CIS351

Homework 2

Academic Integrity

- Remember the Academic Integrity Policies, of this course.

Background

National Big Tree Program is a conservation movement to locate, appreciate and protect the biggest tree species in the United States. More than 750 champions are crowned each year and documented in the annual publication, i.e the *National Register of Big Trees*.

For more than 70 years, the goal of the National Big Tree Program has remained: to preserve and promote the iconic stature of these living monarchs and to educate people about the key role that these remarkable trees and forests play in sustaining a healthy environment." (from the American Forests Big Tree Registry site:)

How are the "winners" crowned? Each nominated tree is given a score based on its girth, height and canopy spread. A formula is applied which gives each tree a points value:

Total Points = Trunk Circumference (in inches) + Height (in feet) + 1/4 * Average Crown Spread (in feet)

The average crown spread is calculated by taking the largest spread and the narrowest spread and dividing that total by 2. Here is a link to a US Forest Service web site with an
example: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5202838.pdf

In this application we are going to help the "Big Tree Hunters" by buiding a Java application that will calculate the Total Points value of a candidate "big tree", which can be used in the nomination process.

Requirements

You will write a single Java program, PA1.java, that must:

- Prompt for and receive the Common Name of the tree. The prompt must be of the form, "Enter the common name: " and the cursor must remain on the line beside the space following the colon.
- Prompt and receive the Scientific Name of the tree. The prompt must be of the form, "Enter the scientific name: " and the cursor must remain on the line beside the space following the colon.
- Prompt and receive the Circumference of the tree. The prompt must be of the form, "Enter the circumference in inches: "
- Prompt for and receive the Height of the tree. The prompt must be of the form, "Enter the height in feet: "
- Prompt for and receive the largest Crown Spread of the tree. The prompt must be of the form, "Enter the largest crown spread in feet: "
- Prompt for and receive the narrowest Crown Spread of the tree. The prompt must be of the form, "Enter the smallest crown spread in feet: "
- Calculate the Average Crown Spread of the tree ans save the value in an integer variable. Note: You may loose some data here if the sum of crown is an odd number. DO NOT worry about it for THIS program.
- Calculate the points value for the tree using the formula:
  Total Points = Trunk Circumference (inches) + Height (feet) + 1/4 * Average Crown Spread (feet)
- Output a report in the following format:

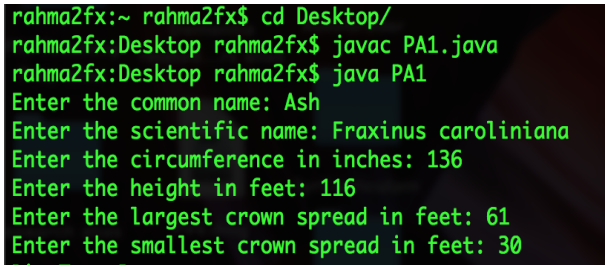
```
Big Tree Report:

    Common Name: the common name of the tree
Scientific Name: the scientific name of the tree

  Circumference: the circumference of the tree (in inches)
         Height: the height of the tree (in feet)
  Average Crown: the average crown spread of the tree (truncated to the nearest whole foot.)

   Total Points: the points for the tree
```

> NOTES:
>
> 1. The parenthetical instructions describe the output values and are not to be output.
> 2. The three blank lines are significant and must be included.
> 3. The colons must line up vertically.
> 4. Each of the 10 lines of output must be terminated with a single newline "\n" character.
> 5. Your program should use appropriate data types for the values being input and calculated, and appropriate and meaningful names for all variables and constants.
> 6. **NOTE: For this assignment, we will only be testing your program with Integer inputs. Hence you CAN use integer for circumference, height, largestCrownSpread, smallestCrownSpread, averageCrownSpread and totalPoints.**

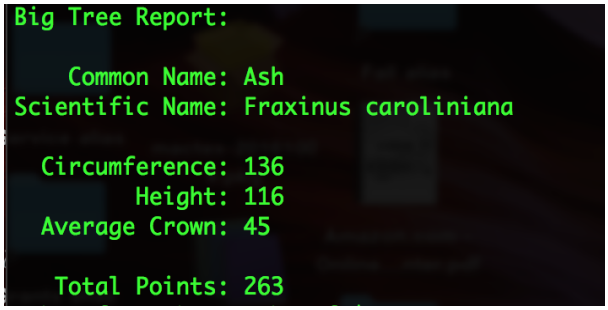
Input/Output Sample

To give you some idea, following two screenshot is provided.

The first screenshot illustrates the input prompt and corresponding inputs:



The following screenshot illustrates the program output:



Input/Output test data

- You can test your program with the following data:

> Ash
> Fraxinus caroliniana
> 136

> 116
> 61
> 30

- This is what you should get as output if your program is correct:

> Common Name: Ash
> Scientific Name: Fraxinus caroliniana
> Circumference: 136
> Height: 116
> Average Crown: 45
> Total Points: 263

Grading Criteria

Total points: 100 points

Filled out Reflection Form : 10%

Correctly compiles and executes without any failure: 10%

Instructor grading based on style and code quality: 10%

Proper variable naming: 10%

Correctly scanned input: 20%

Correctly formatted output: 20%

Correct calculations: 20%

Submission Instructions

First zip the following and then submit the zipped folder in Blackboard

- final version of PA1.java.
- filled out Reflection Form (https://farahman.github.io/reflection-form.pdf).
- filled out cover sheet (https://farahman.github.io/CoverSheet.pdf).

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