EECS 345 Homework #2 - due 9/22/05

1. Define a Smalltalk method for `raisedTo:` on integers. For example, `2 raisedTo: 3` should return 8. Give both iterative and recursive definitions.

2. Define a Smalltalk method `interleave:` on arrays. For example, `#(1 2 3 4 5) interleave: #(a b c)` should return the array `#(1 a 2 b 3 c 4 5)`. Note that you may have to use the Squeak browser or online Smalltalk resources to explore the full functionality of arrays and other related classes necessary for solving this problem.

3. Implement a portion of an inheritance graph for geometric figures in Squeak.

    (a) Implement the class `ClosedFigure`. All closed figures should respond to the `position` and `setPosition:` messages (using instances of the built-in class `Point` found in the `Graphics-Primitives` class category in Squeak), as well as the `boundingRectangle` message (using instances of the built-in class `Rectangle` found in the same class category as `Point`). A bounding rectangle is the smallest rectangle that completely contains a given figure.

    (b) Implement the class `CFRectangle` as a subclass of `ClosedFigure`. `CFRectangles` should respond to the `width`, `height`, `setWidth:`, `setHeight:` and `area` messages as well as all `ClosedFigure` messages.

    (c) Implement the class `CFCircle` as a subclass of `ClosedFigure`. `CFCircles` should respond to the `radius`, `setRadius:` and `area` messages, as well as all `ClosedFigure` messages.

    (d) Implement the class `CFSquare` in its proper place in the inheritance hierarchy and with any method definitions necessary for it to correctly respond to all messages that can be sent to it.