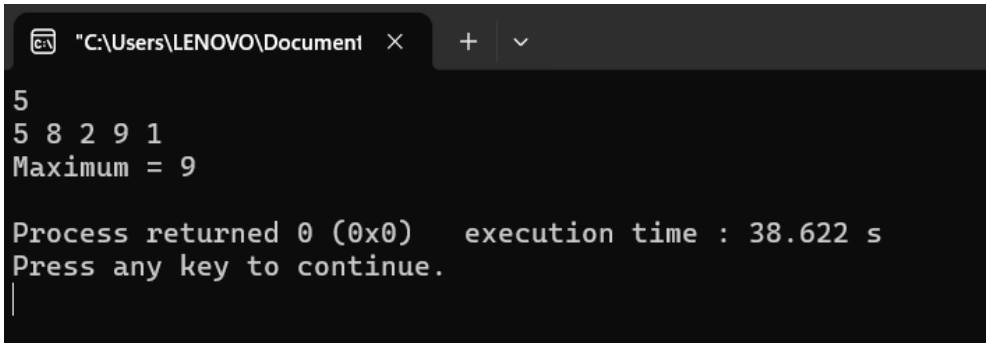
C Programming Assignment

Name : Jubaida Gulshan Ara
Student ID : 24201153
Department : Computer Science and Engineering
Course Code : CSE 104
Submitted to : Nuzhat Tabassum Progga

1.Write a function named findMax() that takes an integer array and its size, and returns the largest element.

```
#include <stdio.h>
int findMax(int arr[], int size) {
    int max = arr[0];
    for (int i = 1; i < size; i++) {
        if (arr[i] > max) {
            max = arr[i];
        }
    }
   return max;
}

int main() {
    int n;
    scanf("%d", &n);

    int arr[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    int maximum = findMax(arr,n);
    printf("Maximum = %d\n", maximum);

    return 0;
}
```

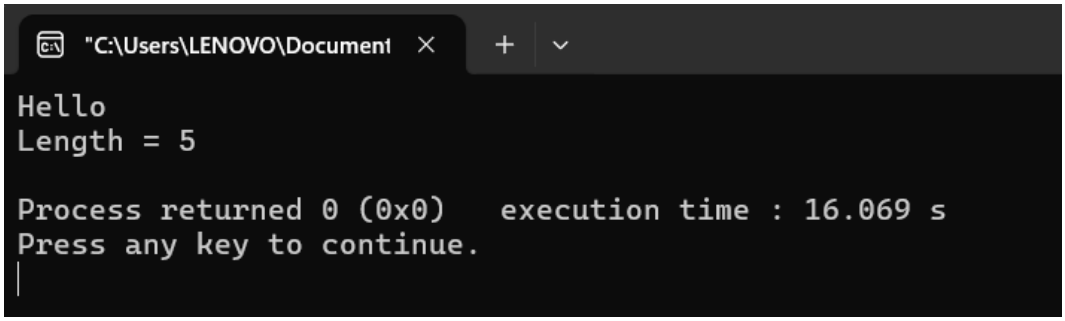
Output screenshot:



2.Write a function named stringLength() that takes a string as input and returns its length without using strlen().

```
#include <stdio.h>
int stringLength(char str[]) {
    int length = 0;
    while (str[length] != '\0') {
        length++;
    }
    return length;
}

int main() {
    char str[100];
    gets(str);
    int len = stringLength(str);
    printf("Length = %d\n", len);
    return 0;
}
```

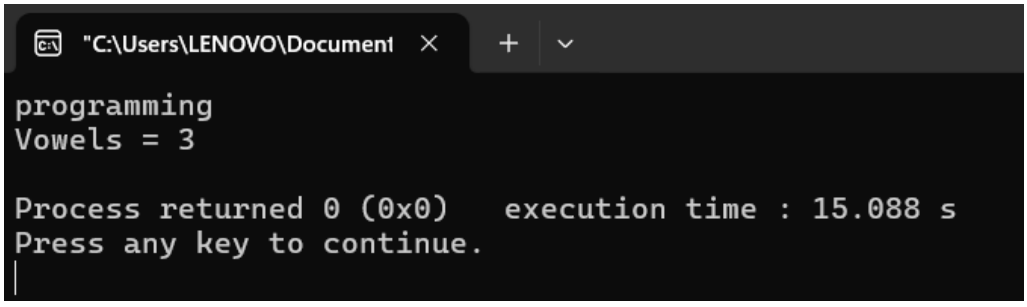
Output screenshot:



