Final Assignment

Summer 2024

Course Title: Introduction to Programming

Course Code: CSE 1102 (Summer 2024)

Submitted by:

Student Name and ID

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1 Question (a):

To calculate the total cost of apples, bread and milk, we can use the variables given below:

For the price of the items float, apple_cost, bread_cost, milk_cost.

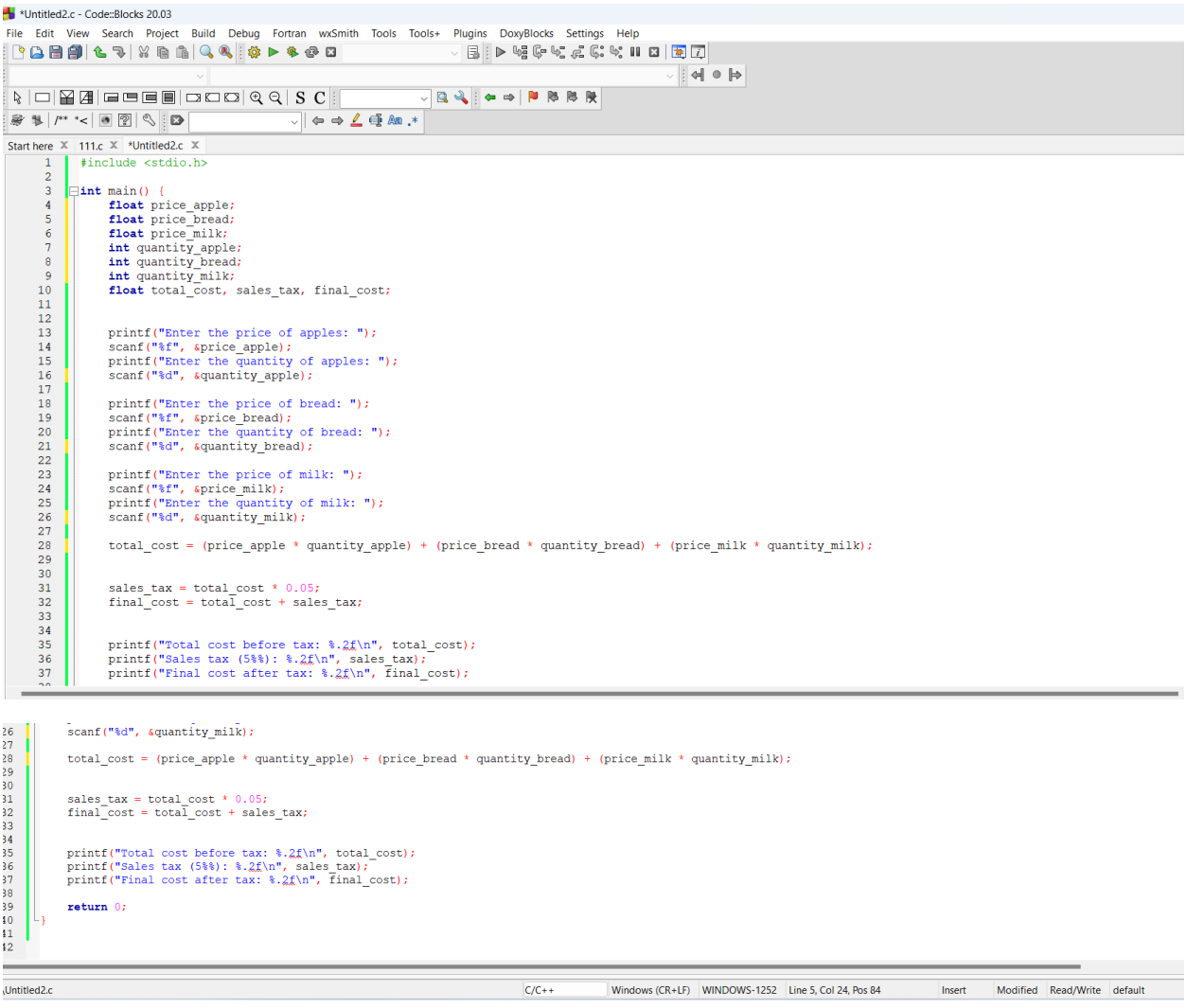
For the quantity of the items, int apple_quantity, bread_quantity, milk_quantity**.**

The arithmetic operators to be used is given below:

