UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

INF 154 Assignment 6

Practical #: 6

Topic: Practical Lecture 6

– Reinforce the following concepts

- **If and Switch statements**
- **While loop**
- **nested while loop**

Practical Name: INF154Prac6xxxxxxxxx (where xxxxxxxxx is your student number)

Due: Monday, 01 May 2023 at 08:30

Code

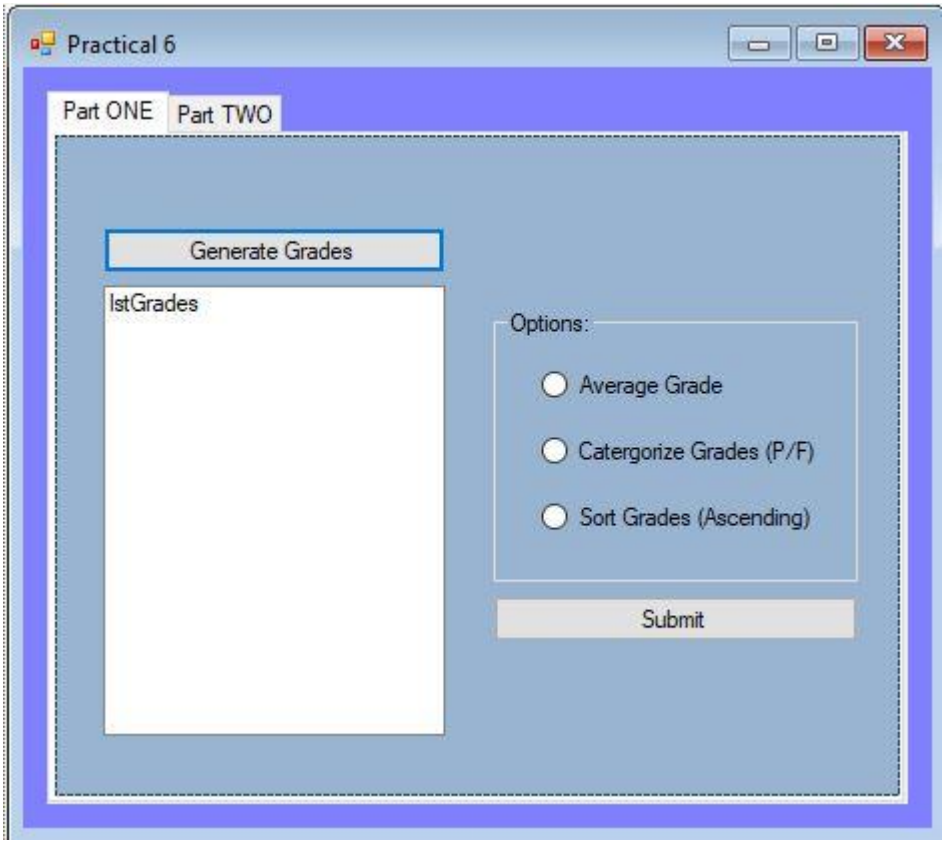
You will need to code a 2-part program that will be able to generate random grades between 0-100. This program should be able to do the following:

- **to calculate the average of all of its grades.**
- **to tell you how many fall into the pass/fail category.**
- **to sort the grades in ascending order.**

