Mathematics 2170 : Computer Science I
Topics for Exam 1

You are responsible for the topics covered in labs 1 through 4, slides, lectures, and handouts for weeks 1 through 4, and all assigned readings in the textbook. The summary of methods in Figure 2.8 in the text will be available during the exam and you may bring a single 8.5” × 11” piece of paper with notes, but otherwise the exam will be closed-book. The following list of specific topics may help you in your preparation for the exam.

- Primitive data types, primarily int, double, and boolean
- Arithmetic operations and expression evaluation (including mixed mode expressions); utilizing integer division and the modulus operator
- Input using readInt() and readDouble()
- Output using print() (with "\n") and println()
- Graphics classes: GRect, GOval, GLine, and GLabel; messages & message passing; using the Color class
- Identifiers, Constants
- Declaration and initialization of objects
- The assignment operator, updating values through assignment; shorthand assignment, auto-increment and auto-decrement operators
- Type conversion through type casting
- Tracing Java code fragments
- Repetition patterns; while and for loops — writing and tracing
- Java program format: the GraphicsProgram, SliderProgram, ConsoleProgram and DialogProgram classes
- Java comments
- Graphics coordinate system
  - Using Cartesian coordinates, followed by scaling and translation
  - Direct use of coordinate system of the graphics output window
- netbeans and Java programming: steps involved in creating, building, and executing programs
- Publishing to your web site and submitting electronically

Lab Exercises
- Lab 1: Hello World, Add2Integers, TemperatureConvert, RosePoem
- Lab 2: Target, LineHouse, Rainbow, Creature (group)
- Lab 3: Savings, CylinderVolume, DistanceSum, Spiral (group)
- Lab 4: starLine, Reverse, LowerTriangle, CurveStitch, starTriangle (group)

The summary on the reverse will be given to you with Exam 1.
Constructors

new GLabel(string, x, y)
Creates a new GLabel object containing the specified string that begins at the point (x, y).

new GRect(x, y, width, height)
Creates a new GRect object with the specified dimensions whose upper left corner is at (x, y).

new GOval(x, y, width, height)
Creates a new GOval object whose size is set to fit inside the GRect with the same arguments.

new GLine(x1, y1, x2, y2)
Creates a new GLine object connecting the points (x1, y1) and (x2, y2).

Methods common to all graphical objects

object.setColor(color)
Sets the color of the object to color, which is ordinarily a color name from java.awt.

object.setLocation(x, y)
Changes the location of the object to the point (x, y)

object.move(dx, dy)
Moves the object by adding dx to its x coordinate and dy to its y coordinate.

Methods available for GRect and GOval only

object.setFilled(fill)
Sets whether this object is filled (true means filled, false means outlined).

object.setFillColor(color)
Sets the color used to fill the interior of the object, which may be different from the border.

Method available for GLabel only

label.setFont(string)
Sets the font for label as indicated by string, which gives the family name, style, and point size.

Colors from java.awt

<table>
<thead>
<tr>
<th>Color</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color.BLACK</td>
<td>Color.RED</td>
</tr>
<tr>
<td>Color.DARK_GRAY</td>
<td>Color.YELLOW</td>
</tr>
<tr>
<td>Color.GRAY</td>
<td>Color.GREEN</td>
</tr>
<tr>
<td>Color.LIGHT_GRAY</td>
<td>Color.CYAN</td>
</tr>
<tr>
<td>Color.WHITE</td>
<td>Color.BLUE</td>
</tr>
<tr>
<td>Color.MAGENTA</td>
<td>Color.ORANGE</td>
</tr>
<tr>
<td>Color.PINK</td>
<td></td>
</tr>
</tbody>
</table>