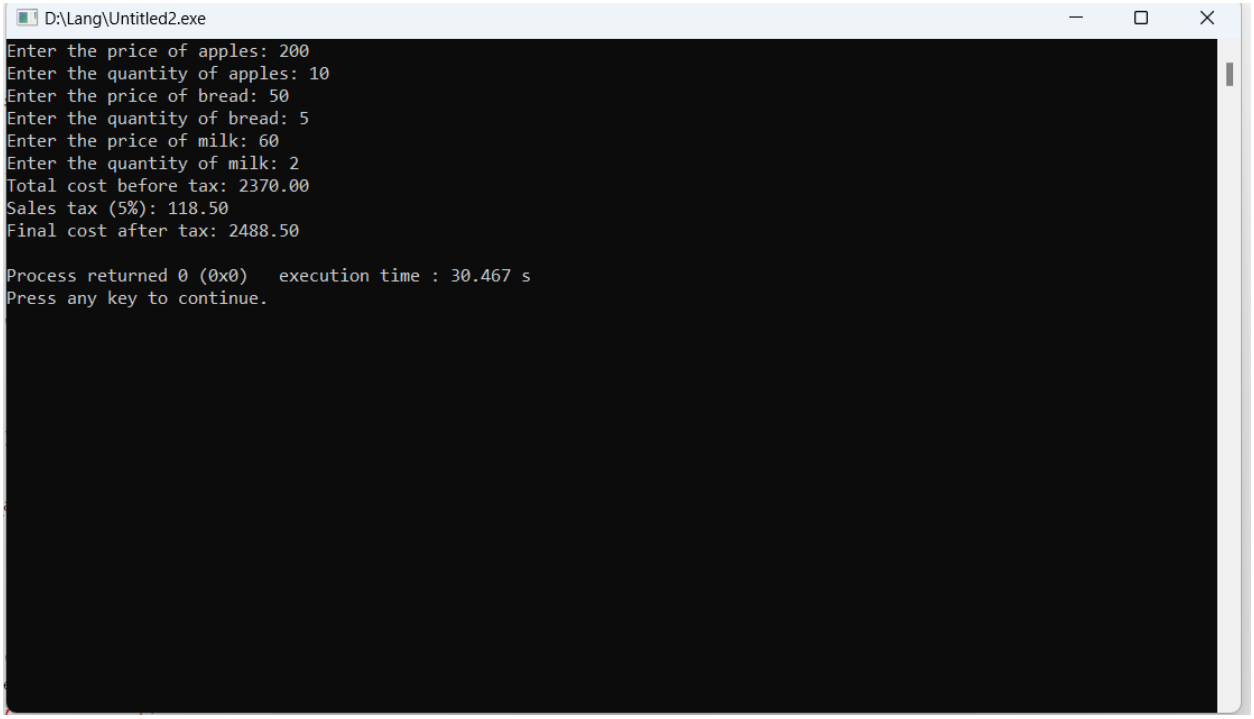
1. We will use Multiplication (*) to calculate the cost. We will multiply the price with the quantity.

2. We will use Addition (+) to sum up the total cost all the items

Here's the Code,



Output Result



- To ensure accuracy, we have used floating-point numbers (float).
- We have inserted the formula very sincerely.

1 Question (b):

Flowchart Description:

1. Start: Begin the flowchart.

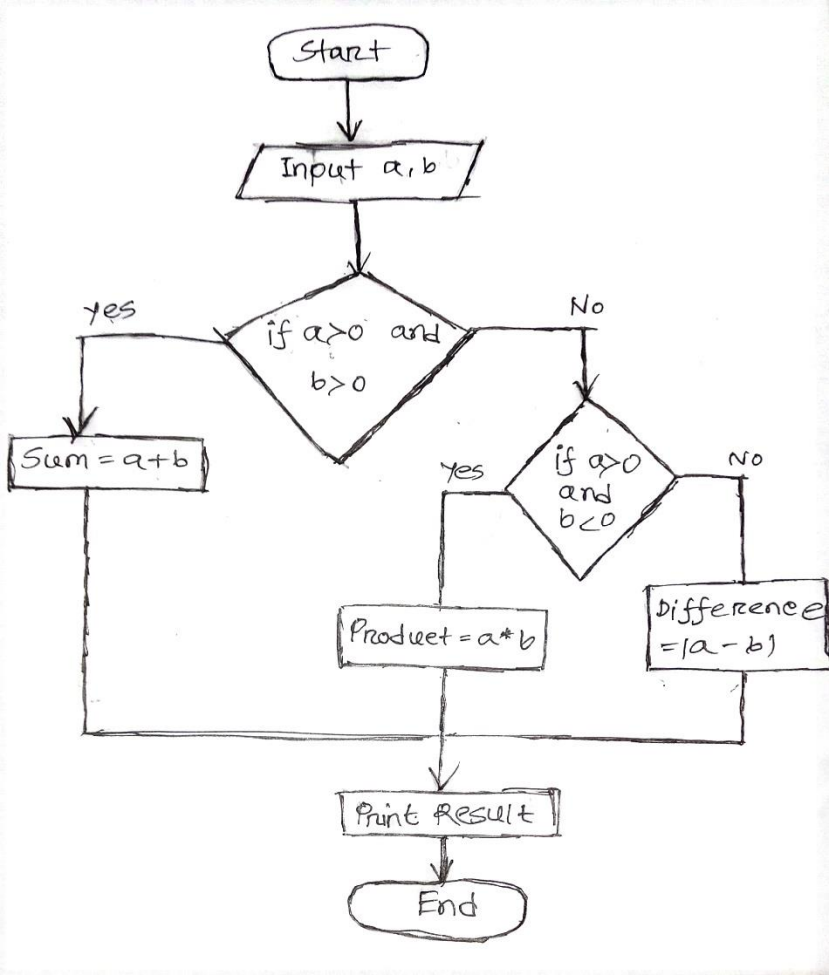
2. Input Step: Read two numbers a and b.

3. Condition 1: Check if a > 0 and b > 0. If yes, compute the sum a+ b and display it. If no, move to the next condition.

4. Condition 2: Check if a > 0 and b < 0. If yes, compute the product a * b and display it. If no, move to the next condition.

5. Condition 3: Check if a < 0 and b < 0. If yes, compute the absolute difference $|a - b|$and display it.

Here The drawing of the Flowchart,



2 Question:

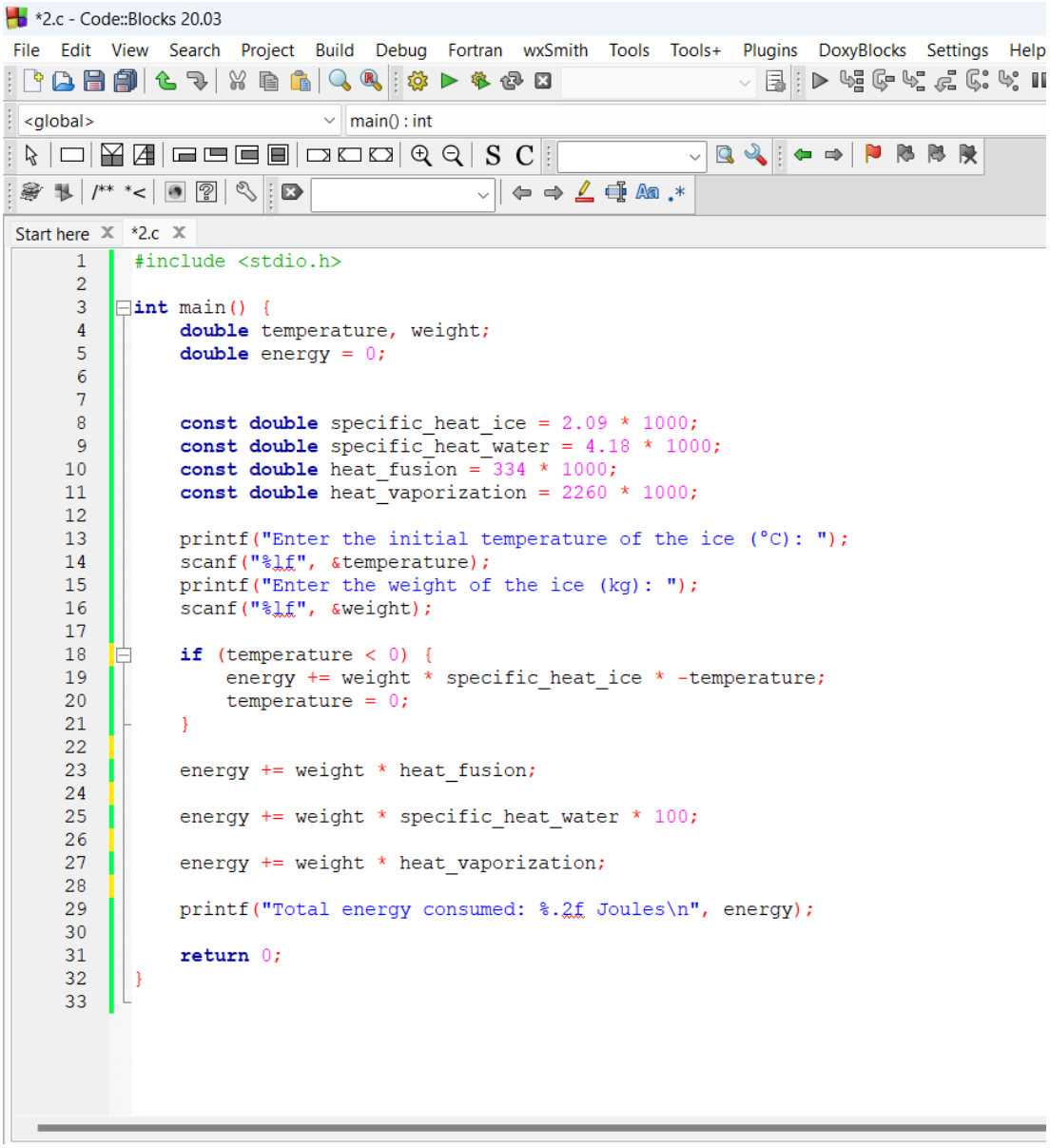
1. Heat for warming up the cool from unique temperature to 0°C

