Project Title: Temperature Converter

Name:	ID:
1. Prince Vaghasiya	24AIML074
2. Dharm Vaghasiya	24AIML073
3. Vraj Sutariya	24AIML067

Project Title: Temperature Converter Objective: To create a program that converts temperatures between Celsius, Fahrenheit, and Kelvin using C. Course Learning Outcome (CLO): By the end of this project, students will be able to develop a program that converts temperature units by applying mathematical formulas using C

Program overview:

The **Temperature Converter** project involves developing a program in the C programming language that allows users to convert temperatures between three common units: Celsius, Fahrenheit, and Kelvin. This project aims to familiarize students with basic programming concepts

Function:

Purpose: To perform specific temperature conversions based on the user's choice.
Examples of Conversion Formulas

1) Celsius to Fahrenheit: F=(C×9/5)+32F=(C×9/5)+32

2) Fahrenheit to Celsius: C=(F−32)×5/9C=(F−32)×5/9

3) Celsius to Kelvin: K=C+273.15K=C+273.15

Program Flow:

1. Menu Display: User sees options for converting temperatures.

2. User Input: User selects an option and enters a temperature.

3. Function Execution: The appropriate conversion function is called based on user input.

4. Result Display: Converted temperature is displayed.

5. Loop: Repeat until user chooses to exit.

```c
void convertToFahrenheit(float celsius, float kelvin) {
    float fahrenheitFromCelsius = (celsius * 9 / 5) + 32;
    float fahrenheitFromKelvin = (kelvin - 273.15) * 9 / 5 + 32;
    printf("Celsius to Fahrenheit: %.2f°F\n", fahrenheitFromCelsius);
    printf("Kelvin to Fahrenheit: %.2f°F\n", fahrenheitFromKelvin);
}
```

This function converts temperatures from Celsius and Kelvin to Fahrenheit using the respective formulas:

Formulas:

- **Fahrenheit from Celsius:** $F=(C\times95)+32$
- **Fahrenheit from Kelvin:** $F=(K-273.15)\times95+32$

Output: It prints the converted Fahrenheit values for both Celsius and Kelvin inputs.

```c
void convertToCelsius(float fahrenheit, float kelvin) {
    float celsiusFromFahrenheit = (fahrenheit - 32) * 5 / 9;
    float celsiusFromKelvin = kelvin - 273.15;
    printf("Fahrenheit to Celsius: %.2f°C\n", celsiusFromFahrenheit);
    printf("Kelvin to Celsius: %.2f°C\n", celsiusFromKelvin);
}
```

This function converts temperatures from Fahrenheit and Kelvin to Celsius using the formulas:

Formulas:

- **Celsius from Fahrenheit:** $C=(F-32)\times 59$
- **Celsius from Kelvin:** $C=K-273.15$

Output: It prints the converted Celsius values for both Fahrenheit and Kelvin inputs.

```c
void convertToKelvin(float celsius, float fahrenheit) {
    float kelvinFromCelsius = celsius + 273.15;
    float kelvinFromFahrenheit = (fahrenheit - 32) * 5 / 9 + 273.15;
    printf("Celsius to Kelvin: %.2fK\n", kelvinFromCelsius);
    printf("Fahrenheit to Kelvin: %.2fK\n", kelvinFromFahrenheit);
}
```

This function converts temperatures from Celsius and Fahrenheit to Kelvin:

Formulas:

- **Kelvin from Celsius:** $K=C+273.15$
- **Kelvin from Fahrenheit:** $K=(F-32)\times 59+273.15$

