CSUS
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
Department of Computer Science

CSc 133 — Object-Oriented Graphics Programming

Name _____

SAMPLE EXAM

1. Write your name in the space above.
2. The exam is closed book, closed notes, except that you may use a *single sheet* of ***hand-written*** notes. If you use a note sheet you must put your name on it and turn it in with your exam.
3. There are 100 total points; you have 75 minutes to work on it — budget your time accordingly.
4. Absolutely NO use of ANY electronic devices is allowed during the exam. This includes cell phones, tablets, laptops, or any other communications device.
5. Please be neat — I cannot give credit to answers I cannot read.
6. The exam has 7 pages, counting this cover page. Make sure you have all the pages.

Problem	Points	Possible
1	_____	50
2	_____	15
3	_____	15
4	_____	20
Total	_____	100

1. Multiple Choice. Write the letter of the best answer in the blank to the left.

_____ A certain Java/CN1 class named "**`Point`**" has constructors "**`Point()`**" and "**`Point(int x, int y)`**". This is an example of

A. abstraction B. encapsulation C. inheritance D. overloading E. overriding

_____ A certain Java/CN1 class named **`Sphere`** contains a method named **`getColor()`** which returns the color of the **`Sphere`** object. This method is an example of a (an)

A. accessor B. mutator C. aggregation D. design pattern E. abstraction

_____ A certain Java/CN1 class named "B" extends another class named "A". Class B defines a method named "C" with the same signature as that of a method named "C" in Class A. Method C does not contain the keyword "super". A program constructs an instance of B and invokes method "C" in that object. The code which will be executed as a result of this invocation is

A. the code in A.C
B. the code in B.C
C. the code in A.C followed by the code in B.C
D. the code in B.C followed by the code in A.C
E. it depends on the code in A.C
F. it depends on the code in B.C
G. None of the above

_____ If a Java/CN1 program contains a declaration such as "class A {…}", where "…" represents the code defining the class, then

A. A has no parent class
B. A is its own parent
C. A is a superclass of Object
D. A is a subclass of Object
E. A is an abstraction of Object

_____ In Java/CN1, *inheritance* is indicated using the keyword

A. abstract
B. extends
C. implements
D. static
E. new
F. none of the above

_____ Before Java 8, an *interface* consists of

A. a set of method declarations (abstract methods)
B. a set of method definitions (implementations)
C. a class description given in an online Application Programming Interface (API)
D. the set of classes in an inheritance hierarchy
E. a set of accessor (selector and/or mutator) methods

_____ In a UML Class Diagram depicting classes named “Student” and “Course”, a label named “takes” on the diagram would most likely represent

A. a method in Student
B. a method in Course
C. an association
D. a multiplicity
E. a composition

_____ In CN1, when one object is registered as containing the method(s) to be invoked when another object generates an “ActionEvent”, we say the first object is a (an)

A. event generator
B. action performer
C. listener
D. layout manager
E. exception handler

_____ An association between two objects named “A” and “B” such that (1) B is referenced by A but not by any other object, and (2) the lifetime of B is controlled by A, is called a (an)

A. Composition B. Aggregation C. Abstraction D. Encapsulation E. Inheritance

_____ A CN1 build-in class *Container* is a

A. component
B. layout manager
C. design pattern
D. framework
E. more than one of the above
F. none of the above

[THERE WOULD BE MORE MUTIPLE-CHOICE QUESTIONS IN THE REAL EXAM…]

2. Two different programming teams have implemented a class named **Rectangle**. One team provided accessors to get and set the location (origin), width, and height of a rectangle, while the other team chose to make the origin, width, and height fields public so that they can simply be directly accessed (read and/or changed). The second team argues that if you have accessors which allow you to both get and set all the values in the rectangle, there is no difference in having the fields public. Explain why the second team does not know what they are talking about. Be specific; give an example of how their approach can produce a software system that fails.

3. An CN1 program displays a form which contains two components: a control container containing a single button, and a separate display container. The button has an action listener attached to it which is an instance of a separate class. The display container has a pointer listener attached to it which is likewise an instance of a (different) separate class. The form is a subclass of **`Form`**; the containers are subclasses of **`Container`**, and the button is a **`Button`**.

Draw a UML diagram depicting the associations between the elements of this program.

4. Writing a CN1 code, describe on the next page the structure of a program which implements a simple Graphical User Interface (GUI) consisting of a form with a border layout which has the following components:

(1) a single button on the north area, whose label is initially “Hello” and which prints the message “World” on the console when pressed;

(2) a side menu with a single item which when selected has the effect of changing the button label to “Goodbye”;

(3) a single container on the center area, on which pressing a pointer causes the background to become red, and releasing the pointer causes the background to become blue.

(note: CN1 **`Button`** class has a method *setText(String)* to change its label).

< use the NEXT PAGE for your answer to this question >

< This page is provided for your answer to the previous question >