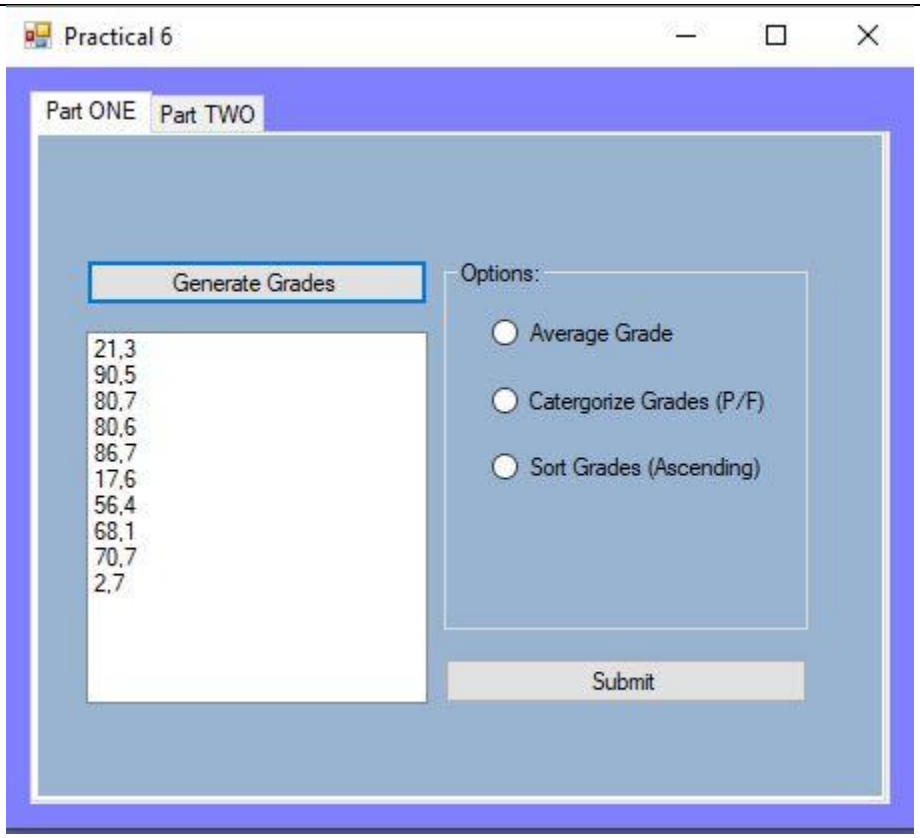
The second part will be a simple factorial calculator that will generate an answer based on the input given by the customer.

Step 1: Create a tabControl that contains two tab pages (one that has part one and the other that has part two). Ensure that the naming conventions and labels are written correctly.

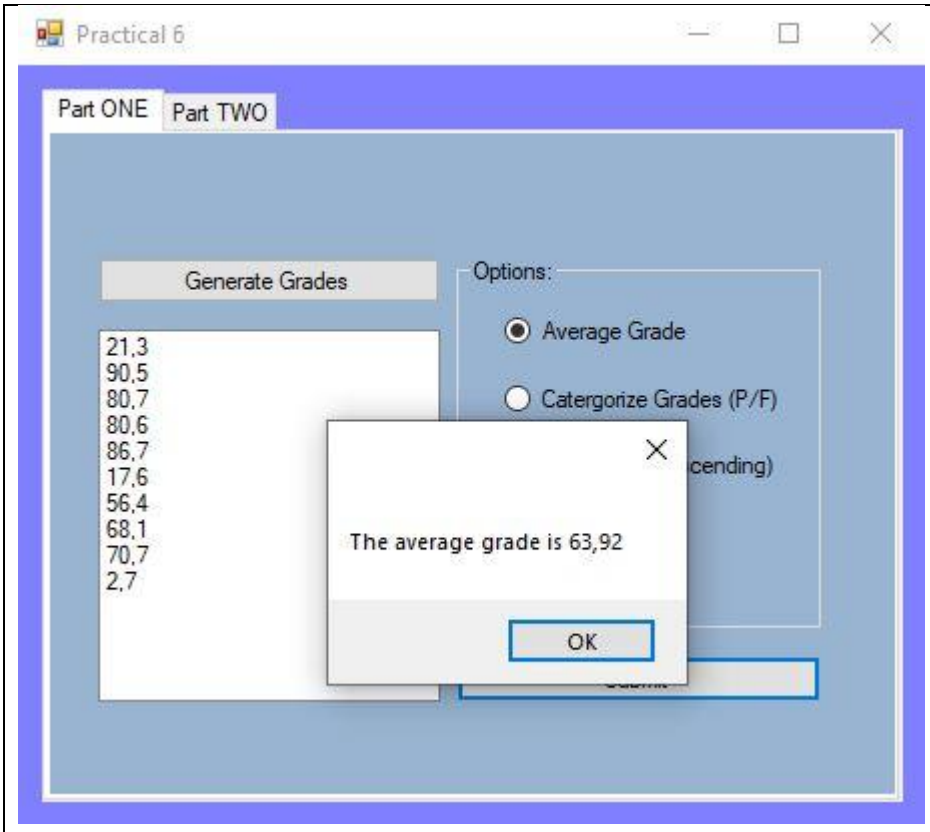
Step 2: PART ONE – Create a grade analysis page that contains a list box (lstGrades), Generate Grades buttons (btnGrades), three radio buttons within an options groupBox, and a submit button that will be used to trigger the events for each radio button.



