Reading:

1. Deitel & Deitel, Chapter 9 & 10

Objectives:

2. Second Midterm.
3. Assign coding part of project to students.

Concepts:

1. Inheritance
2. Second Midterm
3. Project Assignment

References:

2. http://java.sun.com/j2se/1.4.2/docs/api/
1. Inheritance
   • Definition
     o Deriving an object from an existing class. In the other words, Inheritance is
       the process of inheriting all the features from a class.
   • Superclasses & Subclasses
     o Superclasses – A class from which a particular class is derived, perhaps with
       one or more classes in between.
     o Subclasses – A class that is derived from a particular class, perhaps with one
       or more classes in between.
     o Relationship – The Subclasses inherits methods from the Superclasses. A
       Subclass can override the Superclasses methods.
     o Protected - It signifies that the method or variable can only be accessed by
       elements residing in its class, subclasses, or classes in the same package.

2. Second Midterm
   • Exam Material
     o Methods
       • Recursion
       • Iteration
       • Dot Notation
     o Applications & Applets
       • Distinctions
       • Applet methods
         • Paint(Graphics g)
         • Init( )
         • Start( )
         • Stop( )
         • Destroy( )
     o String
       • Concatenation
       • Numerical Representation
       • Comparison
     o Refresh on Inheritance

3. Project
   • See Project Description on CS 201: Week 5 – Lab and CS 201: Week 10 - Lab
CS 201: Week 10 – Midterm

Time: 120 minutes
Closed Book/Notes

Name: ____________________________________ (Please Print)

Student ID: ________________________________

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<th>Max Points</th>
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Short Answer

1. Carefully read the following code.

```java
int limits = 0;
String message = “Illnos”;
String new_message = new String [20];
int n = message.length();
int j = 0;
for(i=0; i < n; i++){
    if(i == limit || i % 3 == limit){
        new_message[i] = “i”;
        n++;
    }
    else{
        new_message[i] = message[j];
        j++;
    }
}
system.println(new_message.substring(0,n));
```

What is the output?

illinois

If instead the following values were given:
message = “msssspp” & limits = 1
What is the output?
mississipp

2. Name and describe 4 of the functions that commonly must be overridden when working with Applets.

init( ) – Initialization when applet is loaded.
start( ) – Where the applet start after it is initialized.
stop( ) – Runs when the user exits the page.
paint( ) – What applet uses to display something on screen.
destroy( ) – Allows the applet to clean up after itself.
3. Define and describe the differences between recursion and iteration.

Recursion – A programming method in which a routine calls itself.

Iteration – A programming method where there is a pass through a group of instructions, which is repeated using loops.

- **Iteration**
  - Uses repetition structures (for, while or do…while)
  - Repetition through explicitly use of repetition structure
  - Terminates when loop-continuation condition fails
  - Controls repetition by using a counter

- **Recursion**
  - Uses selection structures (if, if…else or switch)
  - Repetition through repeated method calls
  - Terminates when base case is satisfied
  - Controls repetition by dividing problem into simpler one
  - More overhead than iteration
  - More memory intensive than iteration
  - Can also be solved iteratively
  - Often can be implemented with only a few lines of code

4. Describe through an example the Object Oriented concept of Inheritance. Make sure to explain the relationships between your objects.

For example, mountain bikes, racing bikes, and tandems are all kinds of bicycles. Mountain bikes, racing bikes, and tandems are all subclasses of the bicycle class. Similarly, the bicycle class is the superclass of mountain bikes, racing bikes, and tandems.
Objectives:
1. Create and Use Test Cases for Testing Final Project
2. Present Final Project.

Assignment:
You are to create a quick test case that examines at least 3 different scenarios and consists of at least 15 actions.

The Instructor or TA will pick up the test cases and then you’ll have time to present and demonstrate your project. Two test cases randomly selected from the class and the TA’s test case will be used to determine the functionality of the program.

Would there be a coding problem detected or if the project doesn’t provide all functionality, the teams will have one last attempt to modify their code and present the project a second time. If it’s the second time presenting they must demonstrate what modifications they did to their code as well as their reasoning behind it.

As always, your code should be clear and well commented. You are graded on neatness as well as correctness.

If the case of cheating arises it will be dealt in accordance to the Cheating Policy (refer to syllabus).