# The purpose of the program:

#include <stdio.h> // included for standard input output function

int main(){

    // declare variable number as integer

    int number;

    // Ask for input number from 1 to 10. This code will loop while the number inputted is either less than 1 or more than 10.

    do{

        printf("Enter number between 1 & 10: ");

        scanf("%d", &number);

    }while(number < 1 || number > 10);

    return 0;

}

This C program is designed to prompt the user for a number within a specified range (1 to 10 in this case), and it will keep asking until a valid number is entered.

# The logic of the program:

#include <stdio.h> // included for standard input output function

int main(){

    // declare variable number as integer

    int number;

    // Ask for input number from 1 to 10. This code will loop while the number inputted is either less than 1 or more than 10.

    do{

        printf("Enter number between 1 & 10: ");

        scanf("%d", &number);

    }while(number < 1 || number > 10);

    return 0;

}

The main() function is the entry point of the program. Inside this function there is a variable called a number. This variable is for the user input, then it enters a do-while loop. This type of loop is used when you want the loop to run at least once before checking the condition. The program uses the printf() function to display a message asking the user to enter a number between 1 and 10. It then uses the scanf() function to read the user's input. The "%d" format specifier is used to read an integer, and the & operator is used to get the address of the variable number, so scanf() can modify its value.

# The limitation of the program:

#include <stdio.h> // included for standard input output function

// declare variable number as integer

int main(){

    int number;

    do{

        // Ask for input number from 1 to 10. This code will loop while the number inputted is either less than 1 or more than 10.

        printf("Enter number between 1 & 10: ");

        scanf("%d", &number);

    }while(number < 1 || number > 10);

    return 0;

}

1. No Error Handling for Non-integer Input:

The scanf() function is used to read an integer input. If the user enters a non-integer (like character or a string), scanf() will fail, and the program will enter an infinite loop because number will not be updated and will keep its initial value. This issue can be solved by clearing the input buffer after a failed read or using a different function to receive input that can handle non-numeric characters.

//function to clear input buffer

void clearBuffer(){

    int ch;

    while ((ch = getchar()) != '\n' && ch != EOF);

}

Here is a simple function that can prevent the infinite loop to keep on happening after inputting characters. Then just call the function after the input to clear the input buffer.

    do{

        // Ask for input number from 1 to 10. This code will loop while the number inputted is either less than 1 or more than 10.

        printf("Enter number between 1 & 10: ");

        int result = scanf("%d", &number);

        if (result == 0) clearBuffer();

    } while(number < 1 || number > 10);

1. No User Feedback for Invalid Input:

If the user enters a number outside the number scope, the program simply asks for the input again without telling the user that their input is wrong/invalid. This can lead to confusion later. To fix this problem you can create a simple printf() or messages.

if (result == 0)

        {

            clearBuffer();

        } else if (number < 1 || number > 10)

        {

            printf("Invalid input. Please enter a number between 1 to 10.\n")

        }

1. No Functional Output:

After inputting a number between 1 to 10, the program simply does nothing after.

1. Limited Input Range:

It is only limited to 1 until 10 no less or no more than 1 & 10. I modified the code to be able accept number according to the dev by giving 2 variables like min and max.

int main(){

    int number;

    int min = 1; // Replace with the minimum number

    int max = 20; // Replace with the maximum number

    do{

        // Ask for input number from 1 to 10. This code will loop while the number inputted is either less than 1 or more than 10.

        printf("Enter number between %d & %d: ", min, max);

        int result = scanf("%d", &number);

        if (result == 0)

        {

            clearBuffer();

        } else if (number < min || number > max)

        {

            printf("Invalid input. Please enter a number between %d to %d.\n", min, max);

        }

    } while(number < 1 || number > 10);

    return 0;

}