Lab 2

Objectives:

- Learn about keyboard input to Java programs using the Scanner class.
- Practice using variables and assignment
- Experiment with simple arithmetic using the jGrasp Interactions pane
- Practice writing algorithms in pseudocode and considering alternative solutions

Preparation: Use variables to output a personalized message

1) Implement a Java program named `PetName.java` that simply prints the word “Hello.” Test it to ensure it works before proceeding.

2) Add some variable declarations, right at the beginning of the main method (i.e., before you print anything):

   ```java
   String name = "Daphne";
   String petName = "Luca";
   int age = 18;
   
   Substitute your name, age, and pet name. If you don’t have a pet, maybe try one of these: [http://www.medievalists.net/2013/06/23/medieval-pet-names/](http://www.medievalists.net/2013/06/23/medieval-pet-names/)
   
   3) Modify your program to print the message below, incorporating the variables in your printing statements. Test your program to ensure it works correctly.

   ```java
   Hello, my name is Daphne and I am 18 years old. I’m enjoying my time at Villanova, though I miss my pet Luca very much!
   ```

4) Check your program for style and comments. If necessary, fix indentation or add some blank lines to make it more readable.

5) Submit `PetName.java` through blackboard under the assignment “Lab 2 Prep”
Part A: Input using Scanner

1) Run PetName and compare your work to your partner's.

*Verify that the code works as stated, is well formatted and includes appropriate comments. If necessary, help your partner improve their code to make it more readable, then sign each other's worksheet.*

*Classmate signature: ________________________________

2) Now improve `PetName.java` so that it obtains the values of the variables `name`, `petName`, and `age` as input from the keyboard. Do this by inserting the appropriate code to use a Scanner to input value. Remember that you also need to add code for the prompt (i.e., you need to print the request for input, such as “Please enter name:”, *etc*).

```
Please enter name:
Anne
Please enter pet name:
Purkoy
Please enter age:
21
Hello, my name is Anne and I am 21 years old. I'm enjoying my time at Villanova, though I miss my pet Purkoy very much!
```

3) Add some more code to do a computation using the variable `age`, for example, computing and printing the person's age in dog years.

4) Check your work with your classmate.
   * Test each other's programs to ensure they work well. Be sure to test with different inputs for the name, pet name, age.
   * Did you use `scan.next()` or `scan.nextLine()` to input the name and `petName`?
   * ___________________________ Was it the same for your partner? ___________________________

   Both should work fine in this example, but they may cause different effects depending on the input provided or the order that the input is obtained: for example, if you decide to input the name, age, petName (in that order) instead of name, petName, age. Work with your partner to try to understand the differences between `scan.next()` and `scan.nextLine()` as they apply to this program.

Experiment with your code some more and discuss with your classmate.

What happens if you enter a full name instead of just the first name? ___________________________

______________________________________________________________
What happens if you enter the name instead of age or vice versa? ____________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Classmate signature: _________________________________
Part B: Use the jGrasp Interactions pane to test some code snippets

Open jGrasp and click on Interactions tab (lower part of window).

You can type in expressions, for example (works like calculator):

\[
\begin{align*}
4 + 3 & \quad \text{________} \\
3.1 \times 0.2e-4 & \quad \text{________}
\end{align*}
\]

... or Java statements such as variable declarations, assignment statements, and other simple Java code snippets.

\[
\begin{align*}
\text{int } a = 1 \\
\text{double } b = 3.4 \\
\text{int } c = 5; & \quad \text{// Note: semicolon is optional here} \\
a & = c \\
c & = 2
\end{align*}
\]

\[
\Rightarrow \text{You can type any expression to get its value; type variable names to get their values:}
\]

\[
\begin{align*}
a & \quad \text{________} \\
b & \quad \text{________} \\
c & \quad \text{________}
\end{align*}
\]

Try some more expressions and note what you get:

\[
\begin{align*}
14 / 3 & \quad \text{________} \\
14 \mod 3 & \quad \text{________} \\
143 / 60 & \quad \text{________} \\
143 \mod 60 & \quad \text{________} \\
8 / 12 & \quad \text{________} \\
8 \mod 12 & \quad \text{________}
\end{align*}
\]

String word, sentence;
word = "fish " \quad \text{________}

\[
\begin{align*}
1 + \text{word} & \quad \text{________} \\
1 + 1 + \text{word} & \quad \text{________} \\
\text{word} + 1 + 1 & \quad \text{________} \\
\text{sentence} = \text{word} + \text{word} & \quad \text{________} \\
\text{sentence} = \text{sentence} + \text{sentence} & \quad \text{________}
\end{align*}
\]

\[
\begin{align*}
\text{sentence} = \text{sentence} + \text{sentence} & \quad \text{________} \quad \text{________} \quad \text{________} \\
\text{this a few times and see what happens}
\end{align*}
\]

You can also experiment with Math:

\[
\begin{align*}
\text{Math.sqrt}(2) & \quad \text{________} \\
\text{Math.round}(2.83) & \quad \text{________} \\
\text{Math.PI} & \quad \text{________}
\end{align*}
\]

\[
\begin{align*}
double \phi = \text{Math.PI} / 3 \\
\phi & \quad \text{________} \\
\text{Math.sin}(\phi) & \quad \text{________}
\end{align*}
\]

Notes about other things you tried: ________________________________

\[
\text{Check & discuss your work with a classmate.}
\]

\[
\text{Classmate signature: ________________________________________}
\]

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Lab 2 Comments

Comments on this lab, please:

What was the most valuable thing you learned in this lab?

What did you like best about this lab?

Was there any particular problem?

Do you have any suggestions for improving this lab as an effective learning experience?