De La Salle University

Computer Engineering
2nd Sem AY 2023

Subject/Course: LBYCPEI: Object Oriented Programming		**Professor's Name: Mr. Ruiz**
Team Hermes Members: DIMAPILIS, David Brian S. FERROLINO, Rudd Anthony C. Ong, Aidan Matthew G.	**Section: EQ5**	**Date accomplished: 6/26/2023**

TypeCraft: A Groundbreaking Adaptive Typing Program for Enhancing Digital Literacy and Individualized Learning in the Digital Age

I. Introduction

TypeCraft is a groundbreaking typing program designed to enhance the way students acquire typing skills. Through a blend of gamified learning, adaptive feedback, and tailored lessons, it aims to bolster digital literacy, individualize learning, and integrate seamlessly into existing educational frameworks. TypeCraft provides a dynamic typing journey, adapting to each learner's skill level and offering personalized feedback to improve accuracy and speed. Its customizable lessons allow educators to align typing exercises with curriculum needs, making it a comprehensive tool for boosting computer literacy. Suitable for various educational settings, TypeCraft equips students with essential typing skills, paving the way for academic and professional success in the digital age. It's time to unlock the power of typing with TypeCraft.

II. Methodology

To develop TypeCraft, we aimed to employ a user-centric design approach, focusing on the needs and experiences of the end-users: which is our fellow students and educators. The software will be developed using IntelliJ Java, leveraging its robustness, accessibility, and platform independence. The four pillars of Java - abstraction, encapsulation, inheritance, and polymorphism - will be integral to our development process. Abstraction will be used to hide the complexity of certain operations, encapsulation to protect the data, inheritance to promote code reusability to the mainstream, and polymorphism to allow entities to take on many forms.

The project will be divided into a six-step process:

1. *Requirement Gathering and Analysis:* Understand the needs of the users and define the system requirements.
2. *Design:* Develop the system architecture, including the user interface and database design.
3. *Implementation:* Code the system functionalities using Java.
4. *Testing:* Test the system for bugs and fix them.
5. *Deployment:* Deploy the system for use in educational institutions once approved.
6. *Maintenance:* Provide ongoing support and updates.

III. Project Description

IPO: (Input-Process-Output)

Input:

- User login credentials
- User selection from the main menu (start a new lesson, continue a previous lesson, view progress)
- User selection of a specific lesson
- User's typing input during the lesson

Process:

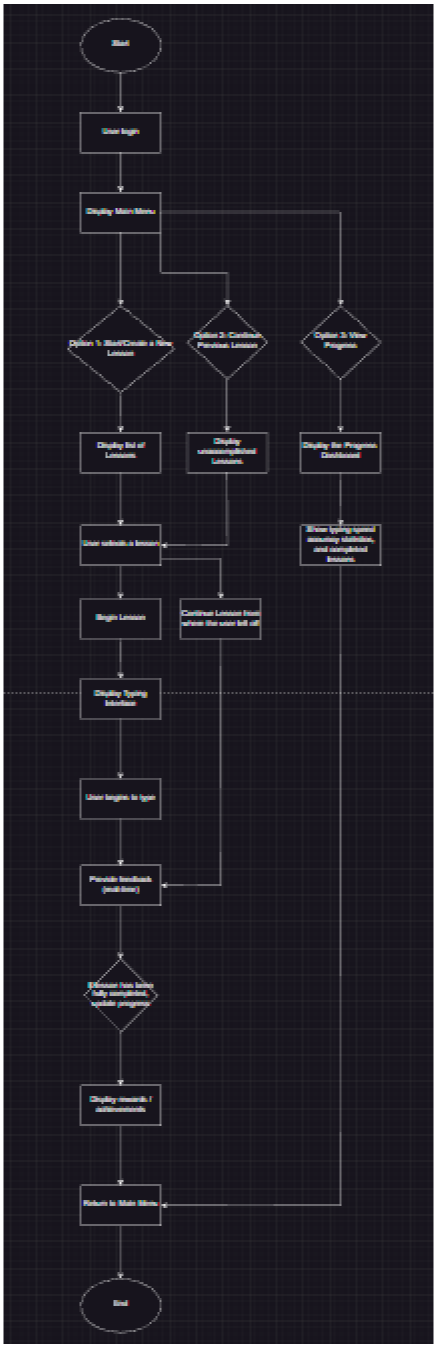
- User authentication
- Display of main menu and handling of user selection
- If a new lesson is started, the program displays a list of lessons and starts the selected lesson
- If a previous lesson is continued, the program displays a list of incomplete lessons and resumes the selected lesson from where it was left off
- If progress is viewed, the program generates and displays a progress report
- During a lesson, the program captures the user's typing input, provides real-time feedback, and updates progress upon lesson completion
- The program also manages and displays rewards and achievements based on the user's progress

