Refactoring Report

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CSCI 4490 - Software Engineering
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Github - https://github.com/MG-Kilometer/uca-course-registration-REFACTOR.git

Contributions

- Miles Glover - unit testing, report formatting
- Logan Flora - component testing
- Cassandra Leder - system testing, testing format

Test Strategy

- Unit
  - The strategy used in unit testing was to take every single method and class and test the general use of that method. Some classes are untestable as they have no methods or are generally unsuitable for testing (like an interface).
- Component
  - The strategy followed in the unit testing was to take the main components of the software, the 6 major menu options and the data registration system, and develop functions that test these individual components on their own, rather than as a whole system later on. And rather than testing a single method, this portion of testing involved the entire path of functions each component takes in the background, ensuring correctness along the way.

- System
  - The strategy in system testing seeks to fully prove that the system is capable of fulfilling its requirements. The program should be able to add students, add a course, enroll students in the course, drop students from the course, promote the other student in the waitlist, and be able to display all the students in the repository.

Test Cases

Designation	Type	Input	Expected Output	Result
UT-01	Unit	v.Validate_String ("^[A-Za-z]+$", "John");	No output (empty string), no errors thrown	Pass
UT-02	Unit	audit.write_logfile();	No errors thrown (file was able to be opened and written to)	Pass
UT-03	Unit	out.Start();	"=== UCA Course Registration (Refactored) ===" and "NOTE: This code has been refactored." is printed to CLI	Pass
CT-04	Component	Enroll 2 students in course CSCS1000	Students, courses, and connections are correctly stored in the three repos	Pass
ST-05	System	Add students, enroll students, drop student, promote in the waitlist, and list all students.	Correct sequence and state updates without any exceptions raised.	Pass

Screenshots

Unit Test

```
--- UI Class Tests ---


Banner ID: Name: Email: Passed addStudentUI valid input check
Course Code: Title: Capacity: Passed addCourseUI valid input check
Student ID: Course Code: Enrolled.
Passed enrollUI valid enrollment check
Student ID: Course Code: Dropped.
Passed dropUI drop student check


Expected list of students:
Students:
  - B001 John <jsmith@uca.edu>


Expected list of courses:
Courses:
  - CSCI4000 GermanI cap=2 enrolled=0 wait=0


UI class passed basic interaction tests.


--- Student Class Tests ---


Passed constructor and getter checks
Passed toString format check
Student class tests completed successfully.


--- Course Class Tests ---


Passed constructor and getter checks
Passed roster and waitlist checks
Course class tests completed successfully.
```

Component Test

```
-- Component Test: Enroll Student (UI, Course, Audit) --


Testing successful enrollment...
Student ID: Course Code: Enrolled.
Successfully enrolled B001 in CSCI1000.


Testing waitlist enrollment...
Student ID: Course Code: Course full. Added to WAITLIST.
Successfully waitlisted B002 for CSCI1000.


Testing enrollment in non-existent course...
Student ID: Course Code: No such course
Correctly handled enrollment attempt in non-existent course.


UI.enrollUI component test passed.

-- Component Test: Drop Student & Promote (UI, Course, Audit) --


Initial state: B001 enrolled, B002 waitlisted in CSCI2000.


Testing drop with waitlist promotion...
Student ID: Course Code: Promoted B002 from waitlist.
Successfully dropped B001 and promoted B002.


UI.dropUI component test passed.
```

System test

```
--- System Level Tests ---


Adding 2 students


Banner ID: Name: Email: Banner ID: Name: Email:
Add 1 course


Course Code: Title: Capacity:
Enroll 1 student in the course


Student ID: Course Code: Enrolled.
Student ID: Course Code: Enrolled.


Drop 1 student from the course (promotes waitlist)


Student ID: Course Code: Dropped.
Students:
 - B001 JohnSmith <jsmith@uca.edu>
 - B002 MichaelSmith <msmith@uca.edu>


No errors occurred! System test passed.
```