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COM S 362 - Homework 2

Due 2/9/20 @ 11:59pm

1. The code smell associated with code fragment 1 is **duplicate code**. Instead of prompting the user to test each emission amount separately, the program should ask the user to select an emission test for the desired vehicles individually. The fundamental design principle that is most violated in this scenario is **information hiding**. As mentioned earlier, the duplicate code within the `while` loop should not be stepped through iteratively as done in the example. In other words, the user should only be presented with the information they need instead of being asked to specify if they want to view something each time.

2. Code fragment 2 does not appear to be violating any design principles.

3. Code fragment 3 violates the **abstraction** design principle. Since there is a smell of a long parameter list, these can instead be compiled into a `Student` object so that it is easier to keep track of changing values.

4. Ten use case scenarios for the proposed library system are as follows:

- Adding a new resource to the catalog
- Removing an existing resource from the catalog
- Ordering new resource for the catalog
- Registering an event on the library calendar
- Signing users up for library events
- Registering for a library card
- Checking out resources from the library
- Processing payment of late fees
- Browsing the catalog for certain resources
- Returning books to the library

5. Two “fully-dressed” scenarios from the list above:

Scenario 1

- Use Case Name – Checking out resources from the library
- Primary Actor – Patron
- Stakeholders and Interests – Librarian, Kiosk
- Preconditions – Patron is in possession of a library card
- Success Guarantee – A resource no longer available to be checked out by another patron

- Main Success Scenario
 1. Patron registers for a library card or already owns one
 2. Patron searches for a resource of interest
 3. Patron finds a librarian or kiosk and checks the resource out
 4. Librarian / kiosk lists the resource as temporarily unavailable for checkout
 5. Patron returns resource to the library when finished

Scenario 2

- Use Case Name – A user requests a resource that the library doesn't stock
- Primary Actor – Patron
- Stakeholders and Interests – Librarian
- Preconditions – User has a pre-existing card
- Success Guarantee – The user checks out a new resource
 1. User browses for a resource and can't find it
 2. User approaches a librarian and inquires about making an order
 3. Librarian places an order for a new resource
 4. User gets notified when the resource arrives and is available for pickup
 5. User visits librarian and checks out resource