# MAT 2170: Laboratory 11

## Key Concepts

1. `char` and the `Character` class of static methods
2. `String` Class and its messages
3. More practice with graphics and `RandomGenerator`

## Instructions

- As usual, create these projects in a `lab11` directory.
- This is an extra–credit lab: use it to regain points lost in earlier labs.
- All programs should be *modular* — i.e., broken down into logical sections. Utilize **methods** to achieve this.
- Each program should **process multiple inputs**, not just run one time and stop.
- Do *not* use a `break` statement in an infinite (`while (true)`) loop.
- When applicable:

  - Please inform the user (me) what the sentinel is in every prompt asking for input.
  - When the user indicates they are finished, thank them for using your program and note that it has finished execution.

- Plan ahead. *Design first*, **then** *implement*. Bring a written–out version of the programs you plan to type into the computer to lab — don't just show up and expect to figure out solutions on the fly.

## Exercises

*5 points*
1. A `DualSlider` program to create "bubbles" in a graphics window. Slider `A` should range from 10 to 500 and represent the number of bubbles to be generated. Slider `B` should control how fast or slowly the bubbles appear — anywhere from no delay to a 150 millisecond delay. The location, size (from 5 pixels in radius to 75), and color of each bubble should be random, with the *center* of each lying *inside* the window.

*5 points*
2. Formatting Social Security Numbers. Write a `ConsoleProgram` that asks the user for Social Security numbers (as `String`s of 9 digits), then displays the original entry followed by the same numbers but with hyphens added. For example, if the user entered the string, "123456789", your program should output something similar to:

   `Your entry was: 123456789, which is: 123-45-6789`

   If the `String` entered has zero length, the user wishes to quit. If the entry has any other length besides 0 and 9, have the user re–enter their number until it does have length either 0 or 9. Processing should continue until user chooses to quit.

*10 points*
3. Exercise 5, page 286. Calculating Scrabble scores, as a `ConsoleProgram`.

*10 points*
4. Exercise 9, page 288. Creating the present participle of a verb, as a `ConsoleProgram`.

## Finishing Up

By the beginning of Lab 12, for any programs you've chosen to write: publish them to your web site, print and hand in, and submit an electronic copy of Lab 11.