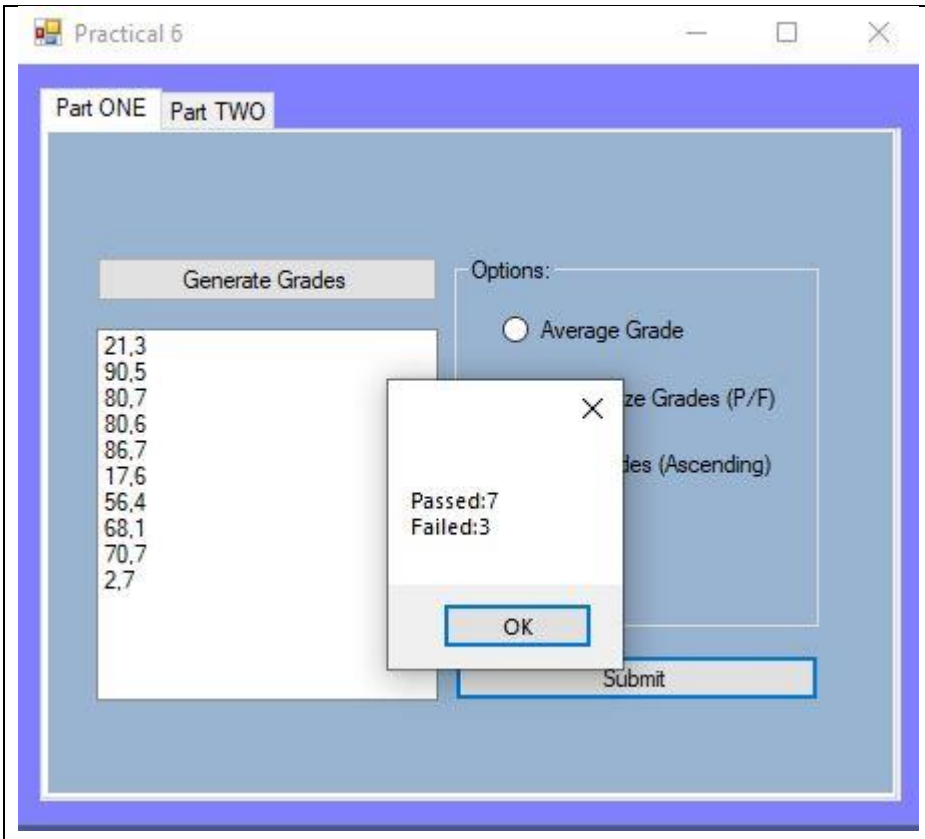
Step 3: When the generate grades button is clicked: 10 random double/decimal numbers need to be generated (NOT INTEGER NATURAL NUMBERS). Please ensure that the numbers are capable of containing decimals. Display these 10 random numbers in the list box (note: not a richTextBox)



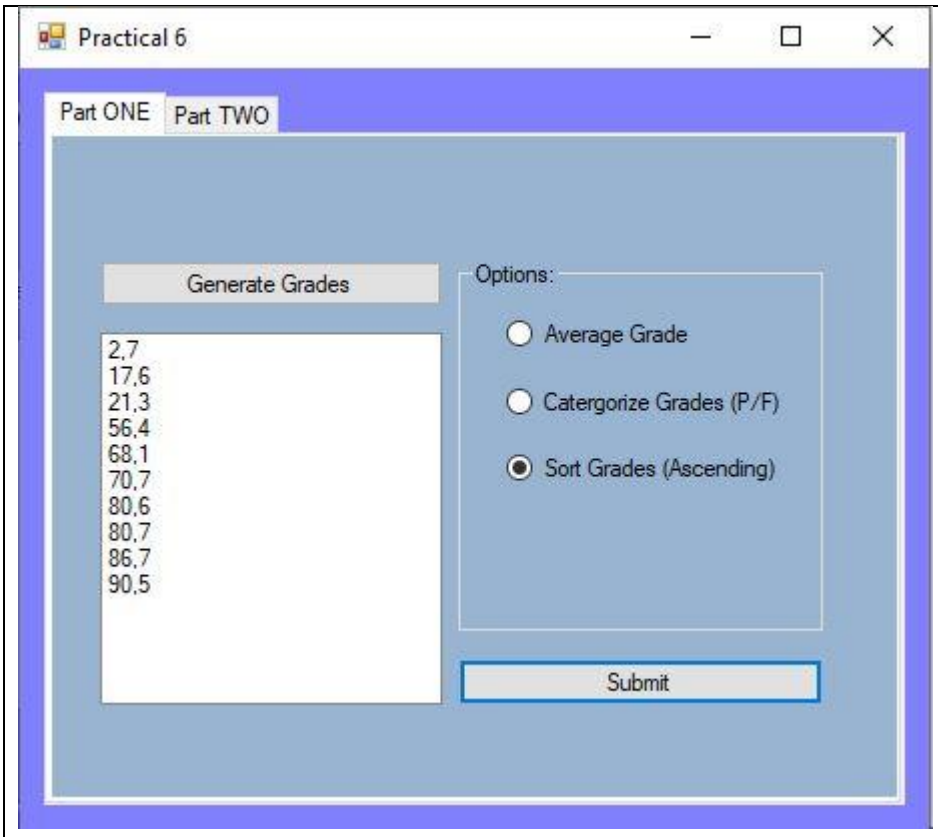
Step 4: When the Average Grade Radio Button is clicked (radAvgGrade) : then a messageBox should appear displaying the average of all the grades that were just generated.