Output:

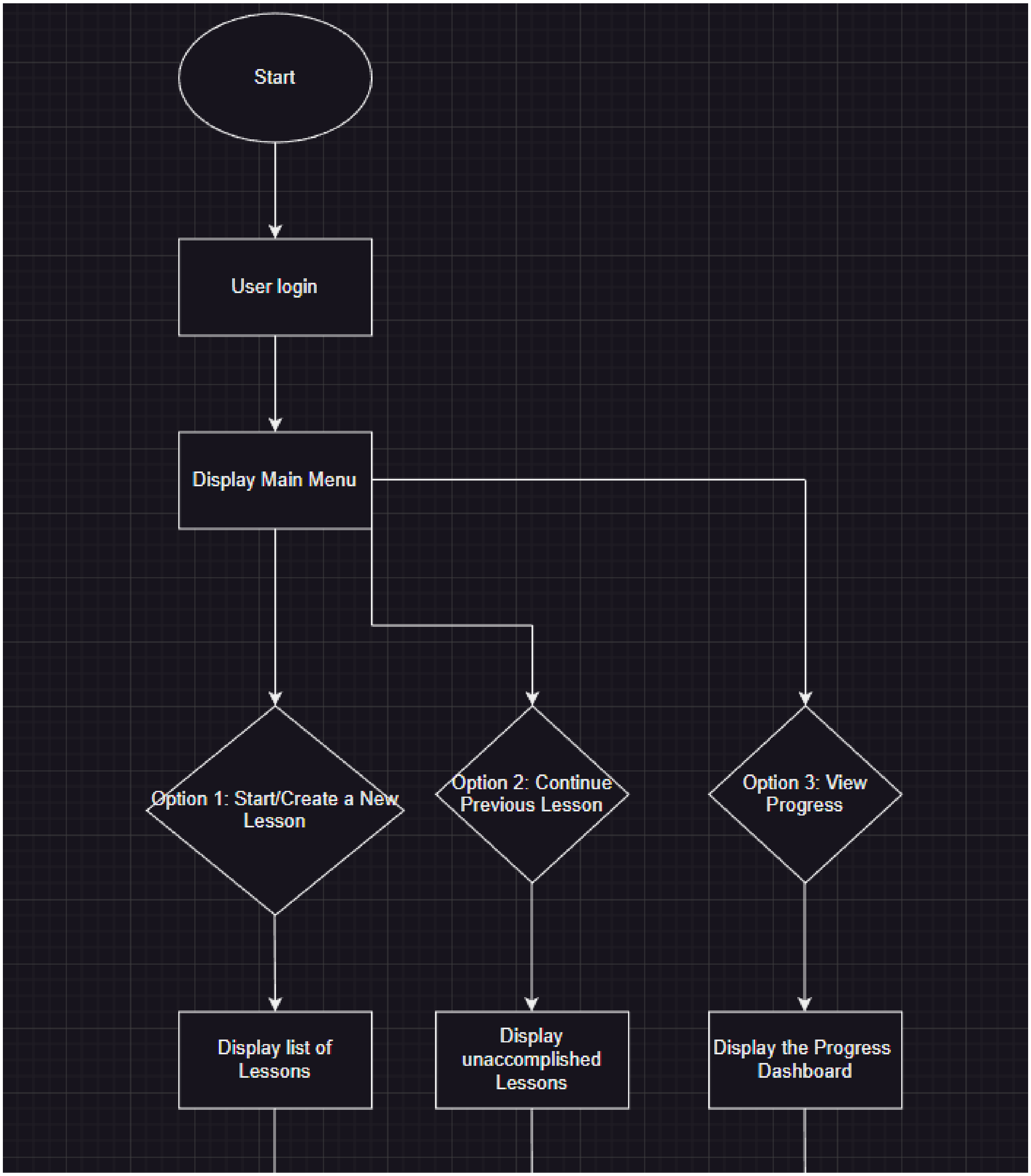
- Main menu interface
- List of lessons (new or incomplete)
- Typing interface for the selected lesson
- Real-time feedback during the lesson
- Updated progress, rewards, and achievements upon lesson completion
- Progress report when the user chooses to view progress

