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CMSI 4072 Senior Project ll
Homework 02
02/14/24

Problem 5.1, Stephens page 116

What's the difference between a component-based architecture and a service-oriented architecture?

A component-based architecture and a service-oriented architecture are similar architecture systems for software development, but what sets the two apart is that service-oriented architecture will allow for independent services to be accessed and utilized from a network, while a component-based architecture will have complete communication through method calls/events.

Problem 5.2, Stephens page 116

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 rule-based architecture for implementing tic-tac-toe due to the game's straightforward mechanics, well-defined objectives, and limited unpredictable scenarios. Additionally, a monolithic system is well-suited for this purpose since the game operates independently on a single device without the need for external database integration.

Problem 5.4, Stephens page 116

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 client/server architecture because it would facilitate chess matches over the internet, as chess pieces operate based on rules that govern their interactions within the game and each piece has specific movement rules, contributing to the overall rule-based nature of chess.

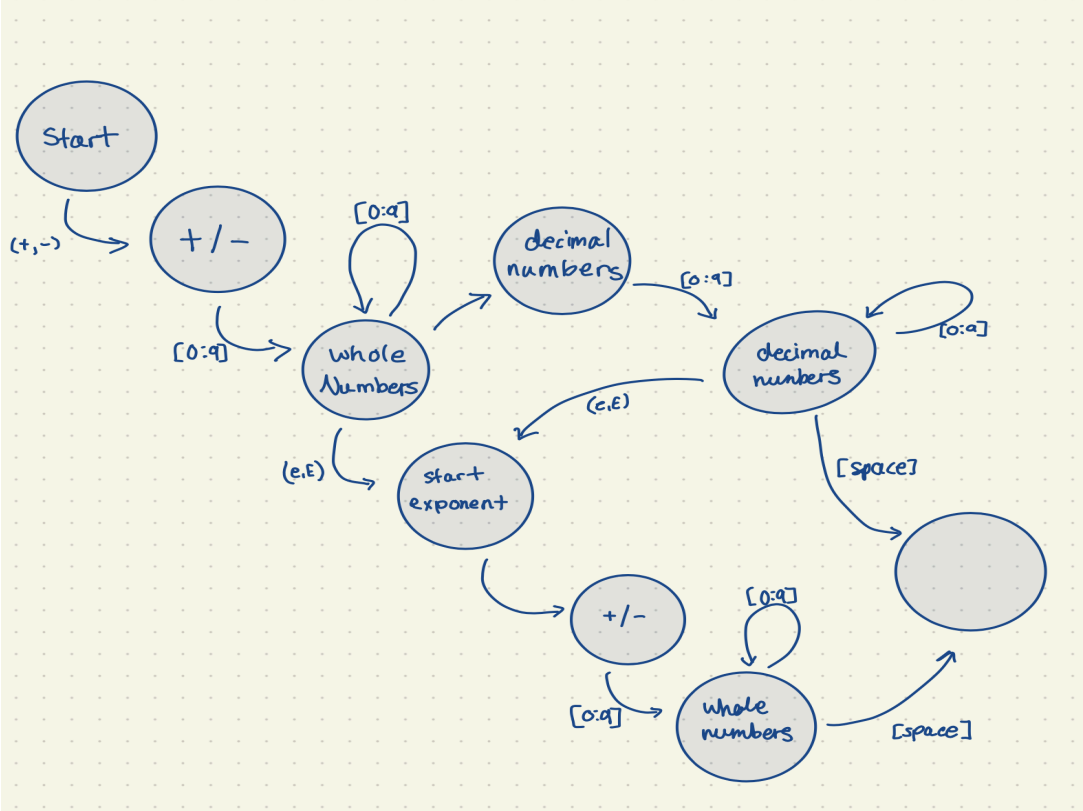
Problem 5.6, Stephens page 116

What kind of database structure and maintenance should the `ClassyDraw` *application use?*

A monolithic approach because the application is self-contained and saves drawings to a filing system so there wouldn't be a need for a database to store the drawings separately.

Problem 5.8, Stephens page 116

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*???]



Problem 6.1, Stephens page 138

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?

All of these classes share properties of: forecolor, backcolor, upper left, width, and height. Properties they do not all share are: font, string, num points,fill color, line thickness, and dash style. Properties shared by some classes are: fill color, line thickness, and dash style. The shared and nonshared properties should be implemented by putting the properties all classes share as a global property, grouping the classes that share properties shared by only some classes together, and putting properties shared only by one class as private.

Problem 6.2, Stephens page 138

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.)