Lab Task

Course Name [Course Code]:	Computer Organization and Assembly Language [CS-2165]	Course Instructor:	Mr. Faizan Younas
Due Date:	29-03-2025	Weightage:	100%

Instructions:

- Do not copy and paste solutions from other sources. Any instances of cheating will result in zero marks.
- In your code, include your registration number and name in comments at the top of the program.
- Run your program in DOSBox and take a clear screenshot of the output with code. Paste the screenshot into a Word document.
- Save the Word document as a PDF file and name it with your registration number (e.g., "1234567.pdf").
- Submit the PDF file as your final solution.

Note: Make sure to proofread your solutions carefully to ensure accuracy and completeness.

Practice Question

1. Password Strength Checker

A bank wants to create a simple system to evaluate the strength of user passwords. The system checks for the following:

The password must contain at least one uppercase letter, one lowercase letter, and one number.

The system should notify the user of the missing criteria if these conditions are unmet.

Task:

Write an assembly program that:

Prompts the user to input a password (maximum of 20 characters).

Check if the password contains at least one uppercase letter, one lowercase letter, and one digit.

It uses loops to go through each character of the password and conditional jumps to check for each criterion.

Displays messages based on the findings:

"Password is Strong" if it meets all criteria.

If an uppercase letter is missing, display "Add an uppercase letter."

If a lowercase letter is missing, display "Add a lowercase letter."

If a number is missing, display "Add a digit."

2. Word Count in a Sentence

An editor wants a program to help them count the number of words in sentences, as they frequently need to ensure that sentences fall within a specific word count.

Task:

Create an assembly program that:

Accepts a sentence as input (up to 50 characters).

It uses an array to store each character and a loop to iterate through the characters.

Counts the words by identifying spaces between characters and counting non-space sequences as words.

Displays the total word count once the entire string has been analyzed.

Hint:

Consider using spaces, commas, or periods as word delimiters. Use conditional jumps to identify and skip over these characters while counting.

3. Vowel and Consonant Counter

A language processing application requires a program to analyze short phrases and count the number of vowels and consonants in each phrase.

Task:

Write an assembly program that:

Prompts the user to enter a phrase (maximum 30 characters).

Iterates through each character using a loop.

Uses conditional jumps to check if each character is a vowel (a, e, i, o, u) or consonant.

Displays the count of vowels and consonants separately after analyzing the entire phrase.