SCIT, University of Wollongong

CSIT110/CSIT810

2021 Session 3

Assignment 2 (10%) due on Saturday 30th July 2021 at 00:00AM

Objectives

- Able to write clear code with comments and follow coding convention
- Able to use variables with meaningful names and correct data types
- Able to define functions and class objects

Marking criteria:

- Total mark is 10. Deduct 1 mark for each day late.
- More than 3 days late will result in a zero mark.
- Code must be able to run with no errors: 0 mark for the whole assignment if there is an error is thrown.
- Correct file format (.py extension): 0 mark for the whole assignment if file submission is not in correct format.
- Use submission template for file submission.

Question 1	correctness, completeness and consistency with the assignment specification	2.5 marks
Question 2	correctness, completeness and consistency with the assignment specification	2.5 marks
Question 3	correctness, completeness and consistency with the assignment specification	2.5 marks
Question 4	correctness, completeness and consistency with the assignment specification	2.5 marks
Overall	comments include name, student number, subject code; clear code and follow coding convention; use variables with meaningful names and correct data types	Deduct up to 1 mark

Submission Instruction: Assignment 2 submission is on Moodle. Put all your python code into a single python file (file extension .py) and submit it.

Save the file in this format name_uowID_a2.py

Assignment questions: there are 4 assignment questions.

Write clear code with **comments** and follow **coding conventions**. Comments should include **your name**, **student number** and **subject code** on top of your code. Please also add this information to the variables as stated in the template Your code must work **exactly** like the provided examples given the input in the examples.

```
name = 'John Snow'
student_num = '1234567'  # Student number
subject_code = 'CSIT110'  # CSIT110 or SP121

    ...
```

Question 1. Write a function that satisfies the following specifications.

Function name	question_1
Detailed information	Write a program to take in the following input. You may use any text for the prompt Get 3 inputs from the user. Treat the first 2 inputs as str objects Treat the last input as an int object Let N be the number given in the last user input. Display a string with the following content – a string containing N number of the first string object, and each of them are separated by the second string object. **Do not** use string concatenation or f-string. Use the end parameter in the print function to display the string object. There should be a newline at the end of the string. You may assume the input are valid.
Example console output	prompt1 **hava** prompt2 **na** prompt3 **4** havanahavanahavanahava

Question 2. Write a function that satisfies the following specifications.

Function	`question_2`
Parameters	-
Return Value	-
Detail Information	Get user inputs for an upper bound number and a gap number with the prompts shown in the example. The upper bound number is a non-negative integer and the gap is a positive integer. The program displays numbers from 0 to the upper bound, and from upper bound down to 0. The gap between two consecutive numbers must be correct according to the user input. Your program must work **exactly** like the following example (the text in bold indicates the user input) Your program does not have to handle error cases when ● upper bound < 0. ● gap <= 0 You should test your program for different kind of scenarios, here are some examples for testing: ○ Upper bound = 5, gap = 1: results 0, 1, 2, 3, 4, 5. sum=15, and 5, 4, 3, 2, 1, 0. sum=15. ○ Upper bound = 5, gap = 2: results 0, 2, 4. sum=6 and 5, 3, 1. sum=9. ○ Upper bound = 5, gap = 7: results 0. sum=0 and 5. sum=5. ○ Upper bound = 15, gap = 7: results 0, 7, 14. sum=21 and 15, 8, 1. sum=24. ○ Upper bound = 0, gap = 1: results 0. sum=0 and 0. sum=0. There is a space after every colon.

Example console output	`Enter upper bound: `**`20`**
	`Enter gap: `**`3`**
	`Go forward: 0, 3, 6, 9, 12, 15, 18.`
	`Sum of numbers = 63`
	`Go backward: 20, 17, 14, 11, 8, 5, 2.`
	`Sum of numbers = 77`

Question 3. Write a function that satisfies the following specifications.

<table>
<tr><td>Function</td><td><code>question_3</code></td></tr>
<tr><td>Parameters</td><td>-</td></tr>
<tr><td>Return Value</td><td>-</td></tr>
<tr><td>Detail Information</td><td>
<p>This function computes the total interest earned for a given year based on the following rated.</p>
<p>Base Interest:</p>
<p>Ordinary Account (OA): 2.5% per annum.</p>
<p>Special Account (SA): 4% per annum.</p>
<p>Medisave Account(MA): 4% per annum.</p>
<p>Retirement Account(RA): 4% per annum (only applicable for those age 55 and above.)</p>
<p>Extra Interest:</p>
<table>
<tr><th>Age</th><th>Extra interest (capped at $20,000 for OA)*</th></tr>
<tr><td>Below 55 years old</td><td>1% per annum on the first $60,000</td></tr>
<tr><td>55 years old and above</td><td>2% per annum on the first $30,000, 1% per annum on the next $30,000</td></tr>
</table>
<p>* OA contributes a maximum of $20000 to the extra interest calculation.</p>
<p>Using the prompts shown in the example, calculate and display the interest earned for in one year assuming no money was deposited into the account during that period.</p>
<p>You do not have to round the interest up or down.</p>
<p>You should test your program for different kind of scenarios, here is another example for testing:</p>
<p>35, 30000, 10000, 20000 -> $2450.00</p>
</td></tr>
<tr><td>Example 1 console output</td><td>Enter current age: <b>35</b>
Enter current amount in OA: <b>10000</b>
Enter current amount in SA: <b>10000</b>
Enter current amount in MA: <b>10000</b>
Your interest rate this year will be $1350.00</td></tr>
<tr><td>Example 2 console output</td><td>Enter current age: <b>65</b>
Enter current amount in OA: <b>10000</b>
Enter current amount in SA: <b>10000</b>
Enter current amount in MA: <b>10000</b>
Enter current amount in RA: <b>10000</b>
Your interest rate this year will be $2150.00</td></tr>
</table>

Question4. Write a function that satisfies the following specifications.

Function Name	question_5
Detailed Information	Tim downloaded a large number of poorly named files, e.g. "patient_zero[20150203].txt", "[shn]shn_batch101.csv", "[x264]psa_recording[1280x720].mp4" and would like to automatically clean up these filenames by removing all instances of square brackets and the contents contained within. 1. Prompts for filenames with "Filename?" repeatedly, until an empty string is given 2. Prints a string with all the cleaned filenames, separated by commas, without any spaces between.

Example Console output	`Filename?`**`patient_zero[20150203].txt`**
	`Filename?`**`[shn]shn_batch101.csv`**
	`Filename?`**`[x264]psa_recording[1280x720].mp4`**
	`Filename?`
	`patient_zero.txt,shn_batch101.csv,psa_recording.mp4`