Fast**National University of Computer & Emerging Sciences, Karachi  
Fall-2017 CS-Department  
Lab Final Exam**

|  |  |  |
| --- | --- | --- |
| **Course Code:** EL-213 | **Course Name:** Computer Organization & Assembly Lang Lab | |
| **Instructor Name(s):** Syed Zain ul Hassan, Sehrish Saeed, Sumaiyah Zahid | | |
| **Student Roll No:** | | **Section No: G** |
| **Date: 5-12-2017** | | **Time: 1:30 - 3:30** |

**Instructions:**

Attempt all tasks

Return the question paper after exam

**Max Marks**: 20 points

**Task1: (5 marks)**You are given a sequence of 22 uninitialized bytes starting from variable *myVar*. Now consider the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte#** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| **Op** | 4 | 5 | 7 | 9 | 8 | 3 | 5 | 6 | 8 | 0 | 9 | 7 | 4 | 2 | 4 | 6 | 7 | 8 | 9 | 7 | 5 | 4 |

Write a program which first fills the 22 bytes with any random number between 0 to 15 and then lets user select a byte. Then rotate the selected byte according to corresponding ***op*** given in the table for that byte. In addition to that, each even byte will rotate left and odd byte will rotate right.

**Task 2: (5 marks)**Write a program which counts the frequency of each character with other and display it in well-defined format.

String: “Coal is love.”

**Task 3: (5 marks)**Write a program for an ATM machine which contains procedures named as *CheckPassword, Deposit, Withdrawal and BalanceInquiry.* The ATM will authenticate any user if the previous set password got matched otherwise the card will be blocked. There must be nested function calling between *CheckPassword* and the rest one. Then from within *CheckPassword*, call other functions if and if password is correct in 3 trials.

In every function call other than *CheckPassword* you have to display the address of the runtime stack of its calling procedure (*CheckPassword*).

**Task 4: (5 marks)**

Write a program which contains a procedure to read characters from a keyboard until the last four characters read make up the word D O R Y. Display the number of characters that were read. (Read 25 characters at max). Then encrypt the total input string to next to next character.

Sample Output: (Assuming character sequence A F G D O R Y were entered)

Characters Read: 7