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(x_1, y_1, x_2, y_2)
Creates a new GLine object connecting the points (x_1, y_1) and (x_2, y_2).

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

Color.BLACK	Color.RED
Color.DARK_GRAY	Color.YELLOW
Color.GRAY	Color.GREEN
Color.LIGHT_GRAY	Color.CYAN
Color.WHITE	Color.BLUE
Color.MAGENTA	Color.ORANGE
Color.PINK	