users\ASUS\Documents\loop1.exe
Hello world
Process returned 0 (0x0)   execution time : 0.233 s
Press any key to continue.
```

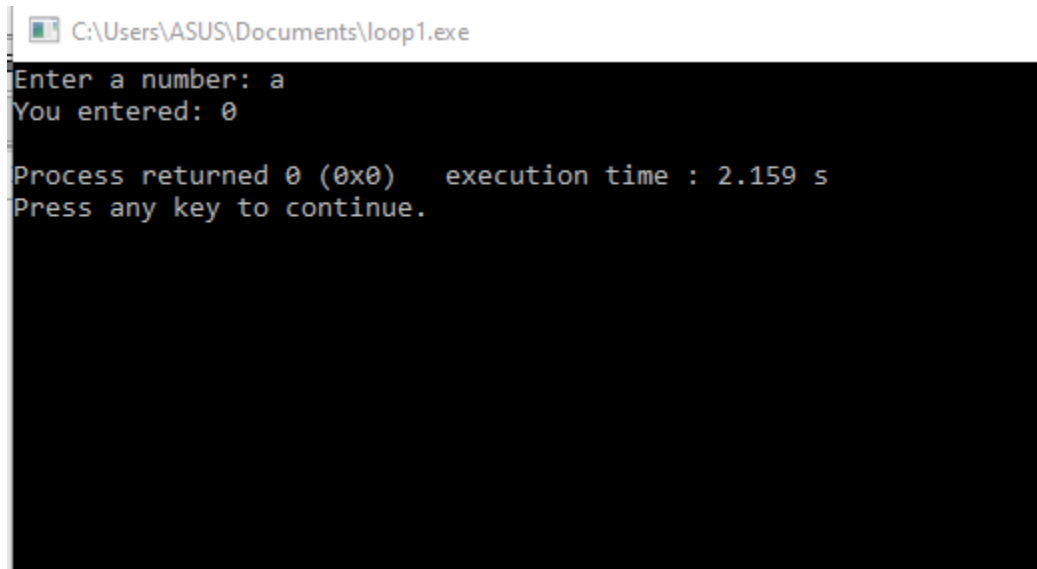
2. Write a program to take input from the keyboard

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:



```
C:\Users\ASUS\Documents\loop1.exe
Enter a number: a
You entered: 0

Process returned 0 (0x0)   execution time : 2.159 s
Press any key to continue.
```

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

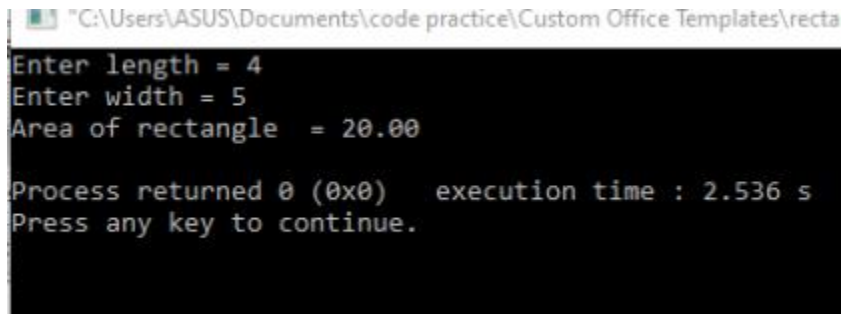
Input:

```
#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:

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\ASUS\Documents\code practice\Custom Office Templates\recta". The command prompt displays the following text: "Enter length = 4", "Enter width = 5", "Area of rectangle = 20.00", "Process returned 0 (0x0) execution time : 2.536 s", and "Press any key to continue.".

```
"C:\Users\ASUS\Documents\code practice\Custom Office Templates\recta
Enter length = 4
Enter width = 5
Area of rectangle = 20.00

Process returned 0 (0x0) execution time : 2.536 s
Press any key to continue.
```