Step 5: When the Categorize Grades Radio Button is clicked (radCatGrades) : then a messageBox should appear displaying the amount of students that managed to pass (>= 50%) and the amount that failed (< 50%). [Note: make use of some sort of counter]



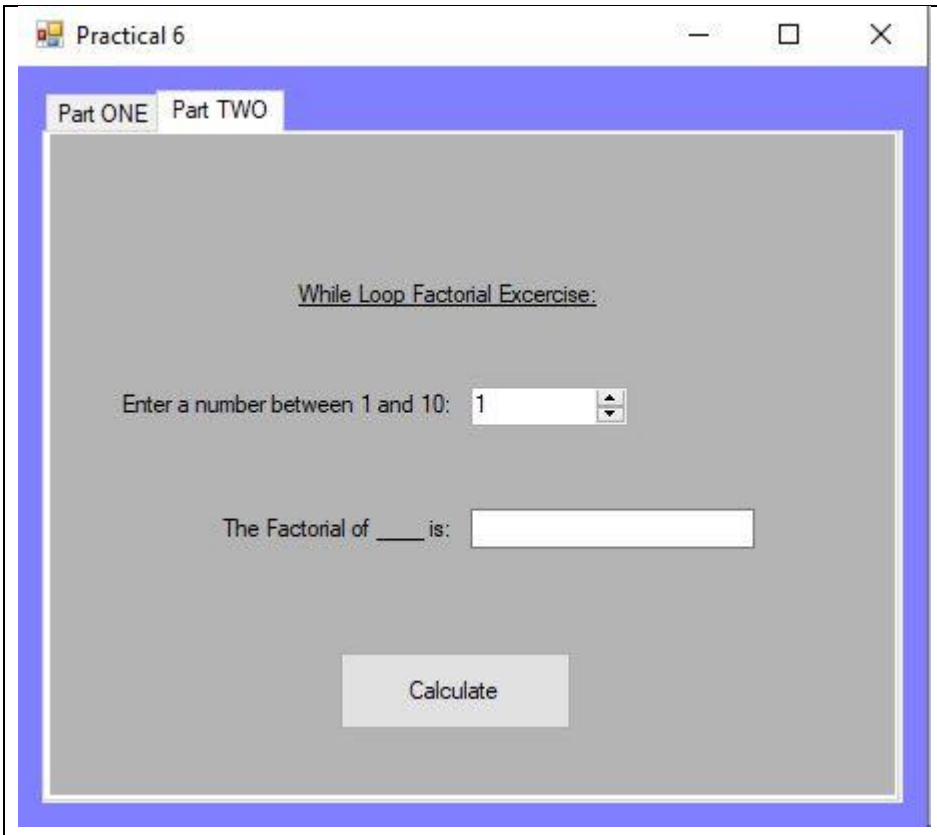
Step 6: When the Sort Grades Radio Button is clicked (radSort) : then the list box on the left should be updated to display the generated numbers in an ascending order (ordering the grades from smallest to biggest).



