Iteration 3 Report
EECE 2560: Fundamentals of Engineering Algorithms
Student Registration System

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Important: Each student must submit individually, even though the project is completed as a team. Prepare this report in **Overleaf** and export it as a **PDF** for submission.

GitHub Link: `https://github.com/leoleocantyousee/Computing_Fund_Final_Project`

Contents

1 Summary of Team Progress and Development Updates

Provide a brief overview (1–2 paragraphs) of your team's progress during Iteration 3 of the Student Registration System. Include:

- For Iteration 3, we focused on having a simple HTML website that would provide the interface with which the user interacts with the library system. I designed the UI using sections for login, registration, and book display such that users are able to view all books and interact with the system without needing to use the command line. Rafi addded the HTML into a single Python file responsible for the core features of launching the website, checking out and returning books, and providing authentication of users. Users can register, log in, and log out, and their information is stored in text files and loaded into Python dictionaries at runtime. To this end, these functionalities were tested by creating accounts, logging in with correct and incorrect credentials, and verifying that book checkout actions required an active login.

  The system is also equipped with the feature of book management: tracking the availability of each book, and who has checked it out. To store the books we just put them in dictionaries where they would go in a list so they could be edited if needed. Books are stored as dictionaries in a list. To complete functions we just used python functions handle adding books, checking availability, recording checkouts and returns; all changes are saved to files so they persist between sessions. The HTML that the program produces a interactive UI for the user where they can see messages for actions such as checkout and return were written into JavaScript. We were able to validate the system by performing several checkouts and returns, confirming that availability, due dates, and user records updated correctly. As for Iteration 4 we currently have Kyle using his experience in SQL to create a database that will allow the user to check books in and out more securley.

2 Implemented Core Features

Describe the main features developed during Iteration 3. For each feature, provide:

- In Iteration 3, we had to create many functions to make sure the library worked correctly. For the first feature we made sure to add user authtification this would allow the users to register, log in, and log out of the system. We did this by creating dictionaries of user credentials and functions for the previous features stated. Data about users was written to and loaded from text files to help track usernames and passwords. We were able to verify this feature by validating the creation of multiple test

accounts,we would make sure to log in with valid and invalid credentials, checking if we would get the correct outputs which we did.

Some other functions we added was book managment, which was intended for book availability tracking, checkout, and return. Books were added as dictionaries where the contents of what was needed was put inside a list, and the Python functions addbook(), checkoutbook(), and returnbook() handled logic for book status changes and kept records on who checked out each book. This feature was checked by performing several checkouts and returns and observing that the system updated the availability and due dates correctly with user records. Finally, the HTML UI was added to the python, offering a website where the UI could be viewed. To test this we simply inputed a 9 which would generate the html file which we could then open, ensuring the features worked correctly.

Example: Database Integration Module

Goal: Connect the student and course data to a persistent SQLite database. **Implementation:** Used `sqlite3` in Python with three tables—Students, Courses, and Registrations. **Validation:** Verified with unit tests ensuring data consistency after multiple registration attempts.

3 Challenges and Resolutions

Briefly discuss the main technical or organizational challenges faced during Iteration 3 and how they were resolved.

- One challenege that we had during Iteration 3 was the integration of the python backend with the HTML UI. As the website had to display books and user information dynamically, we make sure that the Python functions generated the HTML file correctly and updated it. This was achieved by carefully structuring the Python code in order to write the HTML page using functions like generatehtmlpage and we made sure to test this by running the function, and as expected we got a html file out that ran correctly.

  Another challenge was to keep the user and book data in a consistent state, especially when performing multiple actions in succession, like registering a user and immediately checking out a book. Initially, there were problems with updating text files in the proper order there were temporary inconsistencies. To fix this we made new functions to save the users, checkouts, and other needed data so we did not have to worry about the data not being saved or overwritten. This solution was verified by changing diffrent values and then saving them printing their pre and post values.

4 Leadership Rotation and Team Contributions

Summarize leadership rotation and contributions of each team member during Iteration 3. Even though this is a team project, each student must describe their *individual role and contribution* here.

Leadership Summary

Week/Span	**Leader**	**Responsibilities**	**Key Outcomes**
Week 1	Leonardo Fernandes	HTML/UI design	Created functional UI
Week 2	Rafi Bachir	Additon of Python	Added HTML code to python and also added n

Individual Contributions

Team Member	**Contributions (Technical / Documentation)**	**Hours**
Leonardo Fernandes	HTML/UI design	5 hrs
Rafi Bachir	Additon of Python; ran Pytest suite	7 hrs
Kyle Preger	Helped with both creating HTML and implementing it in Python	6 hrs

Statement by the Individual Submitter

I, **I, Leonardo Fernandes**, confirm that the above table accurately reflects my personal contributions during Iteration 3.