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;
```

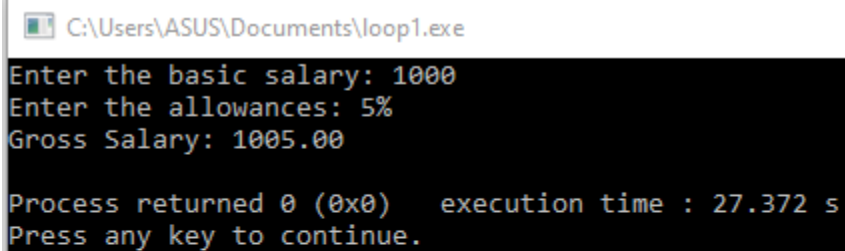
```
    // Prompt the user to enter basic salary
```

```
    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:



A screenshot of a Windows command prompt window. The title bar at the top shows the file path "C:\Users\ASUS\Documents\loop1.exe". The command prompt displays the following text: "Enter the basic salary: 1000", "Enter the allowances: 5%", and "Gross Salary: 1005.00". Below this, it shows "Process returned 0 (0x0) execution time : 27.372 s" and "Press any key to continue.".

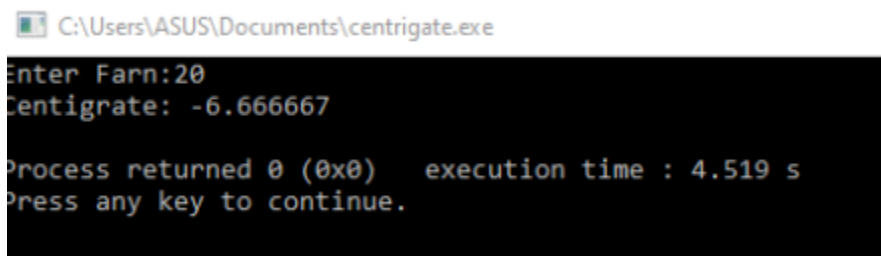
5. The temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into centigrade degrees.

Input:

```
#include<stdio.h>

int main()
{
float c,F;
printf("Enter Centregrade=");
scanf("%f",&c);
F = (C * 1.8)/5
printf("%f",A);
}
```

Output:



The screenshot shows a Windows command prompt window titled "C:\Users\ASUS\Documents\centrigate.exe". The prompt displays the following text: "Enter Farn:20", "Centigrate: -6.66667", "Process returned 0 (0x0) execution time : 4.519 s", and "Press any key to continue.".

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:



The screenshot shows a Windows command prompt window with the title bar "C:\Users\ASUS\Documents\loop1.exe". The program prompts the user to enter values for A and B. A=3 and B=5 are entered. The program then displays the values before and after swapping. After swapping, A=5 and B=3. The program returns 0 and the execution time is 4.128 s. The prompt "Press any key to continue." is shown at the bottom.

```
C:\Users\ASUS\Documents\loop1.exe
Enter the value for A: 3
Enter the value for B: 5
Before swapping:
A = 3
B = 5

After swapping:
A = 5
B = 3

Process returned 0 (0x0)   execution time : 4.128 s
Press any key to continue.
```