3. Write a function named countVowels() that takes a string as input and counts how many vowels (a, e, i, o, u) it contains.

```
#include <stdio.h>
int countVowels(char str[]) {
    int flag = 0;
    for (int i = 0; str[i] != '\0'; i++) {
        char ch = str[i];
        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
            ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {
            flag++;
        }
    }
    return flag;
}

int main() {
    char str[100];
    gets(str);
    int Count = countVowels(str);
    printf("Vowels = %d\n",Count);

    return 0;
}
```

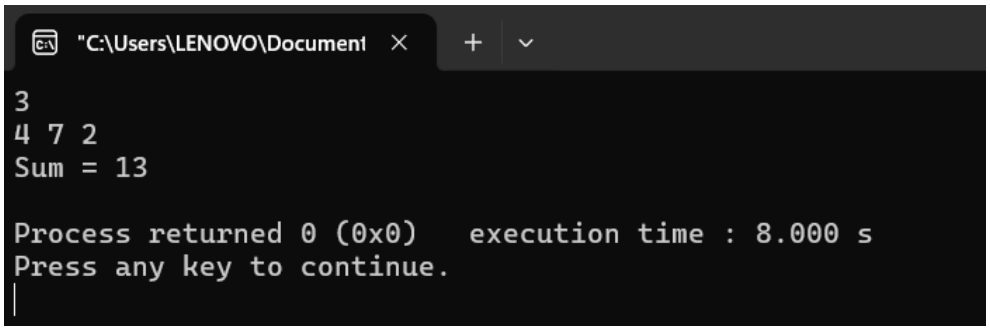
Output screenshot:



4. Write a function named sumArray() that takes an integer array and its size and returns the sum of all elements.

```
#include <stdio.h>
int sumArray(int arr[], int size) {
    int sum = 0;
    for (int i = 0; i < size; i++) {
        sum += arr[i];
    }
    return sum;
}

int main() {
    int n;
    scanf("%d",&n);

    int arr[n];
    for (int i = 0; i<n; i++) {
        scanf("%d", &arr[i]);
    }
    int total = sumArray(arr,n);
    printf("Sum = %d\n", total);

    return 0;
}
```

Output screenshot:



5. Write a function named mergeArrays() that takes two integer arrays and their sizes as parameters.

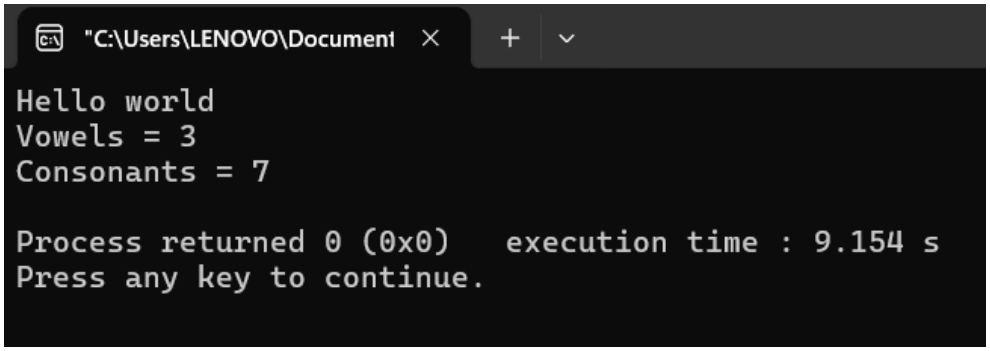
```
#include <stdio.h>
void mergeArrays(int arr1[], int size1, int arr2[], int size2) {
    int mergedSize = size1 + size2;
    int merged[mergedSize];
    for (int i = 0; i < size1; i++) {
        merged[i] = arr1[i];
    }

    for (int i = 0; i < size2; i++) {
        merged[size1 + i] = arr2[i];
    }

    printf("Merged Array: ");
    for (int i = 0; i < mergedSize; i++) {
        printf("%d ", merged[i]);
    }
    printf("\n");
}

int main() {
    int n1, n2;
    scanf("%d", &n1);
    int arr1[n1];
    for (int i = 0; i < n1; i++) {
        scanf("%d", &arr1[i]);
    }
    scanf("%d", &n2);
    int arr2[n2];
    for (int i = 0; i < n2; i++) {
        scanf("%d", &arr2[i]);
    }

   mergeArrays(arr1, n1, arr2, n2);
   return 0;
  }
```

```
3
1 2 3
2
4 5
Merged Array: 1 2 3 4 5

Process returned 0 (0x0)   execution time : 21.215 s
Press any key to continue.
```

