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| CO&AL Project Report  W  W  We  Qq  we |
| Submitted to: Miss Madiha  Completion Date: 01/05/2022 |
| Sigma calculator  3rd Semester Project  Team Members: Talha Momin & Asad Abbas |



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| **OBJECTIVE:**  The main goal of this project is to program a fully functional calculator which provides basic arithmetic operations as well as a few other operations in assembly language. This project will be able to give users a precise understanding of how low-level programs are made and how does it work.  **tHEORY:**  This project is made using “emu8086” assembly language emulator. It has its own set of mnemonics and limitations. The calculator is performing all the basic tasks that a calculator is meant to perform but in low level assembly language therefore the user is required to have some basic knowledge of how assembly language work as well as the emulator.  The calculator is provided with a clean looking command line interface for the ease of user. This interface will provide a menu where the user will be able to select from a list of operations to perform. Functions have been made in this code for a list of operations to be performed.  **IMPLMENTATION:** |

# Calculator Made from Assembly Language

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| *“Find even more easy-to-use tools on the Insert tab, such as to add a hyperlink or insert a comment”* |
| To get started right away, just tap any placeholder text (such as this) and start typing to replace it with your own.  Want to insert a picture from your files or add a shape, text box, or table? You got it! On the Insert tab of the ribbon, just tap the option you need.  **Debugging-test-run:**  When we execute the program, this is the main menu with which we are greeted with. |

Text

Description automatically generated

Now selecting our first operation (Addition):

We select each operation by pressing respective key (in bracket) for each operation. In case for addition, we will press ‘+’.

The following image shows our output when we perform addition operation.

Note that we have given the user an ability to go back to the main menu once they have completed an operation.

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When pressed ‘ y ’, it will let the program know that you want to go back to the main menu therefore it will let you again perform from a list of available operations. If pressed ‘n’, it will simply quit the program with a nice note.

Now selecting (Subtraction):

In order to subtract, the user will input ‘ – ‘, in the main menu to let the program know that subtraction operation needs to be performed.

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Now selecting (Multiplication):

To multiply between two variables, the user will have to press the ‘\*’ button from the keyboard when the main menu appears.

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Now selecting (Division):

Similarly, to divide between two variables, the user will have to press the ‘ / ’ button from the keyboard when the main menu appears.

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Modulus Function:

In order to check whether a remainder exists between two variables, the user will have to press the ‘%’ button from the keyboard to start the modulo operation when the main menu appears.

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Power/Exponent Function:

The power function will let the user to find out exponent of a number that they input. This will be done by pressing the ‘ e ‘ button from the keyboard when the main menu appears.

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Factorial Function:

To find out factorial of a number, the user will have to press the ‘ f ’ button from the keyboard to start the factorial operation when the main menu appears.

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Conversion Operation:

And lastly, we have added a functionality to convert temperature from Celsius to Fahrenheit and vice versa. This is a menu driven function as it firstly lets you select from the type of conversion you want and then perform accordingly.

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In order to select this option, press ‘ c ’ from the keyboard in the main menu and furthermore, press ‘ 1 ’, ‘ 2 ’ for conversion operations and ‘ 0 ’ to go back to menu.

Celsius to Fahrenheit:

Text

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Fahrenheit to Celsius:

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