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

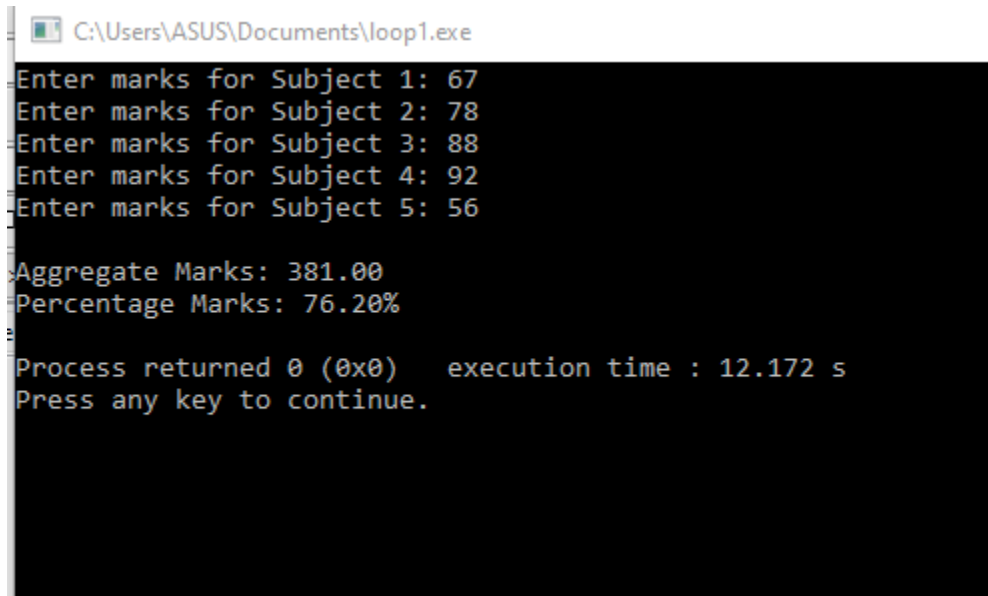
printf("\nAggregate Marks: %.2f\n", aggregateMarks);

printf("Percentage Marks: %.2f%%\n", percentage);

return 0;

}
```

Output:



```
C:\Users\ASUS\Documents\loop1.exe
Enter marks for Subject 1: 67
Enter marks for Subject 2: 78
Enter marks for Subject 3: 88
Enter marks for Subject 4: 92
Enter marks for Subject 5: 56

Aggregate Marks: 381.00
Percentage Marks: 76.20%

Process returned 0 (0x0)   execution time : 12.172 s
Press any key to continue.
```

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:

A screenshot of a Windows command prompt window. The title bar at the top shows the file path 'C:\Users\ASUS\Documents\loop1.exe'. The main area of the window has a black background with white text. It displays the prompt 'Enter a 5-digit number: 12345' where '12345' is the user input. Below that, it shows 'Sum of digits: 15'. At the bottom of the window, it says 'Process returned 0 (0x0) execution time : 2.087 s' and 'Press any key to continue.'.

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);

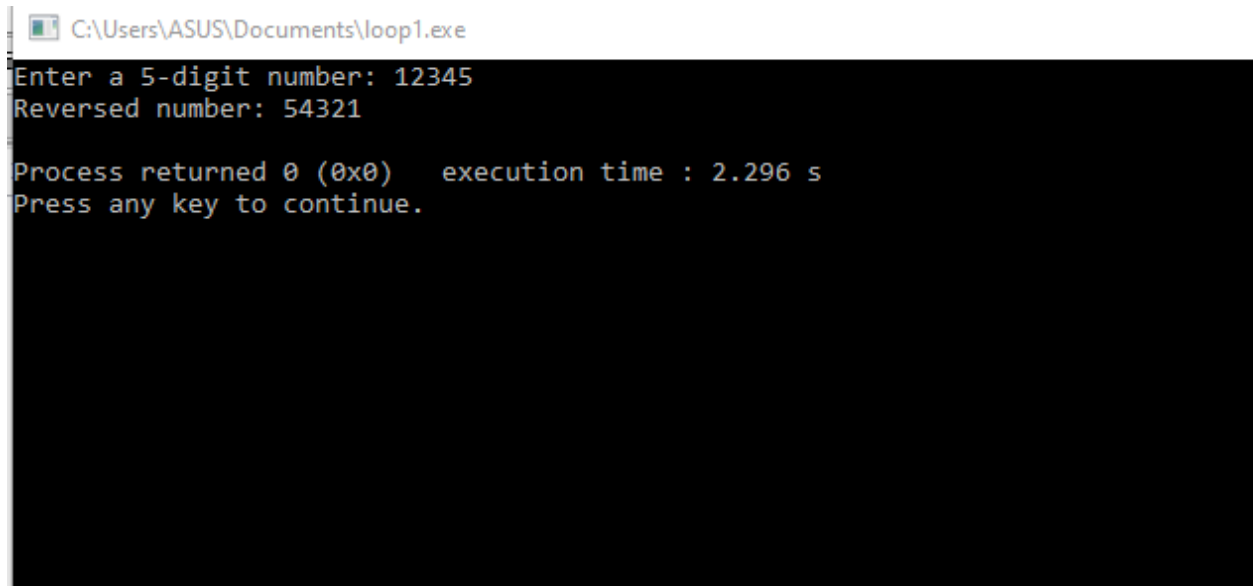
// Validate if the entered number is 5 digits
if (number < 10000 || number > 99999) {
    printf("Please enter a valid 5-digit number.\n");
    return 1; // Exit the program with an error code
}

// 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:



