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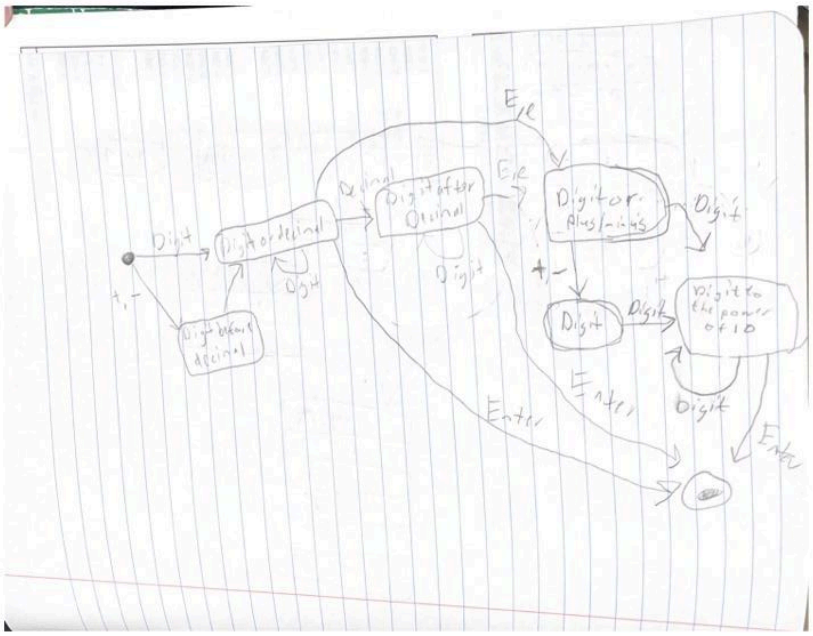
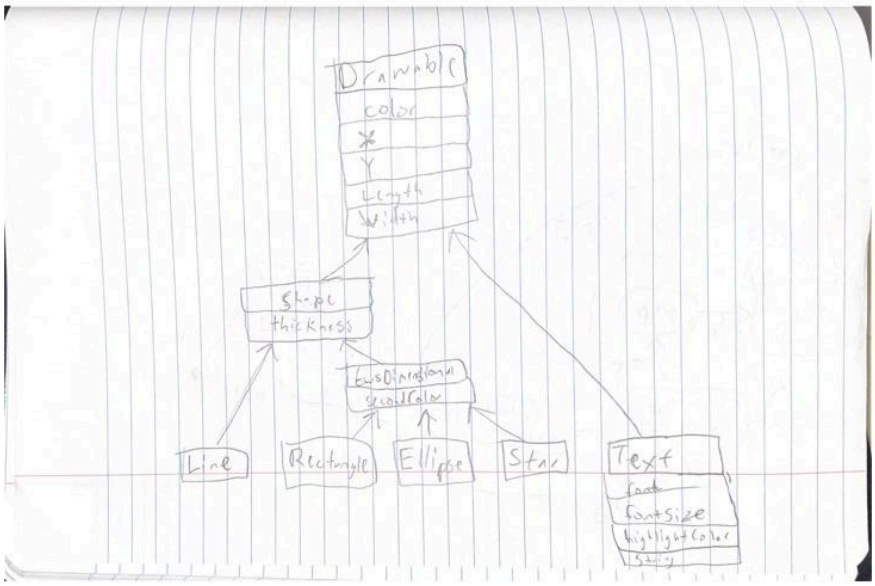
HW #2

1. **What's the difference between a component-based architecture and a service-oriented architecture?**
    a. In component-based software engineering (CBSE), you regard the system as a collection of loosely coupled components that provide services for each other. A service-oriented architecture (SOA) is similar to a component-based architecture except the pieces are implemented as services. A service is a self-contained program that runs on its own and provides some kind of service for its clients
2. Suppose you're building a phone application that lets you play tic-tac-toe against a simple computer opponent. It will display high scores stored on the phone, not in an external database. Which architectures would be most appropriate and why?
    a. This is a simple game that can run on a single program, so a monolithic architecture should be best.
3. Repeat question 3 [after thinking about it; it repeats question 2 for a chess game] assuming the chess program lets two users play against each other over an Internet connection.
    a. A Two-Tier Client/Server architecture would be best here, as it is relatively simple while allowing for multiple users to access the same data.
4. What kind of database structure and maintenance should the ClassyDraw application use?
    a. ClassyDraw should use a simple monolithic architecture with an event-driven user interface
5. Draw a state machine diagram to let a program read floating point numbers in scientific notation as in +37 or -12.3e+17 (which means -12.3 x 1017). Allow both E and e for the exponent symbol. [Jeez, is this like Dr. Dorin's DFAs, or what???]



    a.

6. Consider the ClassyDraw classes Line, Rectangle, Ellipse, Star, and Text. What properties do these classes all share? What properties do they not share? Are there any properties shared by some classes and not others? Where should the shared and nonshared properties be implemented?
    a. All of these classes share a color property as well as their size and position in the drawing space. They don't share properties specific to each of the classes. For example, the line and other shapes will have a line thickness property, but the text will not. The 2-dimensional objects will have 2 color values rather than just one for the line as there is both the border color and main color. The shared properties will be stored in a parent object and child classes will get more specific. This is more clearly shown in the next question's solution.
7. Draw an inheritance diagram showing the properties you identified for Exercise 1. (Create parent classes as needed, and don't forget the Drawable class at the top.)



    a.