

CS110 – Spring 2012

Problem Set 5 (Due Tuesday 4/10. Put in Dropbox or bring a hardcopy to class.)

Name: \_\_\_\_\_

- 1) (20 pts) Write a recursive function `int power(int n, int i)` that takes two integer arguments named `n` and `i`. The function should return the  $i^{\text{th}}$  power of `n`.

- 2) (20 pts) Write a recursive function `boolean palindrome(String str)` that takes a `String` argument `str` and returns `true` if `str` is a palindrome and `false` otherwise.

- 3) (15 pts) Declare and create a 4-dimensional array of floats named `numbers` and fill it with randomly generated values.
- 4) (10 pts) Modify your answer to 3) so that the array `numbers` is created as a ragged 4-dimensional array instead. Only the last dimension needs to be ragged. Use random integers for the lengths of the ragged rows.
- 5) (15 pts) Modify your answer to 4) so that the array `numbers` is created as a ragged 4-dimensional array, and all dimensions are ragged. Use random integers for the lengths of all rows.

- 6) (20 pts) Write a function `PImage select(int x, int y, int s)` which takes an `x` and a `y` screen coordinate and returns an image that is `s` by `s` in size and contains the pixels that make up the `s` by `s` neighborhood around `(x, y)`. For example, `select(mouseX, mouseY, 10)` will return a 10 by 10 pixel region that surrounds the current mouse location.