```
C:\Users\ASUS\Documents\loop1.exe
Enter a 5-digit number: 12345
Reversed number: 54321

Process returned 0 (0x0)   execution time : 2.296 s
Press any key to continue.
```

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
}

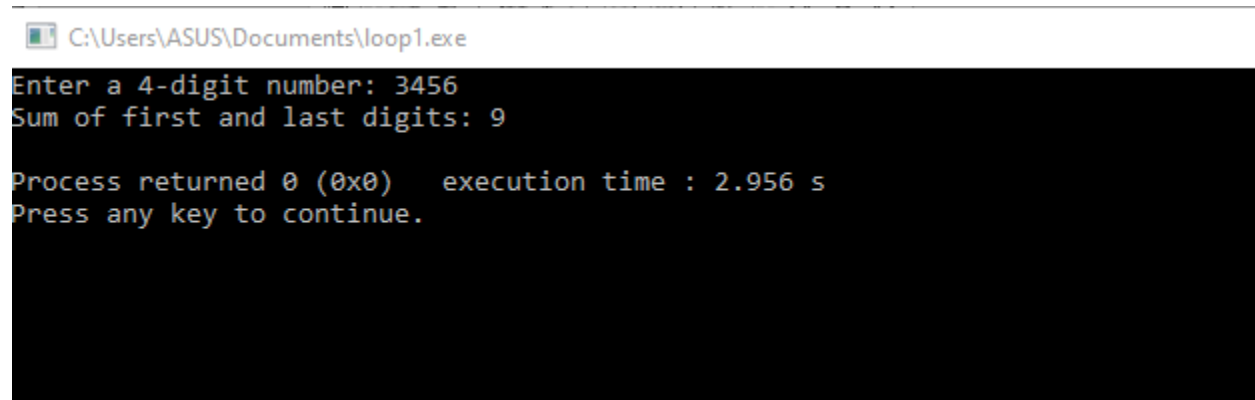
// Extract the first and last digits
lastDigit = number % 10; // Get the last digit
firstDigit = number / 1000; // Get the first digit

// 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:

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\ASUS\Documents\loop1.exe". The command prompt displays the following text: "Enter a 4-digit number: 3456", "Sum of first and last digits: 9", "Process returned 0 (0x0) execution time : 2.956 s", and "Press any key to continue.".

```
C:\Users\ASUS\Documents\loop1.exe
Enter a 4-digit number: 3456
Sum of first and last digits: 9

