Objectives: In this assignment, you familiarize yourself with the while and do-while loop.

Note: You can discuss the assignment with your friends or your tutor but you have to complete by yourself. Copying other’s work is not permitted and you will get 0 point for any part you copied from your friends.

1. (30 points). OddNumberSum

Write a program segment that reads a natural number n (n≥1) from keyboard, then calculates and displays the sum of all odd numbers from 1 to n. Use the while loop to validate input, if the number is smaller than 1, display an error message and the user can try again.

Sample run:

Please enter a natural number greater than 1: -7
Invalid data. Please enter a natural number greater than 1: 9
Sum of odd numbers from 1 to 9 is: 25

2. (30 points) LetterCounting

Write a program to ask the user to enter a String which consists of only alphabet letters a-z or A Z and a character. Then your program will count the number of times this character repeated in the String (ignore case). ‘A’ is considered different with ‘a’. Note: You no need to validate the user’s input for this exercise.

Hint: you can use while statement to check each character in String from left to right. The quite condition of while loop is when you checked all characters in string.

Sample run:
3. **(30 points)** Exercise 5 in page 229 using while or do-while instead of for loop.

4. **(10 points) StringReversion**

   Write a program to ask the user to enter a string of characters. And then show that string in reverse order of characters. You must use while or do-while to finish this exercise.

   **Sample run:**
   
   Please enter a string: ABCDEF321
   After reversing: 123FEDCBA