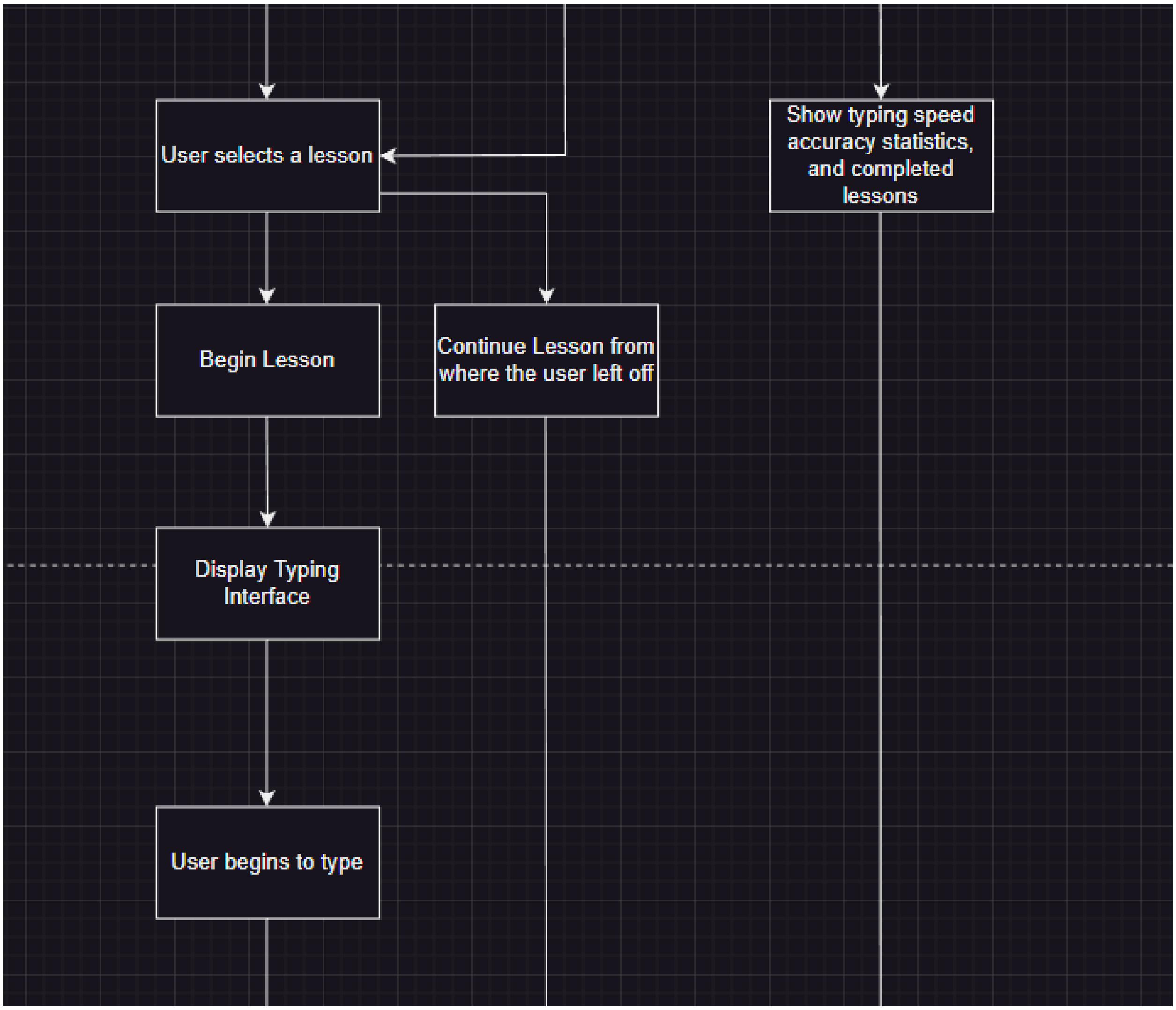
Description of IPO:
This current IPO is what Team Hermes expects the program to do, it also showcases the major components of the program and how they interact, but the actual implementation would involve more detailed design and coding, which will be done later on.