2. Energy needed to raise the temperature of water at 0°C

3. Heat energy needed to raise the water temperature from 0°C to 100°C

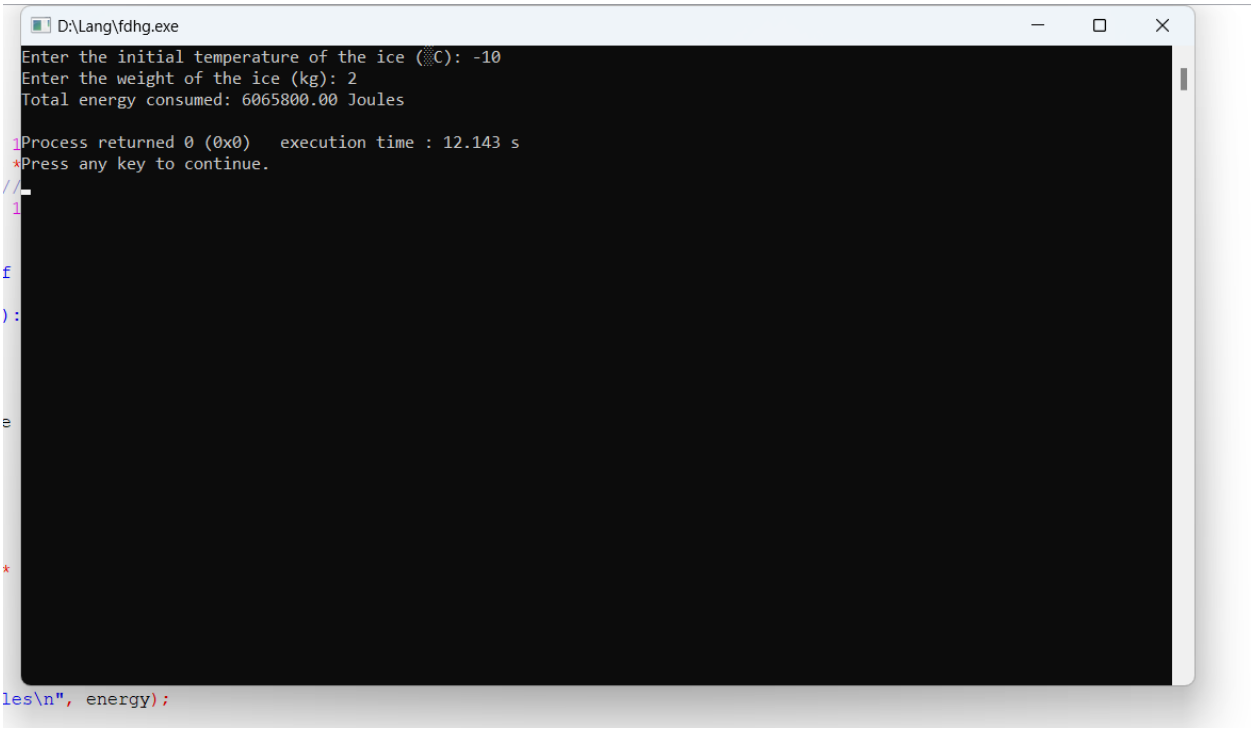
4. Energy needed to turn the water at 100°C into steam.