Process returned 0 (0x0) execution time : 2.956 s
Press any key to continue.
```

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

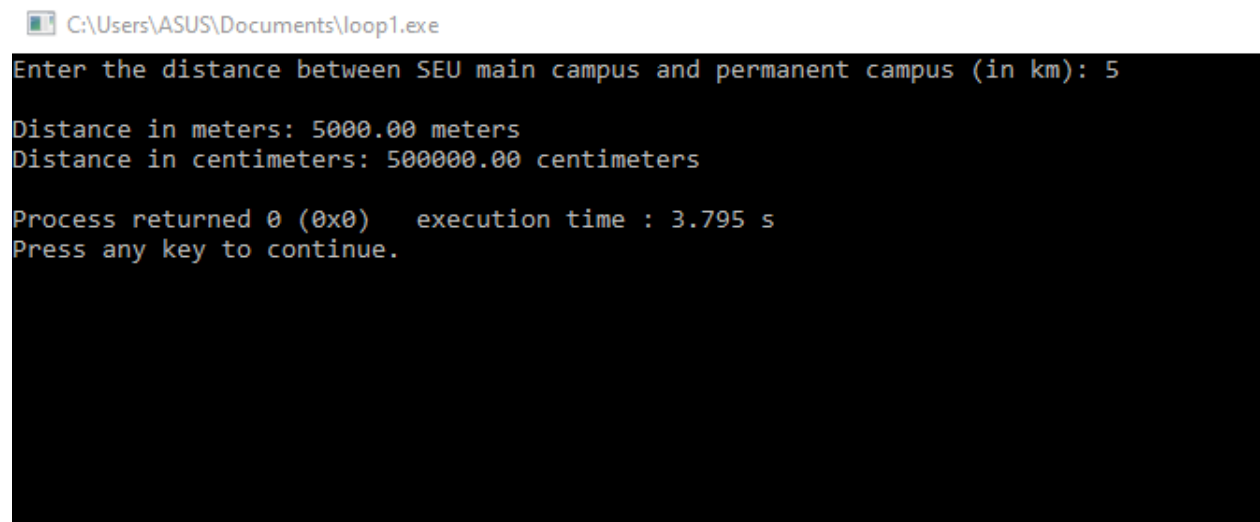

// Display the converted distances

printf("\nDistance in meters: %.2f meters\n", distanceInMeters);

printf("Distance in centimeters: %.2f centimeters\n",
distanceInCentimeters);


return 0;
}
```

Output:



C:\Users\ASUS\Documents\loop1.exe

```
Enter the distance between SEU main campus and permanent campus (in km): 5
Distance in meters: 5000.00 meters
Distance in centimeters: 500000.00 centimeters

Process returned 0 (0x0)   execution time : 3.795 s
Press any key to continue.
```

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 =  $\pi * r^2$ 
```

```
    circumference = 2 * M_PI * radius; // Circumference =  $2 * \pi * r$ 
```

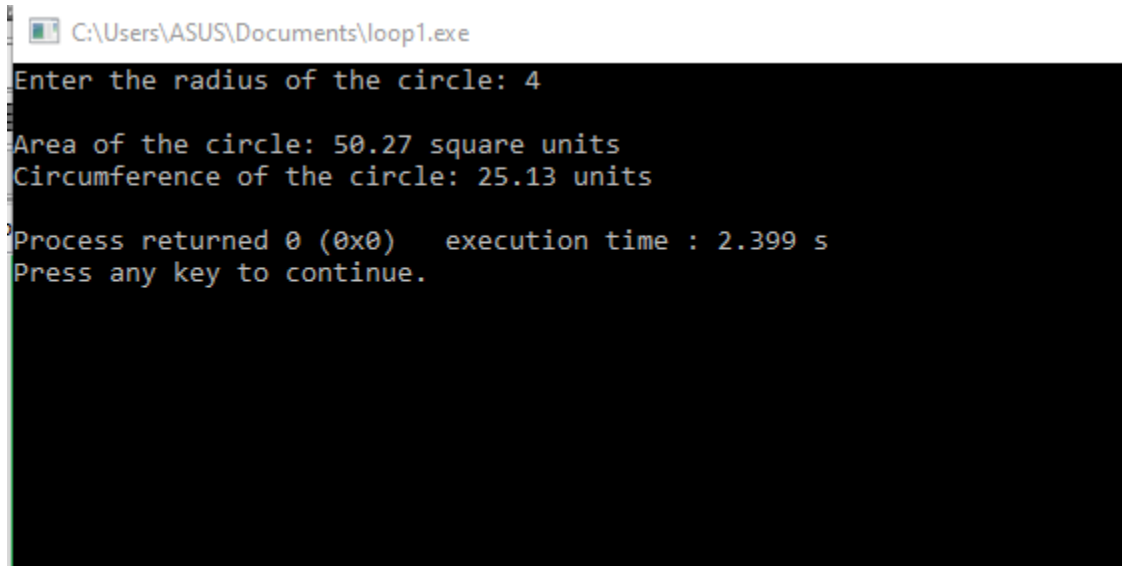
```
    // Display the results
```

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

