Assignment
Of
Problem Solving using C Programming
22CS002

Submitted

in partial fulfillment for the award of the degree

of

BACHELEOR OF ENGINEERING

in

COMPUTER SCIENCE & ENGINEERING

CHITKARA UNIVERSITY

CHANDIGARH-PATIALA NATIONAL HIGHWAY
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IInd Sem ,2024

Problem statement 1 :-

Guess the Number Game : Implement a simple number guessing game. Generate a random number between 1 and 100, and ask the user to guess the number. Provide hints (higher/ lower) until the correct number is guessed. Use a **`do- while`** loop.

Solution :-

Input

```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main() {
    // Seed the random number generator with the current time
    srand(time(NULL));

    // Generate a random number between 1 and 100
    int randomNumber = rand() % 100 + 1;

    int userGuess;
    int attempts = 0;

    printf("Welcome to the Guess the Number game!\n");

    do {
        // Ask the user to guess the number
        printf("Enter your guess (between 1 and 100): ");
        scanf("%d", &userGuess);

        // Increment the attempts counter
        attempts++;

        // Check if the guess is correct
        if (userGuess == randomNumber) {
            printf("Congratulations! You guessed the correct number in %d attempts.\n", attempts);
        } else if (userGuess < randomNumber) {
            printf("Try again! The correct number is higher.\n");
        } else {
            printf("Try again! The correct number is lower.\n");
        }

    } while (userGuess != randomNumber);

    return 0;
}
```

Output

```
Welcome to the Guess the Number game!
Enter your guess (between 1 and 100): 50
Try again! The correct number is lower.
Enter your guess (between 1 and 100):
```

Problem statement 2 :-

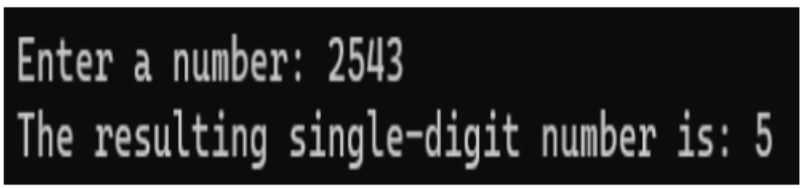
Sum of Digits until Single Digit : Write a program to repeatedly calculate the sum of the digits of a number until a single-digit number is obtained. Print the resulting single-digit number. Use a **`do-while`** loop.

Solution :-

Input

```c
#include <stdio.h>

int main() {
    int number, sum;

    // Get the input number from the user
    printf("Enter a number: ");
    scanf("%d", &number);

    do {
        // Calculate the sum of digits
        sum = 0;
        while (number > 0) {
            sum += number % 10;
            number /= 10;
        }

        // Update the number with the new sum
        number = sum;

    } while (number >= 10); // Continue the loop until a single-digit number is obtained

    // Print the resulting single-digit number
    printf("The resulting single-digit number is: %d\n", number);

    return 0;
}
```

Output



Problem statement 3 :-

Multiplication Table with Do-While: Write a program to print the multiplication table of a given number using a **`do-while`** loop. The user should input the number

Solution :-

Input

```c
#include <stdio.h>

int main() {
    int number, i = 1;

    // Get the input number from the user
    printf("Enter a number: ");
    scanf("%d", &number);

    printf("Multiplication Table of %d:\n", number);

    do {
        printf("%d x %d = %d\n", number, i, number * i);
        i++;
    } while (i <= 10);

    return 0;
}
```

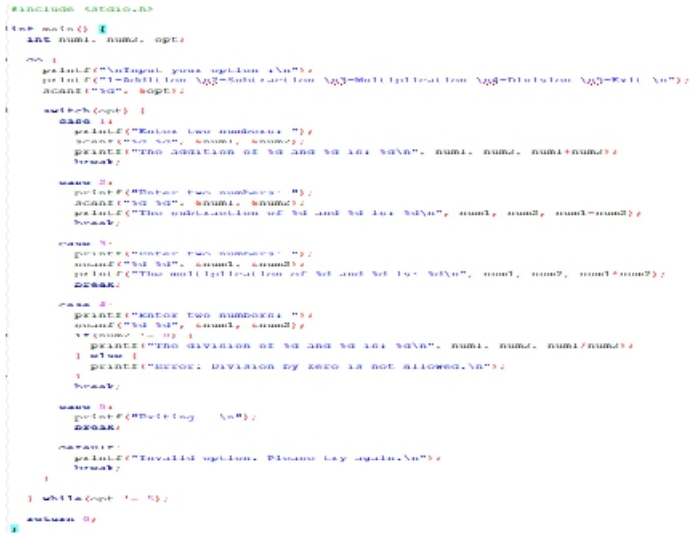
Output

```
Enter a number: 5
Multiplication Table of 5:
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

Problem statement 4 :-

Menu-Driven Calculator: Implement a simple menu-driven calculator program that performs addition, subtraction, multiplication, and division based on user input. Continue to display the menu until the user chooses to exit using a **`do-while`** loop.

Input



Output

```
Input your option :
1-Addition.
2-Subtraction.
3-Multiplication.
4-Division.
5-Exit.
3
Enter two numbers: 5 8
The multiplication of 5 and 8 is: 40
```

Thank You