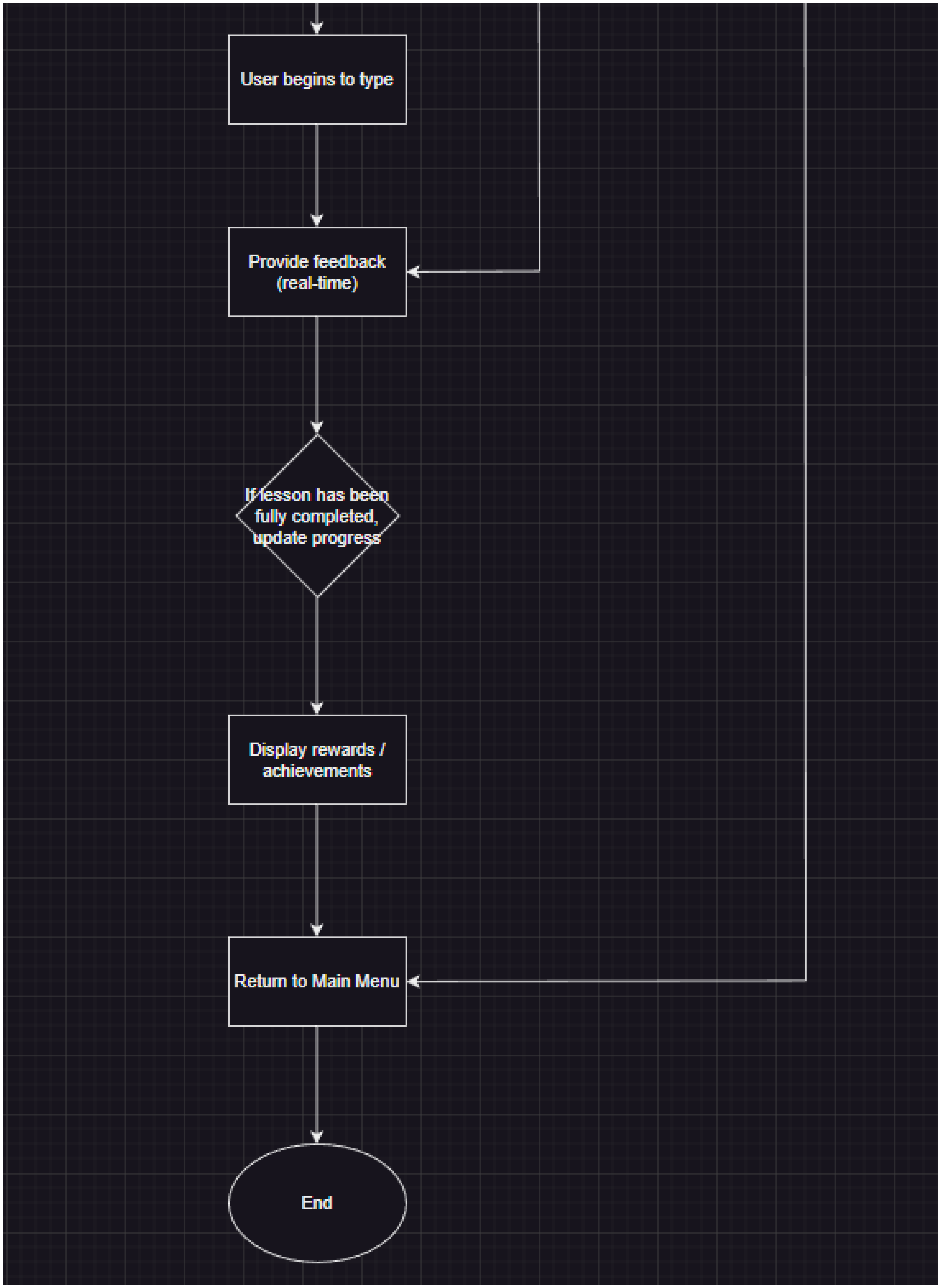
Flowchart (Full Picture)