```
    printf("Circumference of the circle: %.2f units\n", circumference);
```

```
    return 0;
}
```

Output:



```
C:\Users\ASUS\Documents\loop1.exe
Enter the radius of the circle: 4
Area of the circle: 50.27 square units
Circumference of the circle: 25.13 units
Process returned 0 (0x0)   execution time : 2.399 s
Press any key to continue.
```

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() {
```

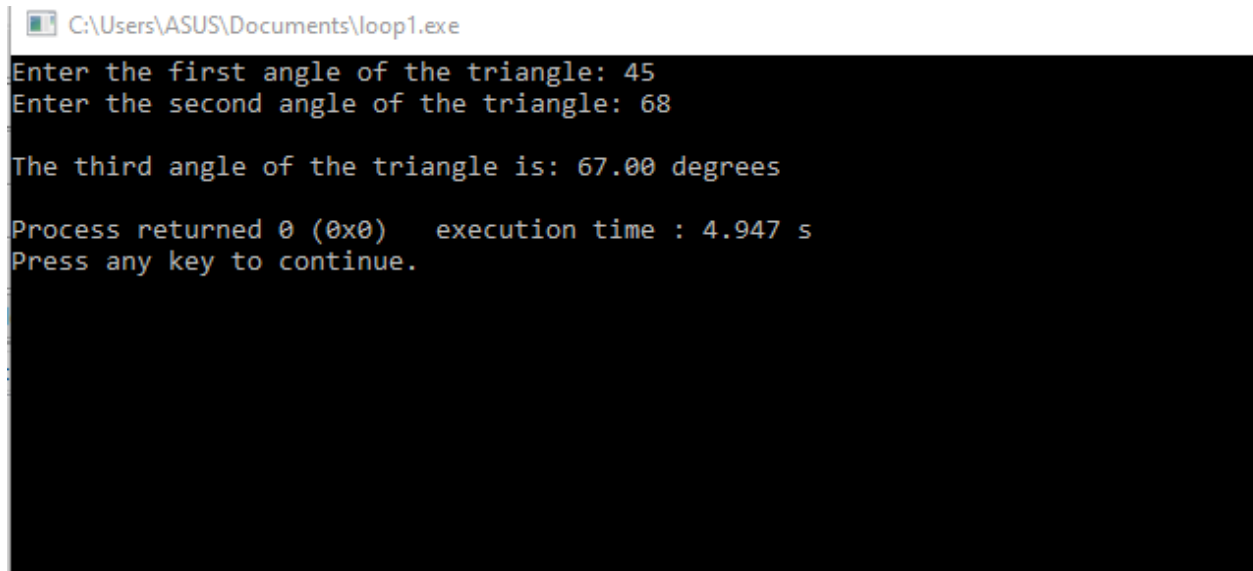
```
    // Declare variables
```

```
    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:



```
C:\Users\ASUS\Documents\loop1.exe
Enter the first angle of the triangle: 45
Enter the second angle of the triangle: 68

The third angle of the triangle is: 67.00 degrees

Process returned 0 (0x0)   execution time : 4.947 s
Press any key to continue.
```

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);
```

