**COMSATS** **University Islamabad, Lahore Campus**

**Block–C, Department of Computer Science**

**COMSATS University Islamabad, Lahore Campus, 1.5KM Defence Road, Off Raiwind Road, Lahore**

**S2 LAB Exam – SPRING 2021**

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| Course Title: | Programming Fundamentals | | | | Course Code: | | CSC103 | Credit Hours: | 4(3,1) |
| Course Instructor/s: | Tahir Muhammad | | | | Programme Name: | | BSE / BCS | | |
| Semester: |  | Batch: |  | Section: |  | | Date: |  | |
| **Time Allowed:** | **1.5 Hour** | | | | **Maximum Marks:** | | | **25** | |
| Student’s Name: |  | | | | Reg. No. |  | | | |
| **Important Instructions / Guidelines:**   * Use proper C Language syntax for coding questions. * Add your code to this word file and submit it on MS Forms * Check your system before starting your lab Exam. * Save your programs on a secure Drive on your system.  |  |  |  |  | | --- | --- | --- | --- | | **Question No.** | **CLO/PLO** | **Max. Marks** | **Obtained Marks** | | **1** | CLO2 (PLO2) C2 | 25 |  | | **Total** |  | 25 |  | | | | | | | | | | |

**Q1: Write a C program that receives a character array of size 100 from and user and performs the following operations:**

* **Prints the total character count. [5 Marks]**
* **Prints the frequency of each character. [5 Marks]**
* **Prints all characters except vowels. [5 Marks]**
* **Swap all characters of the given array between even odd index and print the updated array values. i.e. 'a','b','c','i','o','p','k','a','c','u','j' is given array and after swapping should print 'b', 'a', 'i', 'c', 'p', 'o', 'a', 'k', 'u', 'c', 'j' [10 Marks]**

*Note: Write separate function for each of the above operations and only reference variables are allowed to pass values between functions.*

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| #include <stdio.h>  #include<string.h>  int charCount(char arr[]);  int charFrequency(char arr[], char ch);  void excludeVowel(char arr[], int size);  void charSwap(char arr[], int size);  int main()  {  int size, choice, result,i;  printf("\nEnter the size of string. ");  scanf("%d", &size);  char str[size], ch;  fflush(stdin);  printf("\nEnter string: ");  gets(str);  printf("\n 1. Count number of characters in an array.");  printf("\n 2. Print Frequency of each character.");  printf("\n 3. Print all characters except vowels.");  printf("\n 4. Swap all between even and odd index.");  while(1)    {  printf("\nEnter your choice (1-4): ");  scanf("%d", &choice);  switch(choice)  {  case 1:  result = charCount(str);  printf("\nThe number of characters in given array is: %d\n\n", result);  break;  case 2:  charFrequency(str, ch);  break;  case 3:  excludeVowel(str, size);  break;  case 4:  charSwap(str, size);  break;  default:  printf("\nPlease enter a valid choice (1-4). Please try again...");    }  }  }  int charCount(char str[])  {  int l=0;  l=strlen(str);  while(str[l]!='\0')  {  l++;  }  return l;  }  int charFrequency(char str[], char ch)  {  fflush(stdin);  int count = 0,i;  printf("\nEnter a character to find its frequency: ");  scanf("%c",&ch);  for( i = 0; str[i]!='\0'; i++)  {  if(ch == str[i])  count++;    }  return count;  }  void excludeVowel(char str[], int size)  {  int i;  printf("\n string after excluding vowels:");  for(i = 0; str[i]!='\0'; i++)  if (!(str[i] == 'a' || str[i] == 'A' || str[i] == 'e' || str[i] == 'E' || str[i] == 'i' || str[i] == 'I' || str[i] == 'o' || str[i] == 'O' || str[i] == 'u' || str[i] == 'U'))  {  printf(" %c ", str[i]);  }  }  void charSwap(char str[], int size)  {  fflush(stdin);  char swap,i;  for(i = 0; str[i]!='\0'; i=i+2)  {  swap = str[i];  str[i] = str[i+1];  str[i + 1] = swap;  }  printf("\nUpdated string is: ");  for(i = 0;str[i]!='\0'; i++)  printf("\t%c", str[i]);  } |