

6a. Write a C program that reads a string from the user and prints the length of the string. Program must implement the logic to calculate the length and not use a library function.

Description:

This program reads a string input from the user and calculates its length without using any built-in string functions like strlen().

- The program takes a string as input and stores it in an array.
- It iterates through the string character by character until it reaches the null terminator ('\0'), which marks the end of the string.
- A counter variable keeps track of the number of characters in the string.
- Finally, the program displays the length of the string.

Example: Enter a string: Hello
Length of the string: 5

Algorithm:

Step 1: Start

Step 2: Declare a character array str to store the string and an integer variable length to keep count.

Step 3: Prompt the user to enter a string.

Step 4: Read the input string and store it in str.

Step 5: Initialize length = 0.

Step 6: Loop through the string until the null terminator ('\0') is encountered:

- Increment length for each character in the string.

Step 7: Once the loop ends, length contains the total number of characters in the string.

Step 8: Print the value of length.

Step 9: Stop.

Source Code:

```
#include <stdio.h>

int main() {
    char str[100];
    int length = 0, i = 0;
```

```
// Taking input from the user
printf("Enter a string: ");
scanf("%s", str);

// Calculating string length manually
while (str[i] != '\0') {
    length++;
    i++;
}

// Displaying the length of the string
printf("Length of the string: %d\n", length);

return 0;
}
```

Sample Output:

```
Enter a string:
Engineering

Length of the string: 11

Enter a string:
Hello

Length of the string: 5
```