Automated Library Kiosk System

Internal Team Design Document

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The design of this project is as follows:

Producer consumer relationship for:

1. Inputs from serial device
2. Parsing inputs into applicable events
3. Processing events into results from a database
4. Displaying these results

Due to concurrency goals, any item used outside of the class it belongs to should be treated as IMMUTABLE, and any accessing of associative elements should be avoided.

Again due to concurrency and scoping issues, items that need to be accessed for producer / consumer relationships need to be seen and referenced by other threads, for this extend the Java standard Runnable interface in order to provide an associative function.

Main Threads:

1. GUI : Main head thread. Controlls runtime.
2. Database: Controls the user and item DB
3. Event: Parses input events into check events
4. Inputs: Parses inputs into char – time events for input timing.

Main design goal: Be able to scan in items for an automated library kiosk. Issues:

1. Main library would need offsite / backend implementation of databases, coder for this doesn’t know databases.
2. A lending library interface would need more admin functionality, this is both a security risk and harder to implement.

GUI:

Needs: Map, status, recent events, item list, item details, item position on map

Errors:

1. Item not found
2. User not found
3. Item not in stock
4. User max checkout
5. Reference checkout

Events:

1. Input Event
2. Parse Event
3. Result Event
4. Error Event

Thought: Need to be able to parse events and errors as similar objects, even with an error event wrapper.