Here Code is



For the input temperature = -10°C and weight = 2 kg,

running this corrected program will output:



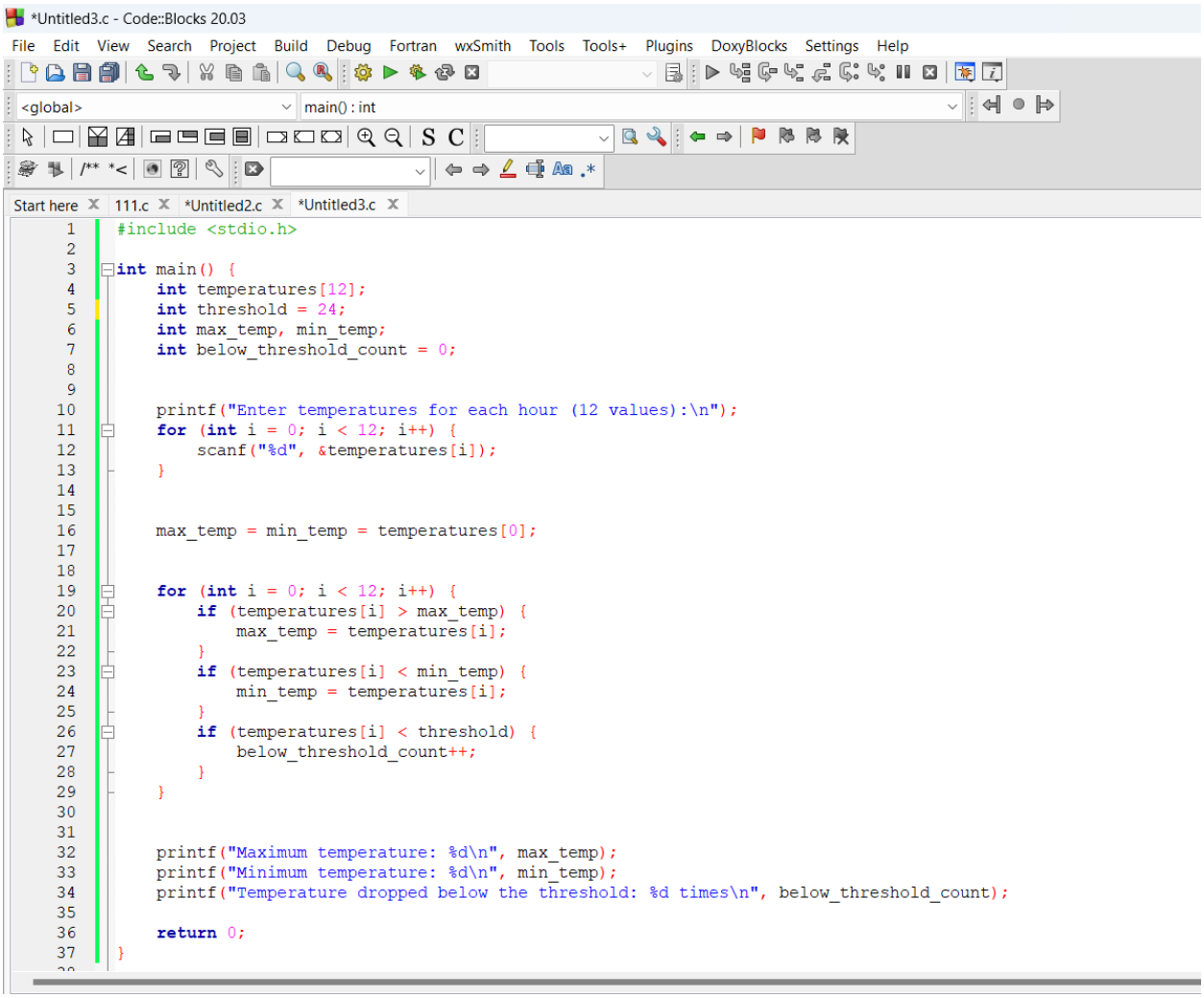
3 Question Answer:

Variables: max_temp and min_temp are initialized as very low and very high values respectively so that literally any plausible temperature input the user will provide would overwrite them.