Start
User login
Display Main Menu
Option 1: Start/Create a New Lesson
Option 2: Continue Previous Lesson
Option 3: View Progress
Display list of Lessons
Display uncompleted Lessons
Display the Progress Dashboard
User selects a lesson
Show typing speed, accuracy statistics, and completed lessons
Begin Lesson
Continue Lesson from where the user left off
Display Typing Interface
User begins to type
Provide feedback (real-time)
If lesson has been fully completed, update progress
Display rewards / achievements
Return to Main Menu
End

Flowchart (Zoomed in)


Start
User login
Display Main Menu
Option 1: Start/Create a New Lesson
Option 2: Continue Previous Lesson
Option 3: View Progress
Display list of Lessons
Display unaccomplished Lessons
Display the Progress Dashboard


User selects a lesson
Show typing speed accuracy statistics, and completed lessons
Begin Lesson
Continue Lesson from where the user left off
Display Typing Interface
User begins to type

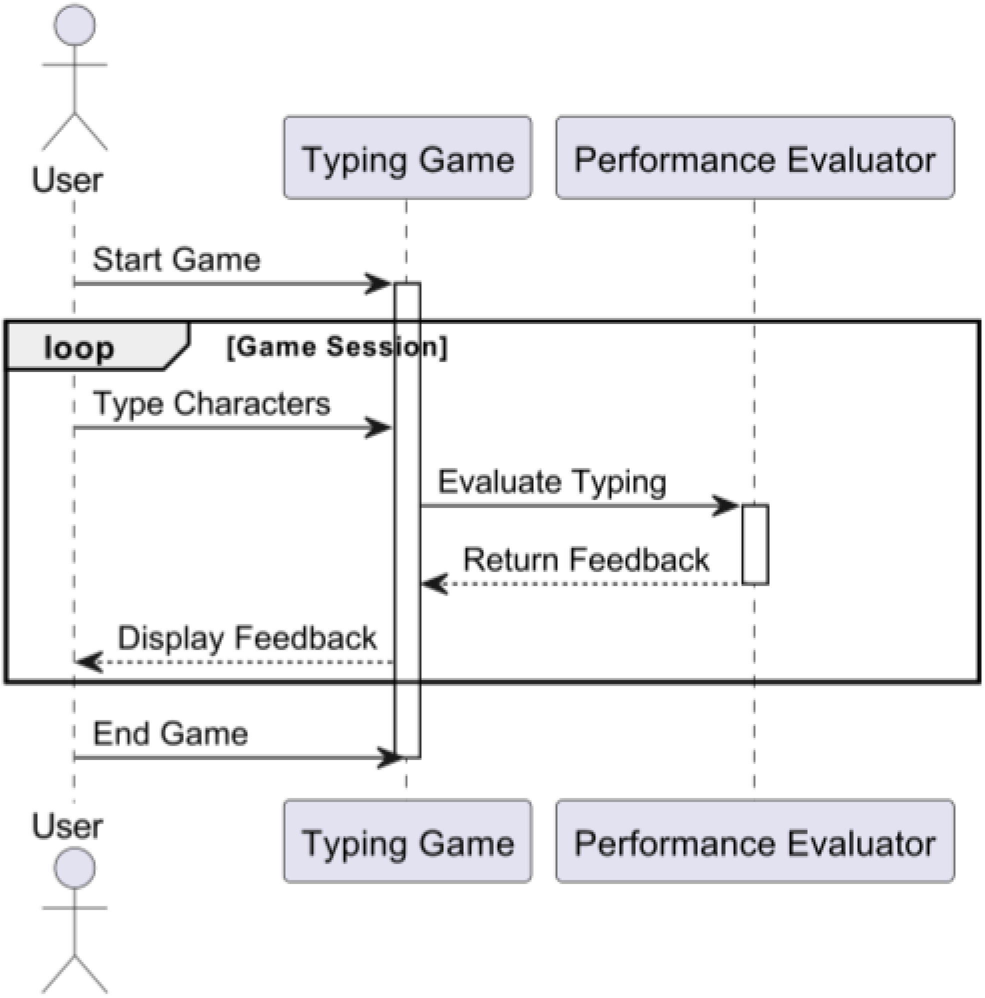

User begins to type
Provide feedback (real-time)