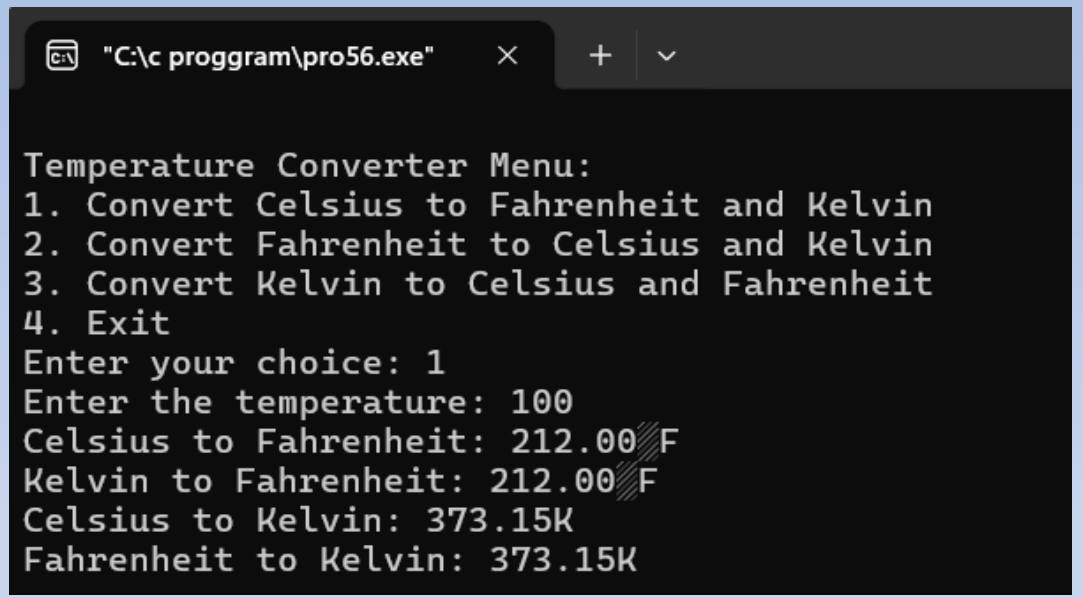
Output: It prints the converted Kelvin values for both Celsius and Fahrenheit inputs.

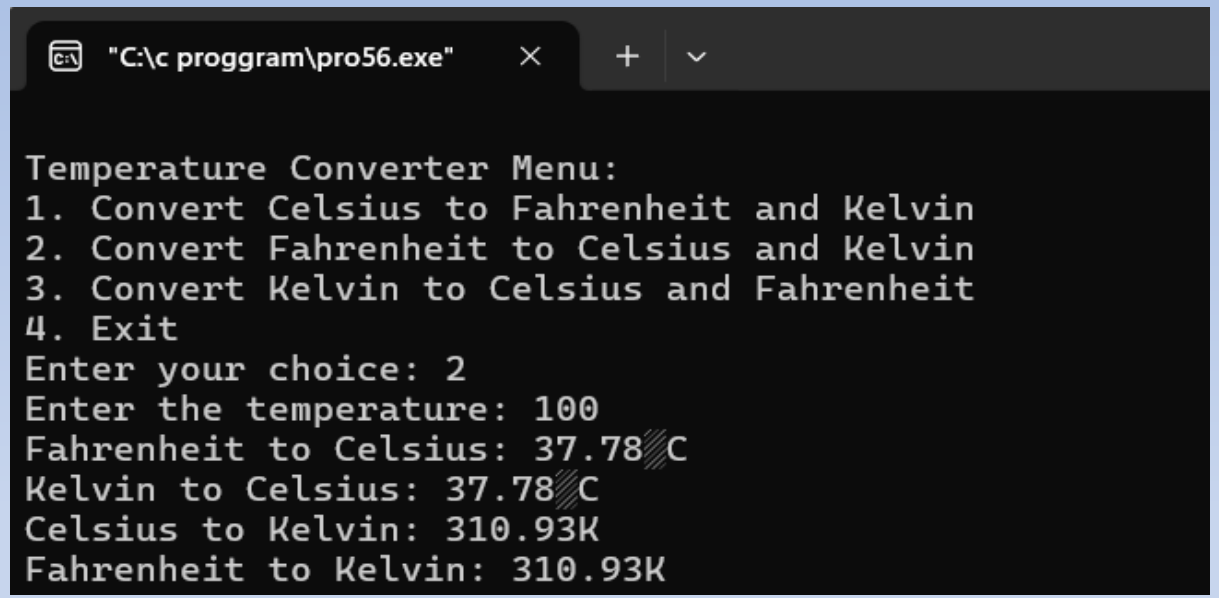
Code is here:

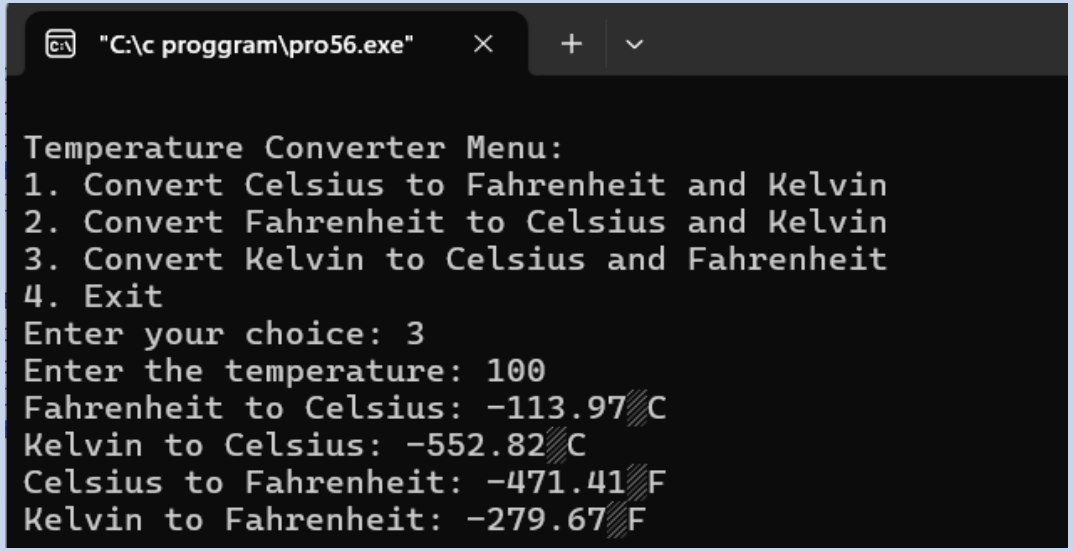
```
#include <stdio.h>

void convertToFahrenheit(float celsius, float kelvin) {
    float fahrenheitFromCelsius = (celsius * 9 / 5) + 32;
    float fahrenheitFromKelvin = (kelvin - 273.15) * 9 / 5 + 32;
    printf("Celsius to Fahrenheit: %.2f°F\n", fahrenheitFromCelsius);
    printf("Kelvin to Fahrenheit: %.2f°F\n", fahrenheitFromKelvin);
}

void convertToCelsius(float fahrenheit, float kelvin) {
    float celsiusFromFahrenheit = (fahrenheit - 32) * 5 / 9;
    float celsiusFromKelvin = kelvin - 273.15;
    printf("Fahrenheit to Celsius: %.2f°C\n", celsiusFromFahrenheit);
    printf("Kelvin to Celsius: %.2f°C\n", celsiusFromKelvin);
}

void convertToKelvin(float celsius, float fahrenheit) {
    float kelvinFromCelsius = celsius + 273.15;
    float kelvinFromFahrenheit = (fahrenheit - 32) * 5 / 9 + 273.15;
    printf("Celsius to Kelvin: %.2fK\n", kelvinFromCelsius);
    printf("Fahrenheit to Kelvin: %.2fK\n", kelvinFromFahrenheit);
}
```

