National University

Of Computer & Emerging Sciences Faisalabad-Chiniot Campus

Assignment # 2
EE 229 – Computer Organization and Assembly Language
Fall 2021
Mr. Abdul Qadeer Bilal

Submission Guidelines:

- ✓ Submit Word Document and PDF.
- ✓ Attempt all questions.
- ✓ Late Submissions won't be accepted in any case.
- ✓ Do not use cover page or any file.
- ✓ Comment your code where needed.
- ✓ Not a Handwritten Assignment.
- ✓ Incase Copied:
  If (checkPlagiarism () == true)
  setMarks(0);
- ✓ Add appropriate screenshots of executed code, Assembly codes would be submitted in .asm file. Format – RollNo_AssignmentNo_Name

Q1: Implement all the following conditional statements in assembly language. Assume that val1 and X are 32-bit variables. Assign proper values to registers and variables to form the Boolean expression true or false.

(a): Implement the following pseudocode in assembly language:

```
if ebx > ecx then
X = 1
```

(b): Implement the following pseudocode in assembly language:

```
if edx _ ecx then
X = 1
else
X = 2
```

(c): Implement the following pseudocode in assembly language:

```
if ( val1 > ecx) AND (ecx > edx) then
X = 1
else
X = 2
```

(d): Implement the following pseudocode in assembly language:

```
if ( ebx > ecx) OR (ebx > val1) then
X = 1
else
X = 2
```

(e): Implement the following pseudocode in assembly language:

```
if ( ebx > ecx AND ebx > edx) OR (ebx > eax) then
X = 1
else
X = 2
```

Q2. Write a program that does the following:
1. Fill an array with 50 random integers.
2. Loop through the array, displaying each value, and count the number of negative values.
3. After the loop _nishes, display the count.
Note: The Random32 procedure from the Irvine32 library generates random integers.

Q3. Write a program that takes input (0-9) from the user and displays the following pattern.
Sample Output:
Enter the number for the pattern: 5

```
*****
****
***
**
*
```

If the input value is out of range, the program should display an error message.

Q4. Write a program that asks the user to enter an integer test score between 0 and 100. The program should display the appropriate letter grade according to the following table:

Score Range	Letter Grade
90 to 100	A+
80 to 89	A
70 to 79	B
60 to 69	C
0 to 59	F

Use of Conditional Control Flow Directives is MUST.

The program should contain the procedures to do the following tasks:
1. To get the user input and validate the input
2. To calculate the grade
3. To display the grade

Q5. Create a program that functions as a simple Boolean calculator for 32-bit integers. It should display a menu that asks the user to make a selection from the following list:
1. x AND y
2. x OR y
3. NOT x
4. x XOR y
5. Exit program

The program should run in a loop until the user selects the exit program choice. When the user makes a choice, call the appropriate procedure as listed below:
_ AND op: Prompt the user for two hexadecimal integers. AND them together and display the result in hexadecimal.
_ OR op: Prompt the user for two hexadecimal integers. OR them together and display the result in hexadecimal.
_ NOT op: Prompt the user for a hexadecimal integer. NOT the integer and display the result in hexadecimal.
_ XOR op: Prompt the user for two hexadecimal integers. Exclusive-OR them together and display the result in hexadecimal.
Use of Conditional Control Flow Directives is MUST. Each procedure should do one specific task. The code should be efficient.

Q6. Write a program that take input string from user and check whether the input string is palindrome or not. Write this program with the help of procedures. Each procedure should do one specific task.

GOOD LUCK