If lesson has been fully completed, update progress
Display rewards / achievements
Return to Main Menu
End

Description of Flowchart:

This flowchart perfectly illustrates the user journey within the TypeCraft typing program, starting from login to navigating through three main options: starting a new lesson, continuing a previous lesson, or viewing progress. Each option leads to a series of actions, including lesson selection, typing, receiving real-time feedback, and viewing rewards and achievements. The flowchart ends with the user returning to the main menu, ready to start the next interaction.

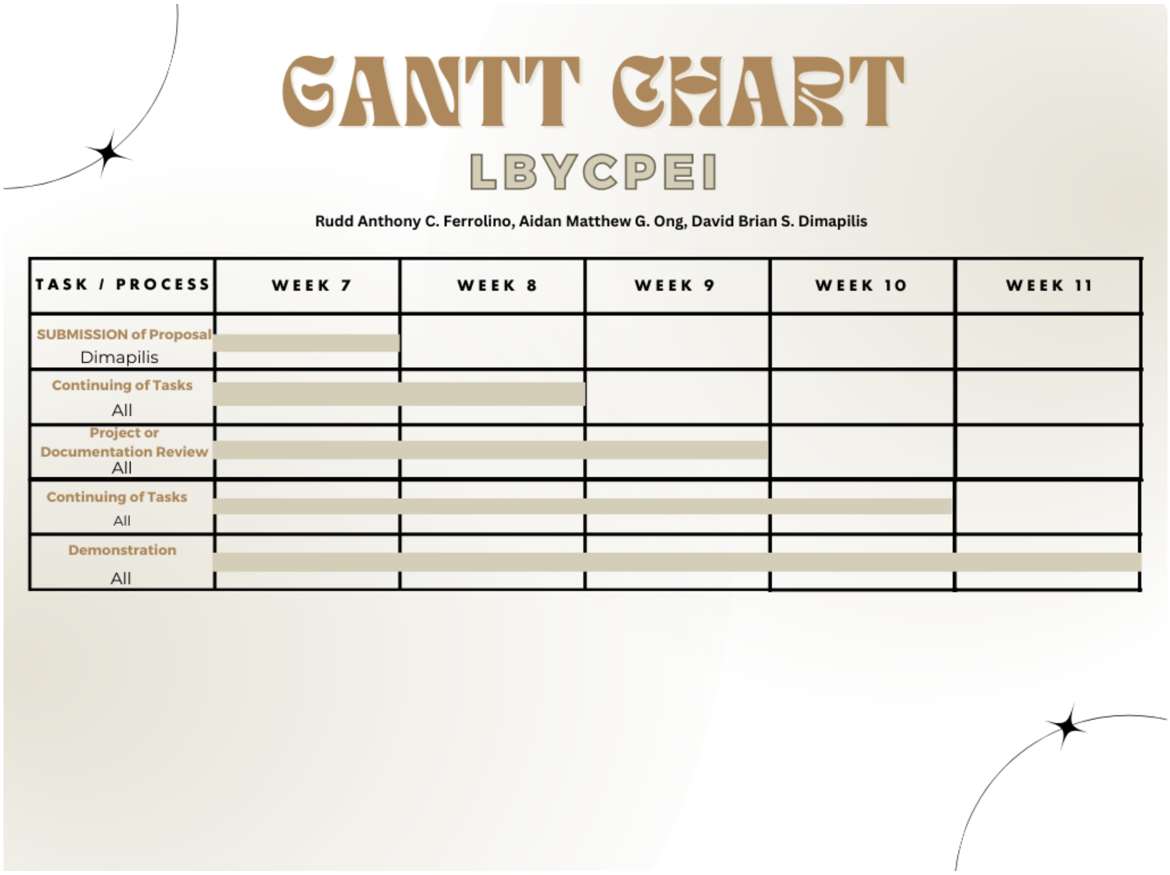
PUML:

```
@startuml

actor User
participant "Typing Game" as Game
participant "Performance Evaluator" as Evaluator

User -> Game: Start Game
activate Game

loop Game Session
   User -> Game: Type Characters
   Game -> Evaluator: Evaluate Typing
   activate Evaluator

   Evaluator --> Game: Return Feedback
   deactivate Evaluator

   Game --> User: Display Feedback
end

User -> Game: End Game
deactivate Game

@enduml
```


