UNIVERSITY OF WESTMINSTER

INFORMATICS INSTITUTE OF TECHNOLOGY

Informatics Institute of Technology

Business School
Assignment Cover Sheet

Course:	**Foundation Certificate Programme**
Unit Code and Description:	Introduction to Programming in Python – P1
Module Leader:	Mr. Sudharshan Welihinda
Assignment Number:	1
Assignment Type:	**Individual**
Issue Date:	**13th July 2021**
Hand – in – Date:	**30th July 2021**
Deadline:	**on or before 9.00 AM**
Weighting:	
Qualifying mark:	**40%**

The department is not responsible if an assignment is lost. To cover this eventuality, you are advised to take a photocopy of the assignment OR to ensure you have the means of re-creating it.

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1. Procedure for submission:

- Create a folder including your coursework report (In PDF format) and all the python codes. (Python 3.x source codes)
- Name the folder as "**DOC 333 Coursework report – StudnetID**"
  (E.g DOC 333 Coursework report – 20210xxx)
- Then convert your folder to a ZIP file and submit it to the link given in LMS before the deadline (Link will be available under ***Coursework*** section)
- Ensure you submit your ZIP folder on time as per the given deadline else, the submission will be considered as a late submission.
- Check if you are uploading the correct ZIP file as you will be given only ***one chance*** to submit/email. Changes cannot be done.

2. **Penalties for Late Hand In:**
   - If students submit coursework late but within 24 hours (or one working day) of the specified deadline, the work will be marked and will then have 10% of the overall available marks deducted, to a minimum of the pass mark (40%).

   - If students submit coursework more than 24 hours (or one working day) after the specified deadline, they will be given a mark of zero for the work in question.

3. **Exceptional Factors Affecting your Performance:**
   - Students should submit written evidence to the Registrar's Department with a copy to the Module Leader of exceptional circumstances, which they consider having caused them to submit assessments late and for which they do not wish to attract any penalty. These must be handed over/emailed to the Registrar within four working days of the hand-in-date.

Assignment Brief

Question 1

Suppose you need to convert an amount (which less than 100,000 and has no decimals) to English word representation or to USD currency.

Write a Python program to accept the amount and the desired option, i.e. whether to convert the amount to word representation or to USD currency, and then to display the appropriate result. You can choose to have words for the numbers in lowercase or uppercase.

For currency conversion, assume 1 USD = Rs. 200.00 and the result is rounded to nearest whole number.

Some test case examples are mentioned below.

Test case 1:

Please Enter the Amount: 25,750

Please enter your Option: W (To convert to word representation enter 'W', to convert to USD currency enter 'C')

Result: *Twenty Five Thousand Seven Hundred and Fifty*

Test case 2:

Please Enter the Amount: 213

Please enter your Option: W (To convert to word representation enter 'W', to convert to USD currency enter 'C')

Result: *Two Hundred and Thirteen*

Test case 3:

Please Enter the Amount: 25,750

Please enter your Option: C (To convert to word representation enter 'W', to convert to USD currency enter 'C')

Result: USD 129

Test case 4:

Please Enter the Amount: 150

Please enter your Option: C (To convert to word representation enter 'W', to convert to USD currency enter 'C')

Result: USD 1

Question 2

Write a program that gets the coefficients a, b and c of a quadratic equation $ax^2 + bx + c = 0$ & calculates and prints its real roots (if they exit) considering the following test cases.
Quadratic equations may have one or two real roots or no real roots at all. When using the quadratic formula, you should be aware of the following three possibilities.

1. Two different real roots - The discriminant $(b^2 - 4ac)$ is a positive number.
2. Two real identical roots - The discriminant $(b^2 - 4ac)$ is equal to 0.
3. No real root - The discriminant $(b^2 - 4ac)$ is a negative number.

If the quadratic equation is in the form of $ax^2 + bx + c = 0$

The coefficient of x^2 : a
The coefficient of x : b
The constant value : c

The discriminant part of the quadratic equation is $(b^2 - 4ac)$

The equation for finding the roots of quadratic equation: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Some test case examples are mentioned below.

- **Test case 1:**

  Enter the coefficient of x^2 : 1
  Enter the coefficient of x : 2
  Enter the constant value: 1
  The discriminant is zero -> There are two real identical roots
  The roots of $x^2 + 2x + 1 = 0$ are -1 and -1

- **Test case 2:**

  Enter the coefficient of x^2 : 1
  Enter the coefficient of x : -5
  Enter the constant value: 6
  The discriminant is greater than zero -> There are two real distinct roots
  The roots of $x^2 - 5x + 6 = 0$ are 2 and 3

- **Test case 3:**

  Enter the coefficient of x^2: 3
  Enter the coefficient of x : -2
  Enter the constant value: 1
  The discriminant is less than zero -> There are no real roots

Deliverables

The following should be submitted.

- A brief report including
  - A description of the problem statement
  - Algorithm you have taken to approach the solution
  - A table of test cases used to test the programs and the results.
  - Screen shots of the test cases used to test the programs and the results.
- All source code of your solution (.py files)

Note:

- All codes must be written in Python 3.x version.
- A listing of the programs (ensure that your program listing is appropriately commented)
- You should submit the softcopy of the report and the project inclusive of all source code of your solution.