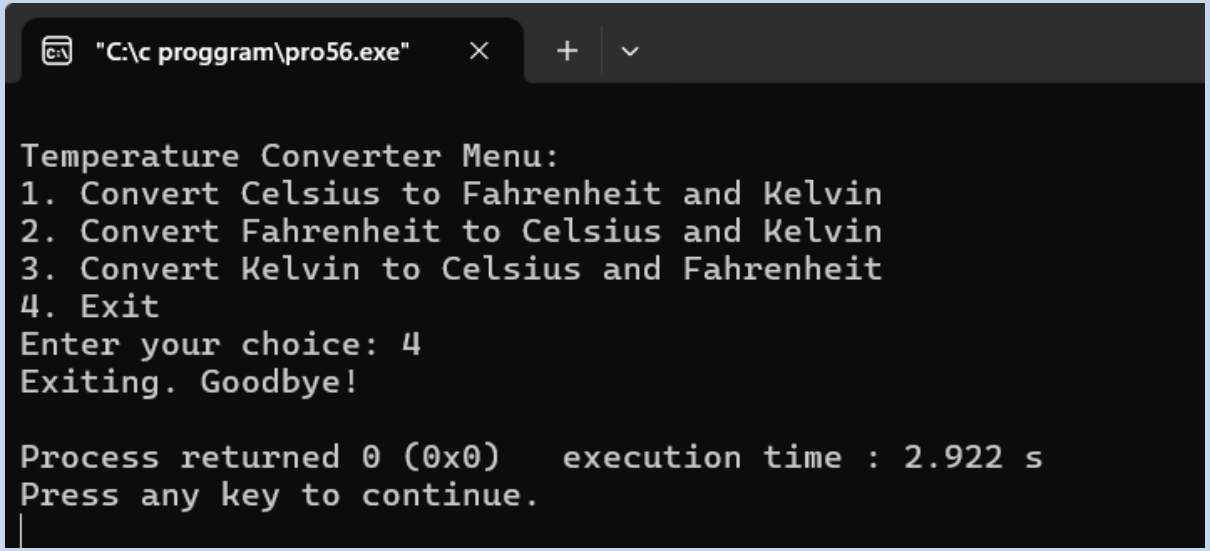
```
int main() {
    int choice;
    float temp;

    while (1) {
        printf("\nTemperature Converter Menu:\n");
        printf("1. Convert Celsius to Fahrenheit and Kelvin\n");
        printf("2. Convert Fahrenheit to Celsius and Kelvin\n");
        printf("3. Convert Kelvin to Celsius and Fahrenheit\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        if (choice == 4) {
            printf("Exiting. Goodbye!\n");
            break;
        }
        printf("Enter the temperature: ");
        scanf("%f", &temp);

        switch (choice) {
            case 1:
                convertToFahrenheit(temp, temp + 273.15);
                convertToKelvin(temp, (temp * 9 / 5) + 32);
                break;
            case 2:
                convertToCelsius(temp, (temp + 459.67) * 5 / 9);
                convertToKelvin((temp - 32) * 5 / 9, temp);
                break;
            case 3:
                convertToCelsius(temp - 273.15, (temp - 273.15) * 9 / 5 + 32);
                convertToFahrenheit((temp - 273.15) * 9 / 5 + 32, temp);
                break;
            default:
                printf("Invalid choice! Please try again.\n");
        }
    }
    return 0;
}
```

