**Module 03 – Calculator**

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Microsoft C# Programming

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Module 03 - Lab 1

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To begin, the Calculator application displays a welcome message with a brief description of the program functionality. Below is a screenshot of a user successfully entering 2 numbers and an operator choice, and seeing the result:

A screenshot of a computer

Description automatically generated

If the second number the user enters is a zero, and they select the option to ‘Divide’, they are presented an error message and prompted for a new operator choice:

A screenshot of a computer

Description automatically generated

If the user input for either number is not valid (either null or cannot be converted to a double), the user is shown an error message and the program loops to get new input:

A screenshot of a computer

Description automatically generated

If the user does not enter a valid menu option for the operator the program displays an error message and loops to get new input:

A screenshot of a computer program

Description automatically generated

Below is the code from my Program.cs file in the Calculator project:

//calculator

//takes two integers and lets the user choose from 4 operators

class Program

{

static void Main(string[] args)

{

string? userInput;

double firstNumber = 0;

double secondNumber = 0;

bool exitLoop = false;

printGreeting();//print an introduction to the program

//loop to get the first nummber from the user

while (!exitLoop)

{

print("Enter the first number:");

userInput = Console.ReadLine();

try

{

firstNumber = double.Parse(userInput);

exitLoop = true; // firstNumber saved we can move on

}

catch (FormatException)

{

print("Entry is invalid - only numbers are allowed");//loop again for a valid number

}

}

exitLoop = false;//rest to false for a new loop

//loop to get the first nummber from the user

while (!exitLoop)

{

print("Enter the second number:");

userInput = Console.ReadLine();

try

{

secondNumber = double.Parse(userInput);

exitLoop = true; // secondNumber saved we can move on

}

catch (FormatException)

{

print("Entry is invalid - only numbers are allowed");//loop again for a valid number

}

}

double result = doMath(firstNumber, secondNumber);

print("The result is: " + result.ToString());

//beginning of functions

void print(string message)

{

Console.WriteLine(message);

}

void printGreeting()

{

print("========================================");

print("Welcome to Tim's Calculator Console App!");

print("You will be asked to enter 2 numbers.");

print("Then you will choose an operator from the options of:");

print("Add (+), Subtract (-), Multiply (\*), Divide (/)");

print("===============================================");

}

double doMath(double num1, double num2)

{

//get the user's operator of choice and return the result of the equation

string? input;

while (true)

{

print("Enter an operator:");

print("1 - Add (+):");

print("2 - Subtract (-):");

print("3 - Multiply (\*):");

print("4 - Divide (/):");

input = Console.ReadLine();

if (input != null)

{

switch (input[0])//we will just take the first character

{

case '1':

return num1 + num2;

case '2':

return num1 - num2;

case '3':

return num1 \* num2;

case '4':

if (num2 != 0)

{

return num1 / num2;

}

else

{

print("The 2nd number is 0, we cannot divide by zero.");

break;

}

default:

print("Invalid operator option entered.");

break;

}

}

}

}//end of doMath function

}//end of main function

}//end of program