T.C.

GEBZE TECHNICAL UNIVERSITY

COMPUTER ENGINEERING DEPARTMENT

CSE 101
HW1 REPORT

THE NAME OF THE HOMEWORK

CALCULATOR MACHİNE

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PREPARED BY

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Introduction

The calculator offers various mathematical operations, including addition, subtraction, multiplication, division, exponentiation, finding the average of numbers, and finding the maximum of numbers. The program runs in a loop until the user chooses to exit by entering '0'.

Code Structure

Main Function

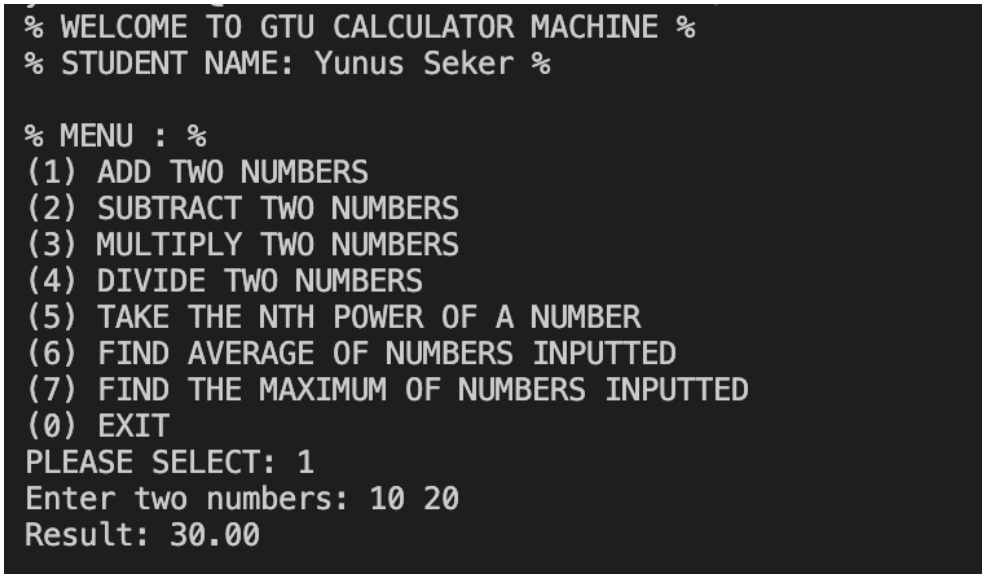
The main function is the entry point of the program. It displays a welcome message and then enters a loop that presents a menu to the user. The user can choose an operation from the menu, and the program performs the corresponding calculation. The loop continues until the user decides to exit by entering '0'.

Function Prototypes

Before the main function, there are function prototypes for various mathematical operations (add, subtract, multiply, divide, power, average, findMaximum). These prototypes provide a declaration of the functions before they are defined, allowing the main function to call them.

Mathematical Operation Functions

1. Addition (add): Takes two floating-point numbers as parameters and returns their sum.



2. Subtraction (subtract): Takes two floating-point numbers as parameters and returns the result of subtracting the second number from the first.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 2
Enter two numbers: 8 9
Result: -1.00
```

3. Multiplication (multiply): Takes two floating-point numbers as parameters and returns their product.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 3
Enter two numbers: 6 123
Result: 738.00
```

4. Division (divide): Takes two floating-point numbers as parameters and returns the result of dividing the first number by the second. Checks for division by zero.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 4
Enter two numbers: 16 4
Result: 4.00
```

5. Exponentiation (power): Takes a base (floating-point) and an exponent (integer) as parameters and calculates the result of raising the base to the power of the exponent using a loop.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 5
Enter base and exponent: 12 2
Result: 144.00
```

6. Average (average): Takes a variable number of inputs from the user until a non-numeric character is entered. Calculates and returns the average of the entered numbers.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 6
Enter numbers (enter a non-numeric character to finish): 1
Enter numbers (enter a non-numeric character to finish): 2
Enter numbers (enter a non-numeric character to finish): 4
Enter numbers (enter a non-numeric character to finish): 6
Enter numbers (enter a non-numeric character to finish): k
Result: 3.25
```

7. Maximum (findMaximum): Takes a variable number of inputs from the user until a non-numeric character is entered. Tracks and returns the maximum entered number.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 7
Enter numbers (enter a non-numeric character to finish): 1
Enter numbers (enter a non-numeric character to finish): 4
Enter numbers (enter a non-numeric character to finish): 5
Enter numbers (enter a non-numeric character to finish): 10
Enter numbers (enter a non-numeric character to finish): 22222
Enter numbers (enter a non-numeric character to finish): 3
Enter numbers (enter a non-numeric character to finish): p
Result: 22222.00
```

Menu and User Input

The program displays a menu of options to the user and uses a switch statement to execute the selected operation. User input is obtained using the scanf function.If user entered unexpected input program warning the user.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 19
Invalid choice. Please try again.
```

Exit Condition

The program continues to run until the user enters '0', at which point it prints a goodbye message and exits.

```
% MENU : %
(1) ADD TWO NUMBERS
(2) SUBTRACT TWO NUMBERS
(3) MULTIPLY TWO NUMBERS
(4) DIVIDE TWO NUMBERS
(5) TAKE THE NTH POWER OF A NUMBER
(6) FIND AVERAGE OF NUMBERS INPUTTED
(7) FIND THE MAXIMUM OF NUMBERS INPUTTED
(0) EXIT
PLEASE SELECT: 0
Exiting program. Goodbye!
```