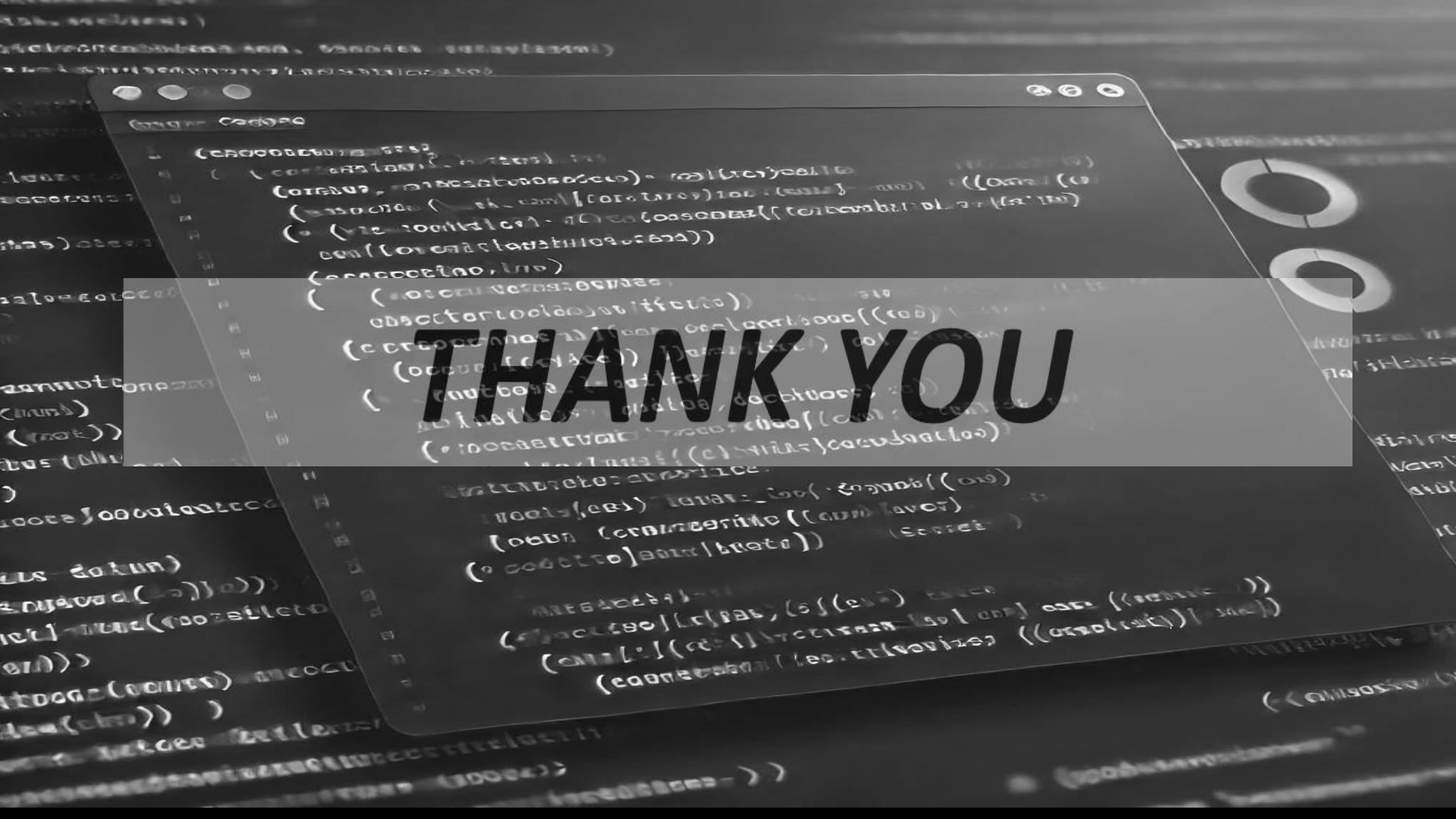
Output:


"C:\c proggram\pro56.exe"
Temperature Converter Menu:
1. Convert Celsius to Fahrenheit and Kelvin
2. Convert Fahrenheit to Celsius and Kelvin
3. Convert Kelvin to Celsius and Fahrenheit
4. Exit
Enter your choice: 1
Enter the temperature: 100
Celsius to Fahrenheit: 212.00 F
Kelvin to Fahrenheit: 212.00 F
Celsius to Kelvin: 373.15K
Fahrenheit to Kelvin: 373.15K


"C:\c proggram\pro56.exe"
Temperature Converter Menu:
1. Convert Celsius to Fahrenheit and Kelvin
2. Convert Fahrenheit to Celsius and Kelvin
3. Convert Kelvin to Celsius and Fahrenheit
4. Exit
Enter your choice: 2
Enter the temperature: 100
Fahrenheit to Celsius: 37.78 C
Kelvin to Celsius: 37.78 C
Celsius to Kelvin: 310.93K
Fahrenheit to Kelvin: 310.93K


"C:\c proggram\pro56.exe"
Temperature Converter Menu:
1. Convert Celsius to Fahrenheit and Kelvin
2. Convert Fahrenheit to Celsius and Kelvin
3. Convert Kelvin to Celsius and Fahrenheit
4. Exit
Enter your choice: 3
Enter the temperature: 100
Fahrenheit to Celsius: -113.97 C
Kelvin to Celsius: -552.82 C
Celsius to Fahrenheit: -471.41 F
Kelvin to Fahrenheit: -279.67 F


"C:\c proggram\pro56.exe"
Temperature Converter Menu:
1. Convert Celsius to Fahrenheit and Kelvin
2. Convert Fahrenheit to Celsius and Kelvin
3. Convert Kelvin to Celsius and Fahrenheit
4. Exit
Enter your choice: 4
Exiting. Goodbye!
Process returned 0 (0x0) execution time : 2.922 s
Press any key to continue.


THANK YOU