6. Write a function named countVowelsConsonants() that takes a string as input and counts the number of vowels and consonants.The function should print both counts inside the function.

```
#include <stdio.h>
void countVowelsConsonants(char str[]){
 int vowels = 0, consonants = 0;
 for(int i = 0; str[i] != '\0'; i++){
 char ch = str[i];
 if(ch >= 'A' && ch <= 'Z'){
 ch += 32;
 }
 if(ch >= 'a' && ch <= 'z'){
 if (ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'){
 vowels++;
 }
 else{
 consonants++;
 }
 }
 }
 printf("Vowels = %d\n", vowels);
 printf("Consonants = %d\n", consonants);
}
int main() {
 char str[100];
 gets(str);
 countVowelsConsonants(str);
 return 0;
}
```

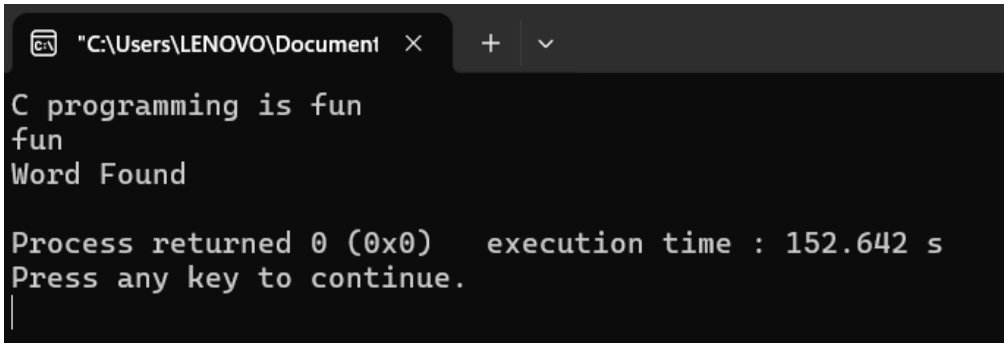
Output screenshot :



7. Write a function named findWord() that takes a string and a word as parameters and checks whether the word exists in the string.
The function should print "Word Found" or "Word Not Found" accordingly.(use library function of string).

```
#include <stdio.h>
#include <string.h>
void findWord(char str[], char word[]) {
    if (strstr(str, word) != NULL) {
        printf("Word Found\n");
    } else {
        printf("Word Not Found\n");
    }
}

int main() {
    char str[200], word[50];

    scanf(" %[^\n]s", str);
    scanf("%s", word);

    findWord(str, word);

    return 0;
}
```

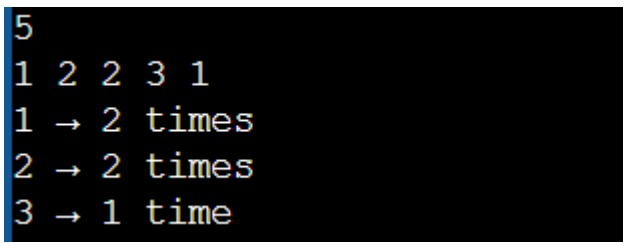
Output screenshot:



8. Write a function named countFrequency() that takes an integer array and its size as parameters.

```
#include <stdio.h>
void countFrequency(int arr[], int size)
{
int visited[size];
for (int i = 0; i < size; i++){
visited[i] = 0;
}
for (int i = 0; i < size; i++){
if (visited[i] == 1){
continue;
}
int count = 1;
for (int j = i + 1; j < size; j++){
if (arr[i] == arr[j]){
count++;
visited[j] = 1;
}}
if (count == 1){
printf("%d → %d time\n", arr[i], count);
}
else{
printf("%d → %d times\n", arr[i], count);
} } }
int main(){
int n;
scanf("%d", &n);
int arr[n];
for(int i = 0; i < n; i++){
scanf("%d", &arr[i]);
}
countFrequency(arr, n);
return 0;
}
```

Output screenshot:



(Codeblocks terminal not showing '→' sign, so used online compiler)