

AP Unit 2 Lab 3 – Instance Variables etc.

Pts: 10

Name _____

Class Hr _____

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I. A) Instance (class) variables (2.5)

- 1) a) Open **Greeter03A.java***
- b) Open and Run **AP1ch02lab03TestA**
- c) Complete the output:

Test program for person1
 SayHello method:
 Back to the test program:

Test program for person2
 SayHello method:
 Back to the test program:

- 2) a) In **Greeter03A** move **private String name = "Chris";** to between the last two braces
- b) Run **AP1ch02lab03TestA**
- c) Is the output the same as in #1) above? (yes/no) 2c) _____

- 3) a) In **Greeter03A** move **private String name = "Chris";** to before the line
String message1 = "Hi";
- b) Run **AP1ch02lab03TestA**
- c) What is the error message? _____
- d) In **Greeter03A** move **private String name = "Chris";**
 back to between the last two braces

- 4) a) In **AP1ch02lab03TestA** change
System.out.println("Back to the test program: " + person2.sayHello()); to
System.out.println("Back to the test program: " + person2.name);
- b) Run **AP1ch02lab03TestA**
- c) Write the error message: _____

- 5) a) In **Greeter03A** change **private String name = "Chris";** to
public String name = "Chris";
- b) Run **AP1ch02lab03TestA**
- c) Is the output the same as in #1) above? (yes/no) 4c) _____
- d) Describe the difference between #1)'s output and this output:

***Summary:** A variable declared in a class but not in a method is called an instance or class variable. An instance variable can not be accessed outside the class even by connecting it to an object like **person2.name** if the instance variable is declared as **private**. If an instance variable is declared as **public** then it can be accessed outside the class, and also possibly alter it inadvertently. Therefore, almost always instance variables are declared as **private**.

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B) **this** implicit object parameter variable (2.11)

- 1) a) Open **Greeter03B.java***
- b) Open and Run **AP1ch02lab03TestB**
- c) Complete the output:

Test program for person1
 'this' in method SayHello():
 Back to the test program:

Test program for person2
 'this' in method SayHello():
 Back to the test program:

- 2) a) In **Greeter03B** change **System.out.println("\'this\' in function sayHello(): " + name);**
 to **System.out.println("\'this\' in function sayHello(): " + this.name);**
- b) Run **AP1ch02lab03TestB**
- c) Is the output the same as in #1) above? (yes/no) 2c) _____

- 3) a) Open **Greeter03B3.java***
- b) Open and Run **AP1ch02lab03TestB3**
- c) Complete the output:

Test program for person1
 'this' in method sayHello():
 sayHey() method:
 Back to the test program:

Test program for person2
 'this' in method sayHello():
 sayHey() method:
 Back to the test program:

- d) In **Greeter03B3** in the SayHello() method change **sayHey();**
 to **this.sayHey();**
- e) Run **AP1ch02lab03TestB3**
- f) Is the output the same as in #3) above? (yes/no) 3f) _____

(Note: Read pages 67(bottom)-68 for an explanation of the **this** implicit object variable.)

***Summary:** A variable declared in a method is a local variable. A variable declared as a class variable is called an object. The **this** (reserved word) variable represents the object that is associated with the method i.e. the implicit object parameter on which the method is called.

C) Answer the following referring to the files **Greeter03B3** or **AP1ch02lab03TestB3**

- 1) The instance field (variable) in **Greeter03B3** is what? 1) _____
- 2) The local variables in **Greeter03B3** are what? 2) _____

- 3) The object reference variables in **AP1ch02lab03TestB3** are what? 3) _____

- 4) The first time **this** is used it represents what object? 4) _____

Turn in this sheet to be graded!