CSE1325 OOP Final Exam

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Name: Key UTA ID: 1000

Instructions:

1. Read all of the instructions for each question and answer what is asked. Do not write down random stuff if you don’t know the answer.
2. The test is worth 100 points and there will be 10 points extra credit available.
3. If you give an answer for the fourth extra credit question and then also give an activity you will be doing this summer, you will get two additional points.
4. If you have a question during the test, raise your hand and ask the proctor. You may or may not get an answer, but you won’t know unless you ask.

Define the following in your own words: {each def'n is worth 6 points}

1.a. Inheritance <Note: do not use any form of the word "inherit" in your definition of inheritance>

Making all the characteristics and behaviors of one class (called a "parent" or "super" class) available to another class ("child" or "sub") that is created using the original parent class.

If answer was "takes on characteristics and behaviors of another class" then only got 4 pts.

Ex.

Class Amphib class Salamander class Frog extends Amphib

{ private int eyes; { private int eyes; {

 private boolean breatheAir; private boolean breatheAir; }

 private boolean bUnderH2O; private boolean bUnderH2O;

 public boolean setEyes(int n) public boolean setEyes(int n)

 { if (n > 0) { if (n > 0)

 eyes = n; eyes = n;

 } }

} }

1.b. Event-driven programming (or event-based)

An event is an input to the program based on something outside the program rather than based on straight linear execution of statements. Example events could be mouse clicks, button pushes, clock interrupts, etc.

Event-driven programming is designing code that primarily reacts to external stimuli and handles it versus procedural programming.

1.c. Registering an eventListener

Registering an eventListener is the action of adding a "handler" method to some object where the object can accept some sort of external input or stimuli. The "handler" method will perform some defined action based on the specific stimuli/input that was received.

1.d. A framework

"A process that uses specific objects" is Sean's definition that you should have gotten in class.

1.e. Multi-threading

A thread is a strand of processing required to execute a program

Multi-threading is the task of breaking a program(s) into different strands of processing where each strand can be executed independently of other strands possibly on different CPU cores.

Answer the following questions with no more than two lines of code or two sentences:

Given the class Dog on the last sheet of the test, answer the following questions. You may tear off the page with class Dog but be careful not to tear off any other pages.

2.a. If we want to write a subclass Poodle of Dog, what would be the first line of code of the class?

 { 6 points}

public class Poodle extends Dog (

2.b. If we want to create a method getColor in the subclass just defined, what line would need to immediately precede the definition of getColor in the subclass? { 6 points}

@Override

2.c. If we want to take in data from the keyboard for age without using a GUI, what kind of objects would we typically need to define to read in the data with? Define an object that could read in data from the keyboard. { 6 points}

A scanner

Scanner keybd = new Scanner(System.in);

2.d. How would we use the object just defined to read in keyboard data for age? Define an integer variable and then write a statement to read an integer from the keyboard using the object defined in the previous question. { 6 points}

int age;

age = keybd.nextInt();

3.a. Draw a picture of a small GUI window that includes fields for a label, a money amount, and two buttons – one to go back and one to continue. { 8 points}

3.b. Write the code that draws all the items and the window from the previous question. You may assume that the money amount is a piece of private data called *purchase.totalAmount* and that it should be accessed with appropriate methods. Include the buttons on the window but do not implement any functionality at this point. Assume that error checking is done in the set functions for the class for those value entered from the GUI. Include the import statements you need for your code.

 { 12 points}

import java.awt.\*;

import java.awt.event.\*;

import javax.swing.\*;

/\* code stuff here classes, etc. \*/

 private JButton bButton;

 private JButton cButton;

 JFrame window = new JFrame();

 JLabel label = new JLabel("Total amount is: ");

 Float amt = purchase.getTotalAmount();

 JLabel label2 = new JLabel("" + amt);

 bButton = new JButton("Go back");

 cButton = new JButton("Continue");

 JPanel panel = new JPanel();

 panel.add(label);

 panel.add(label2);

 panel.add(bButton);

 panel.add(cButton);

 window.add(panel);

 window.setVisible(true);

3.c. Write the set function that error checks the value entered from the GUI. { 6 points}

public boolean setTotalAmount( Float amt )

{

 if (amt < 0)

 {

 /\* System.out.println("Something wrong with input value "); \*/

 totalAmount = 0;

 {

 else

 {

 totalAmount = amt;

 }

}

3.d Write the lines of code that would be needed to implement the functionality of the two buttons so that the go back button calls a method purchase.review() and the continue button calls purchase.payment(). { 12 points}

 bButton.setActionCommand("back");

 cButton.setActionCommand("continue");

 bButton.addActionListener(this);

 cButton.addActionListener(this);

 public void actionPerformed(ActionEvent e)

 {

 if ("back".equals(e.getActionCommand()))

 { purchase.review();

 }

 else if ("continue".equals(e.getActionCommand()))

 { purchase.payment();

 }

 }

3.e. What sort of exceptions might be generated from the code you have written for questions 3.b, 3.c, or 3.d? List two possible exceptions, tell which code they would be related to (3.b, c, or d) and tell how they could occur. { 8 points}

Many answers accepted

Extra Credit questions

XC1. What is JUnit? Do not give an example. {3 pts}

JUnit is a process for testing code

XC2. Write a declaration that creates a new Dog object (calling the constructor) to represent some fictional dog. Examples of fictional dogs are Snoopy, Scooby-Doo, Old Yeller, Toto, etc. You should include as much information as you know about the dog (at least 4 pieces of data including the dog's name.) If your fictional dog is not as well known as the above dogs, please include a note telling where this dog comes from, e.g. "Asta is the dog of Nick and Nora Charles from the Thin Man movies of the 1940's" {3 pts}

Ex:

 Dog astroJetson=

 new Dog(false, "Boxer", 'L', 'G', 4, "Astro", false);

XC3. Does the order to which you add Java components matter in terms of how they are displayed?

 Answer yes or no and tell WHY you answered yes or no. { 2 points }

Many answers accepted

XC4. What activity have you been doing this semester that you will NOT be doing this summer? {Any answer that I could share with my grandmother will receive 2 points. )