Assessment #3

Submission deadline: 24th April 2022 11:59pm AEST via Moodle

Instruction

Below are the coding tasks that you need to complete individually for assessment 3. You should download the Intellij project folder as below and unzip it. Then work on the tasks in the project folder.

Assessment3.zip

This assessment is worth 15% of the unit total. It contains 100 marks which has two components:

- Task correctness weighted and will be converted to 90 marks:
  - Task 1 has 15 marks
  - Task 2 has 6 marks
  - Task 3 has 12 marks
  - Task 4 has 22 marks
  - Task 5 has 20 marks
  - Task 6 has 11 marks
  - Task 7 has 14 marks
- Code readability & documentation has 5 marks.
- ...ks.

...c integrity mentioned in Week 01. You should code alone and ask the unit staff ...ublic forums.

...onstrate side effects in methods. Briefly explain step by step how side effect ...value types as inline comment.

...an array of `double` type and initialised with 5 sensible values. Call task1b ...alling). Display your array before and after to prove side effect has taken place ...types.

...b parameters, an array of `double` as reference type and a double value. In the ...by incrementing the value of the array. Note that you are not required to

Code in `task2()` method as below. Using the String format method just once, display the integer values 1, 10, 100, 1000 each on its own line right justified. The values must not be hard-coded. Example of the output as below.

```
   1
  10
 100
1000
```

Hints: Inserting the character sequence `\n` in a String embeds a 'line feed' (new line – similar to pressing ENTER when typing words in Notepad) in the string e.g. "`line1\nline2`"

Task 3 (W5 - 12 marks)

Code in `task3()` method by implementing the following sequence using ArrayList.

1. Declare an array list named myList which has the capacity of 10.
2. Add the following numbers "one", "seven", "five", "three", "eight", "ten".
3. Insert the value "eleven" in between "five" and "three".
4. Print all the elements in the myList
5. Delete the second last element in the myList
6. Print true if myList contains "seven"; false otherwise.

Note: Your code should use the appropriate data types.

Task 4 (W6 - 22 marks)

...de a `private` method called `gradeScale` that takes in a parameter `mark` as a String. The mark should be ...nverted to appropriate data types using Java Class libraries and ...valuate the below grading scale. If the mark is ...t within the range, it should return an appropriate error message to the user and vice versa. The method co... should use the appropriate selection control structure and the conditions must demonstrate mutually exclusive ...and collectively exhaustive. The method should only use one return statement.

Code	Grade	Mark
HD	High Distinction	80–100
D	Distinction	70–79
C	Credit	60–69
P	Pass	50–59
N	Fail	0–49

Example of output:

`gradeScale("80")` will return ""`High Distinction`" in terminal

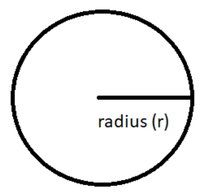
Task 5 (W6 - 20 marks)

Code a `private` method called `daysOfTheWeek` that takes in a parameter day as a String. Based on the input argument, the method should return the appropriate day (e.g. Monday, Tuesday...etc) using a "switch case" control structure. If the day is not within the range, it should return an appropriate error message to the user and vice versa. The code conditions should demonstrate mutually exclusive and collectively exhaustive. The method should only use one `return` statement.

Example of output:

`daysOfTheWeek("2")` will return "`Tuesday`" in terminal

Task 6 (W7 - 11 marks)



Formula:

$$\text{Circumference of a circle} = 2\pi r$$

$$\text{Area of a circle} = \pi r^2$$

Code in `task6()` method that display the `radius` which is integer and the `ratio` of `area` to `circumference` (perimeter of a circle) which are double for all circles with integer radii beginning with a radius of 1 and continuing while the ratio is less than 30 (exclusive). All variables should be declared with appropriate data types and initialised with sensible values. The code should use appropriate repetition control structure.

Hint: The Math Class in Java Libraries has methods that gives the value of π and power.

Task 7 (W7 - 14 marks)

Code in `task7()` method by drawing a CROSS (X), with its width (horizontal length) defined by the variable below:

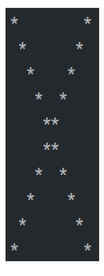
```
int size = 5;
```

The shape should be dynamic (not hard-coded) where changing the value of the `size` variable will draw shapes of different sizes of CROSS (X). This shape should be drawn by printing `*` using `for` loop, with the result shown on the terminal. All variables should be declared with appropriate data types and initialised with sensible values.

Example:

for `int size = 5`, this should produce:

for `int size = 10`, this should produce:



Code Readability (5 marks)

Overall code submission must be well organised and very easy to follow included but not limited to code indentation, code consistency, effective use of whitespace etc.

Code Development & Documentation (5 marks)

Overall code submission demonstrates correct syntax usage and meaningful naming conventions.Code documentations/inline comments are thorough and in detail.

Submission Instruction