Input: The first line of input is the threshold temperature—The program will get input one day worth 24. hours times temperatures.)

Processing: This is the max_temp and min_temp key-value pair that will set it, it does a comparison for not taking the highest and lowest temperatures of the day. It also keeps a count of the number of times the temperature goes below this threshold.

Here's Code




```c
#include <stdio.h>

int main() {
    int temperatures[12];
    int threshold = 24;
    int max_temp, min_temp;
    int below_threshold_count = 0;


    printf("Enter temperatures for each hour (12 values):\n");
    for (int i = 0; i < 12; i++) {
        scanf("%d", &temperatures[i]);
    }


    max_temp = min_temp = temperatures[0];


    for (int i = 0; i < 12; i++) {
        if (temperatures[i] > max_temp) {
            max_temp = temperatures[i];
        }
        if (temperatures[i] < min_temp) {
            min_temp = temperatures[i];
        }
        if (temperatures[i] < threshold) {
            below_threshold_count++;
        }
    }


    printf("Maximum temperature: %d\n", max_temp);
    printf("Minimum temperature: %d\n", min_temp);
    printf("Temperature dropped below the threshold: %d times\n", below_threshold_count);

    return 0;
}
```

Output: Finally it writes the highest temperature, minimum temperature, and how many times the temperature has dropped below this threshold.

My University ID 242014124

Simple Input :

24

12 34 26 27 28 10 22 23 24

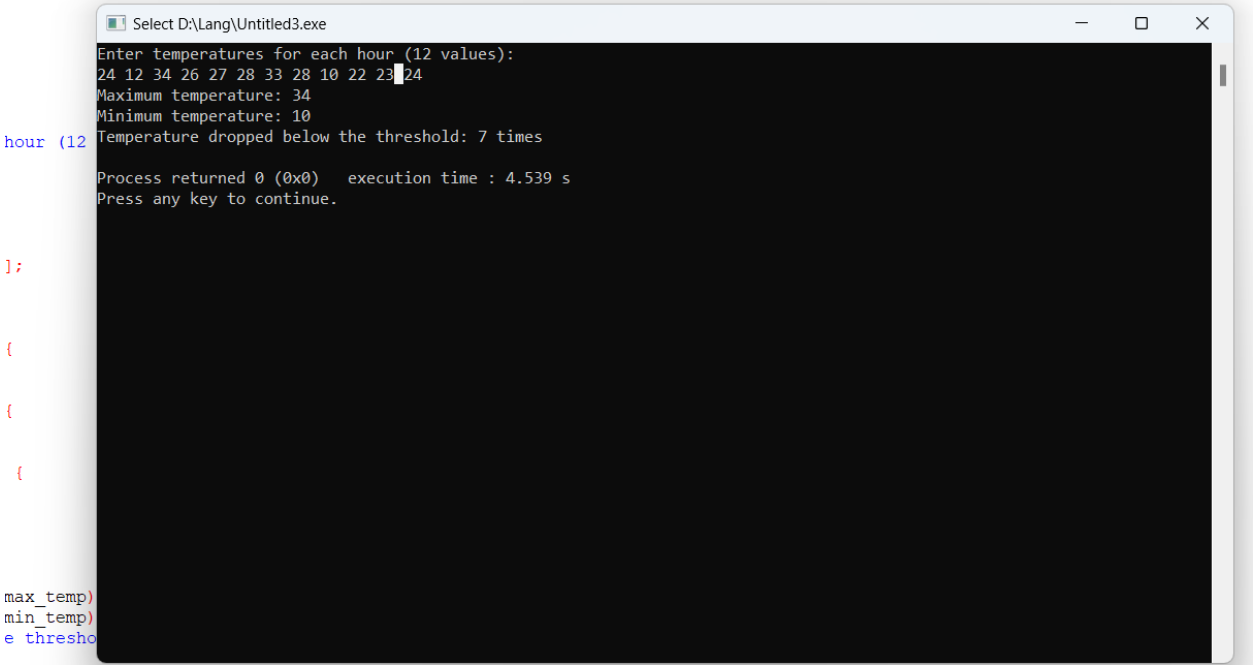
Sample output :

Maximum temperature: 34

Minimum temperature: 10

Temperature dropped below the threshold: 7 times

Output Result :



4 Question Answer :

Here, we need to write a C program that can simulate an online shopping cart system according to the requirements of the problem statement.

