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SIMPLE CALCULATOR PROGRAM

BY:-

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OUTPUT LAYOUT :-

Intro Text - 1

Intro Text - 2

How May I Help You ?

Input eg.

CALCULATION ENTRY FIELD

ANSWER FIELD

GO

CLEAR

VIEW KEYPAD

1	2	3	+
4	5	6	-
7	8	9	*
0	()	/
.	del	=	clear

Basic Working:-

Calculator for simple operations → ①
is combined with calculator for

having common input & output fields. complex operations → ②

① Simple (Design):-

Includes :-

- Intro text
- Input (takes in the form of general sentences).
eg: Hey Calci, can you add 3 and 9 for me?
- output field
- 'Go' button that performs the calculation in input field by taking only numbers & keywords ignoring the other words.
- 'Clear All' button that clears all the text in both input & output fields.
i.e. it resets to blank space.

operations that can be performed are :-

- addition
- subtraction
- multiplication
- division
- modulus
- LCM
- HCF

→ Functions are defined for all operations :-

add, sub, mul, div, mod, lcm, h.c.f.

→ Dictionary is created having all the words relevant to the operations above.

eg. operations = { 'add': add, 'addition': add, 'sum': add, 'plus': add }

→ A function 'calculate' is defined to calculate the value of expression entered in the input field.

→ Another function 'extract' is defined which takes every word separated by space & converts them into float value. If it gets converted, that ~~char~~ word is a number. So it takes only the numbers and ignores the rest of the words.

→ Then inside 'calculate' function it checks for the related words to the operations defined (eg. addition or mul). If the word exists in the dictionary already defined, it performs the corresponding operation of add (+) or multiply (*).

→ If related words aren't found, the output box displays an error message.

Drawbacks :-

- takes only 2 nos. as input at a time
- BODMAS rule cannot be applied.
- Space is required b/w a number & an operator and also each word.

eg. $3 + 4 \rightarrow X$
 $3 + 4 \rightarrow \checkmark$

② Complex Calci (Design) :-

Includes:-

- input field
 - output field
- } common as for simple calci

- 'View Keypad' button

(The keypad is displayed only after this button is clicked)

- Keypad having
keys (0 - 9)
+, -, *, / (operator keys)
(,) (brackets)
. (decimal)
= (equal)
del (delete one character)
clear (clear input & output fields)

→ Has functions defined :-

1) Press → it converts the number or operator pressed in the keypad to a string character & adds to the input field.

2) equal press → it calculates the value in the input field by using the default eval operation.

And the output as answer is displayed in the output field.

3) del → it is used to delete one character from the last in the input field.

This works as this del functions takes all the characters except the last character & displays in the input field again.

`get()[0:-1]`

4) clear → it resets both the input & output fields to a blank space value.

[Same function as 'Clear All' button]

Drawbacks :-

- 'del' function removes last character but also displays all previous characters along with deleted one when next character is entered.
- Keypad is displayed when 'View Keypad' button is pressed.
'Hide Keypad' button & the function to hide buttons not able to create.

Advantages :-

- Follows BODMAS rules as inbuilt function eval is used.
- many numbers can be given as input.

NOTE :-

- For simple operations, use the PC keyboard to enter the expression as general sentences & click 'GO' to evaluate the expression.
click 'Clear All' to clear input & output fields.
- ⇒ For complex operations, use the keypad to enter the expression & click '=' button (equal) in keypad to evaluate the expression.
Click 'Clear' in keypad to clear input & output fields.

→ As the input expression gets evaluated in 2 different ways, use the corresponding 'GO' & '=' buttons to evaluate the expression for simple & complex operations respectively.

FRONT-END PROGRAM :

- create window (non-resizable)
- create :- labels (for intro)
- ⇒
 - input field
 - output field
 - 'GO' button (to calculate)
 - 'clear' button (to clear)
 - 'View Keypad' button
(for the keypad to be displayed).

Keypad :-

keys (0-9)
operators (+, -, *, /)
(,), del, =, clear, . (decimal)

BACK END PROGRAM :-

① → Simple Calci :-

- define operator functions (+, -, *, /, %, lcm, hcf).
- dictionary → contains related words to above operators
- extract function → to check which are numbers in input field.
- calculate function → to evaluate corresponding expressions.

② Complex Calci :-

- press function → to add values as characters in input field.
- equal press function → to evaluate using inbuilt function 'eval'.
- del → to get all characters except the last one.
- clear → clear both input & output fields.