User
Typing Game
Performance Evaluator
Start Game
loop
[Game Session]
Type Characters
Evaluate Typing
Return Feedback
Display Feedback
End Game
User
Typing Game
Performance Evaluator

IV. Deliverables

GANTT CHART:



GANTT CHART

LBYCPEI

Rudd Anthony C. Ferrolino, Aidan Matthew G. Ong, David Brian S. Dimapilis

TASK / PROCESS	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
SUBMISSION of Proposal Dimapilis	▨				
Continuing of Tasks All	▨	▨			
Project or Documentation Review All	▨	▨	▨		
Continuing of Tasks All	▨	▨	▨	▨	
Demonstration All	▨	▨	▨	▨	▨

V. Evaluation

User Interface and Experience: The design of the interface should be intuitive and easy to navigate, even for users with little to no experience with similar software. It should also be engaging to maintain user interest.

Adaptability and Customizability: The program should have the ability to adapt to a user's skill level and provide customizable lessons. It should be evaluated on how well it caters to different user needs and learning styles.

Learning Effectiveness: This is one of the most important criteria. It measures how effective the typing program is in improving the typing skills of the students. Metrics like improvement in typing speed and accuracy over time can be used.

Feedback and Performance Tracking: The program should provide clear, specific, and constructive feedback on the user's performance. It should also track user performance over time to show progress.

Integration with Existing Systems: If the typing program is being used in an educational institution, it needs to be compatible with the existing systems in the institution.

Reliability and Stability: Since it's a local program, the stability of the software is important. It should not crash frequently, and should be able to recover gracefully in case of any failures.

VI. Conclusion

The TypeCraft project is a significant initiative to enhance digital literacy by creating an engaging and adaptive educational typing program. Using gamification and personalized feedback, it facilitates individualized learning and fosters typing mastery, filling a gap in many educational institutions that lack an engaging and effective platform for teaching these essential skills. Notably, its local, non-online nature broadens its accessibility, making it an invaluable tool for schools or individuals with limited internet access. Overall, TypeCraft offers a comprehensive solution for computer literacy that supports academic success and prepares students for future professional endeavors in a digital-centric world.

VII. References

Typing Game for Java. GitHub. (n.d.). https://github.com/topics/typing-game?l=java

Codementor. (n.d.). *Speed typing game*. DevProjects. https://www.codementor.io/projects/web/speed-typing-game-c51led1afn

GeeksforGeeks. (2022, August 1). *Design a typing speed test game using JavaScript*. GeeksforGeeks. https://www.geeksforgeeks.org/design-a-typing-speed-test-game-using-javascript/