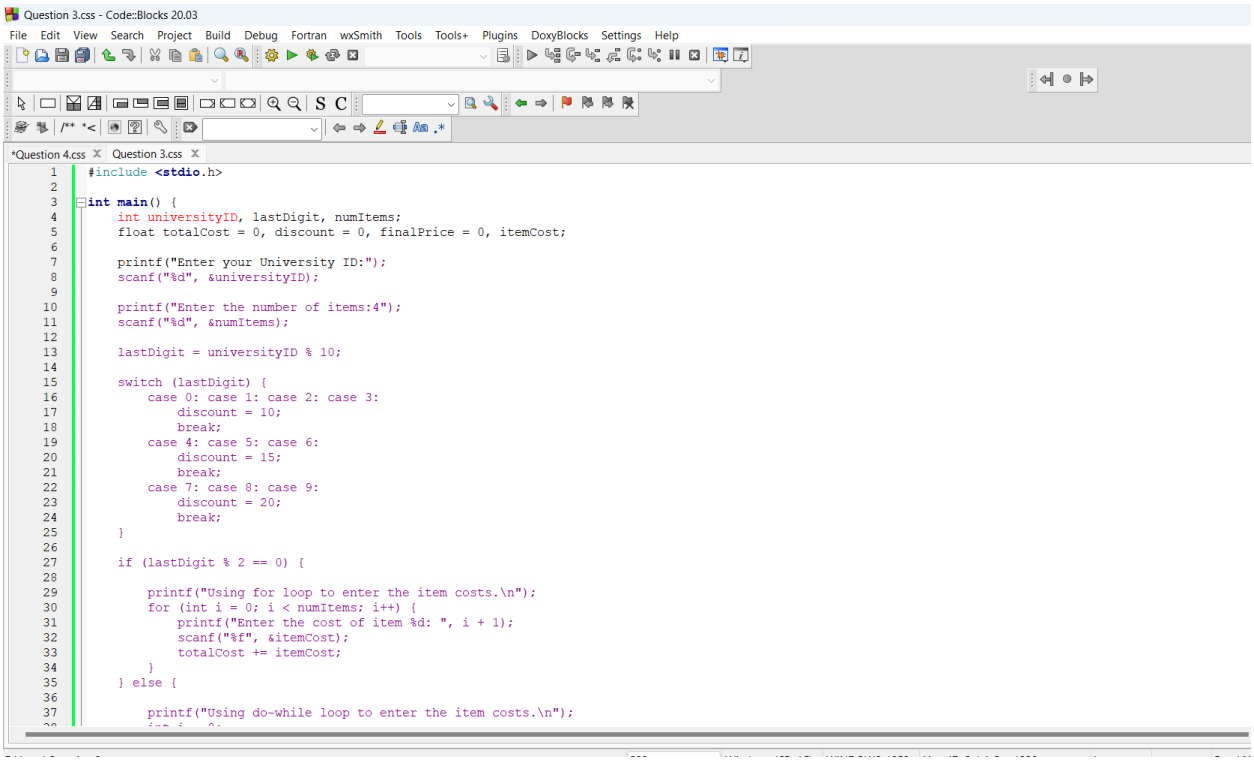
Input University ID : Read University ID.

Discount Check: By Switch-Case the function decides which discount should be set!

Loop through the Costs: Use either a for loop or while/do-while loop depending on whether the last digit is even to mimic adding costs of items to an accumulated amount.

Final Price Calculation: Deduct the discount that you have found from the total cost.

Here's Code



```
            printf("Enter the cost of item %d: ", i + 1);
            scanf("%f", &itemCost);
            totalCost += itemCost;
        }
    } else {

        printf("Using do-while loop to enter the item costs.\n");
        int i = 0;
        do {
            printf("Enter the cost of item %d: ", i + 1);
            scanf("%f", &itemCost);
            totalCost += itemCost;
            i++;
        } while (i < numItems);
    }

   finalPrice = totalCost - (totalCost * discount / 100);


    printf("Original total: %.2f\n", totalCost);
    printf("Discount applied: %.2f%%\n", discount);
    printf("Final price after discount: %.2f\n", finalPrice);

    return 0;
}
```

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Output: Display the original total, discount rate, discount amount, and actual price paid after the discount.

Output Result