Step 7: Ensure that there is some validation that will send an error message via a messageBox if no radioButtons were checked.

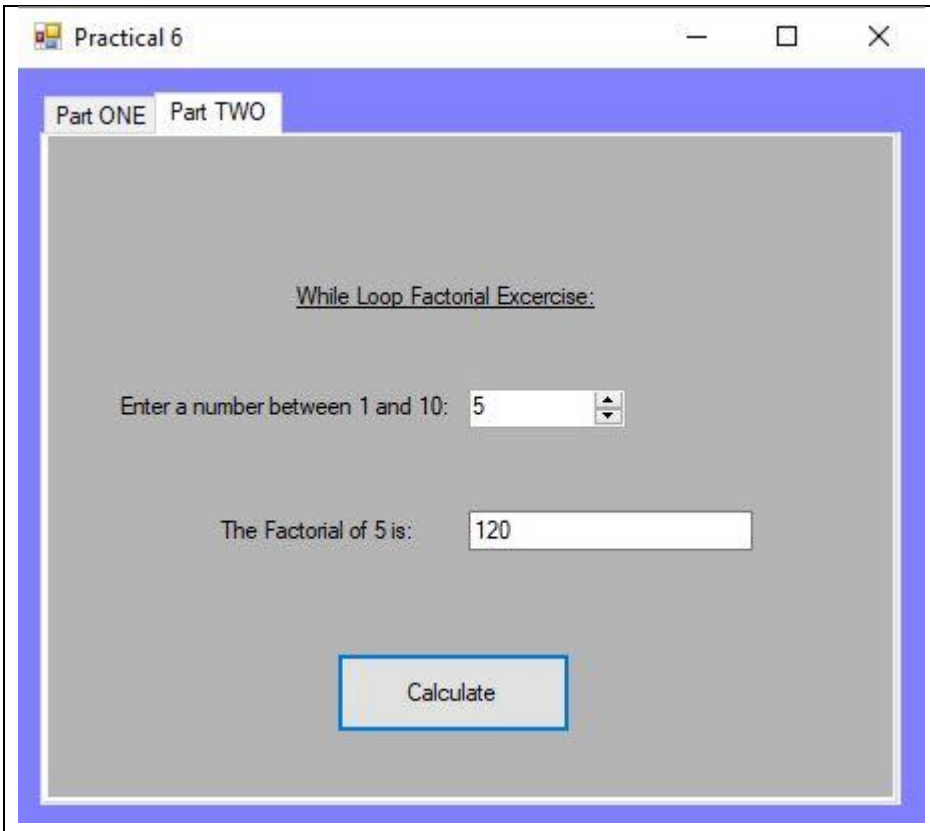
PART TWO:

Step 1: Create this interface in tab two (Part Two):



You are instructed to set the maximum amount for the numericUpDown (nudNumber) to 10 and the minimum to 1 as the user is instructed to enter a number within this range. We do not need to create an if statement that displays an error message if the user entered a value outside of this range, rather we can set this in the front end.

Step 2: When the Calculate button is clicked: Two things should happen. The first being that the label on the left of the textbox (lblFactorial) should be updated writing 'The Factorial of x is' where x is the number that the user entered in the numericUpDown. The second thing that should occur is that the value of the factorial number is displayed in the textbox (txtFactorial)



[Note: For clarification on what a factorial is: https://www.indeed.com/career-advice/career-development/how-to-calculate-factorial#:~:text=A%20factorial%20is%20a%20function,n(n%2D1).)

Marking RUBRIC

Part One	**Mark**
10 Random Double Numbers are generated once 'Generate Grades' button is clicked	2
Average of numbers are displayed in the correct format in a messageBox	3
Categorize the amount of Passed and Failed grades (displayed through messageBox)	3
Sort the grades by ascending order	3
Validation if no Radio buttons were checked	1
Part Two	
NumericUpDown has the correct maximum and minimum limits (1-10) range	1
The label (lblFactorial) is updated based on what the number entered by the user was	1
Correct Factorial value is shown in the textbox (txtFactorial)	2
Good amount and use of comments	1
Total	**/ 17**

Submit your Practical 6c project on ClickUP as follows:

Due Date: 1st May 2023.

Name your project, **INF154Prac6xxxxxxxxx** (where xxxxxxxxx is your student number) and compress (zip) your project.

Submit under the Practical 6 submission link.