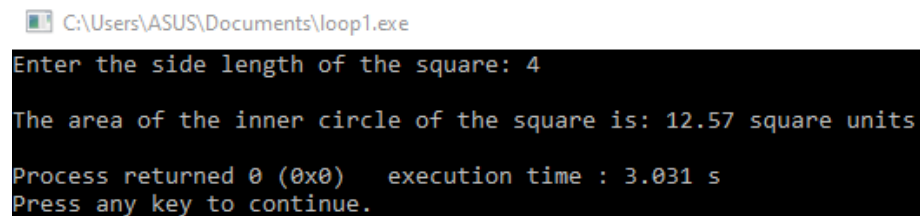
```
// Calculate the radius of the inscribed circle
radius = sideLength / 2;

// 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:



```
C:\Users\ASUS\Documents\loop1.exe
Enter the side length of the square: 4
The area of the inner circle of the square is: 12.57 square units
Process returned 0 (0x0)   execution time : 3.031 s
Press any key to continue.
```

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;
```

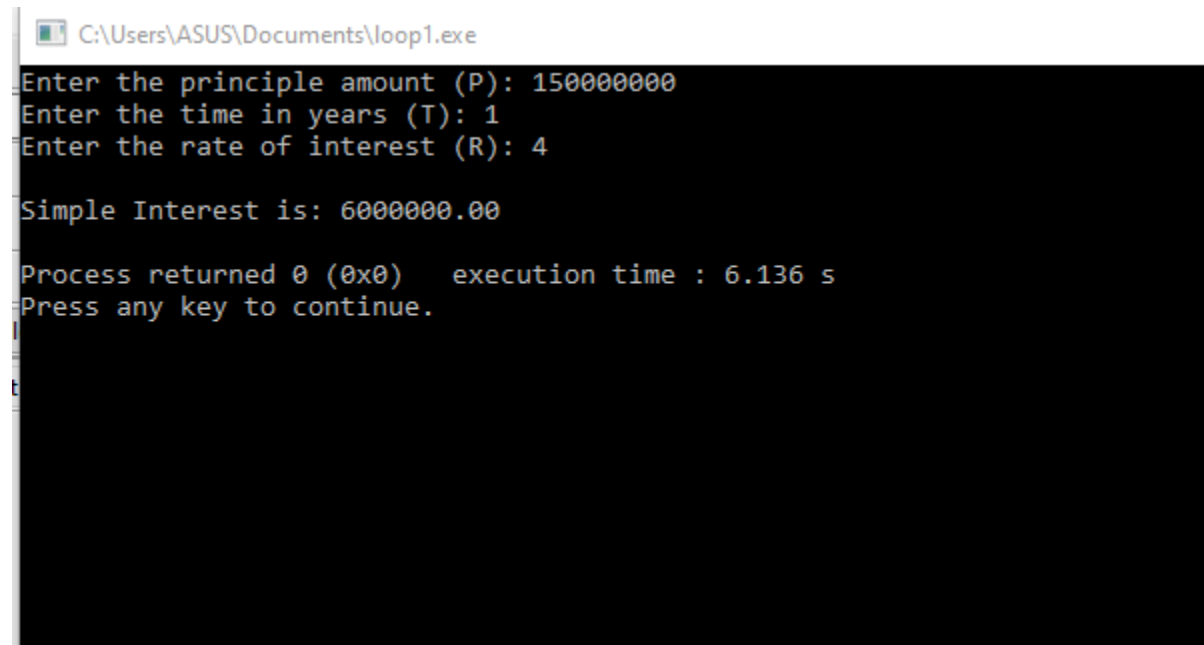
```
// Display the result
```

```
printf("\nSimple Interest is: %.2f\n", simpleInterest);
```

```
return 0;
```

```
}
```

Output:



```
C:\Users\ASUS\Documents\loop1.exe
Enter the principle amount (P): 150000000
Enter the time in years (T): 1
Enter the rate of interest (R): 4

Simple Interest is: 6000000.00

Process returned 0 (0x0)   execution time : 6.136 s
Press any key to continue.
```