Change Report

Cohort 1 Group 7

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Processes, Tools and Conventions used:

- **Google Drive**: Used to share documents and keep them together in one place where we can all work on them. Accessible to all group members using our university google accounts. It also allowed us to open the previous team's deliverables in google docs so that they could be edited and updated.
- **Google Docs**: Used to update the previous team's deliverables. Allowed for tables to be created and for images to be kept together in one place so that they could be added to the updated website.
- **Github**: We forked the previous team's github repo to gain access to a copy of their website and their previous code so that they could be changed. We also used Github to store the code and the files related to the game so that the members of our team working on updating the game could keep track of changes. Another use we had for Github was updating the previous team's website by first creating a copy of the repo for the website and then adding everything that we needed for the updated website for our project.
- **PlantUML**: Used to create a gantt chart for our new plan for the second assessment. This allowed us to create a visual representation of the timespan of Assessment 2, so that we could complete our project in the time given. It also allowed us to create milestones to signify when each part of the project was completed so that we could effectively plan out how to approach the remaining tasks.
- **Lucidchart**: To create diagrams to visualise the architectural components of the game and its features. This allowed us to design the structure of our updated code and how the different objects interact so that we could add the features to the game.
- **Visual Studio Code**: Used to make changes to the previous team's code so that the new features could be added.
- **Whatsapp**: Allowed us to communicate with each other so that we could all be aware of any issues that emerged and solve them as quickly as possible. This ensured that we could effectively update the previous teams code and deliverables in a way that allowed all of us to know what needs to be done and by who.

- For the documentation of the code, we used self documenting code in order to ensure that it is clear how the code works and that the code can be read easily. We also used javadoc to describe what each part of the code does which also helps with the readability of the code. Both of these forms of documentation make it clear what parts of the code do what, allowing the changes described in the updated deliverables to be easily identified.

Overall Overview of Changes and Updates made to Assessment 1:

All updated deliverables can be found at: ENG1 Group 7 – Game Website

Changes made to Requirements:
Original: https://eng1-c1g11.github.io/assets/Req1.pdf
Changed: Requirements Specification

- Changes to Requirements Diagram:
    - Removed “score” from the fit criteria of NFR_DO_NOT_SAVE as this contradicts with new requirements
        - Justification: The new requirement UR_LEADERBOARD states that the best players scores are saved in a leaderboard
    - Added user requirements, UR_LEADERBOARD and UR_ACHIEVMENTS, for a leaderboard with top 5 scores and achievements
        - Justification: New requirements were added to the product brief so the requirements table was updated accordingly
    - Added FR_LEADERBOARD and FR_ACHIEVMENTS for the new user requirements
        - Justification: New user requirements were added to the requirements table
    - Changed description for UR_UI from a fit criteria to user requirement description
        - Justification: Simplified the description to remove specific measurements
    - Added NFR_UI with the previous description for UR_UI
        - Justification: Added the specific measurements from UR_UI to a technical description
    - Added UR_PERFORMANCE and changed the user requirement from NFR_PERFORMANCE from UR_UI because it is more fitting for the fit criteria
        - Justification: It was incorrectly assigned as the technical description did not match with UR_UI
    - Added FR_PROFESSOR and UR_PROFESSOR for a professor that blocks a door
        - Justification: New requirements were collected in a customer meeting so the requirements table was updated accordingly

Changes made to Architecture:
Original: https://eng1-c1g11.github.io/assets/Arch1.pdf
Changed: Architecture Document

- Changes to System**:**
    - **Pause System** – introduced to allow gameplay to be paused and to protect the user during and after testing.
        - Justification: This was added so the game can be safely paused without losing progress or causing unexpected behaviour when play is resumed, as shown in the game state flowchart (https://dvn513-dotcom.github.io/ENG1-Group7/#gamestate).
    - **Leaderboard System** – introduced to support the storage and display of the top five scores.

        - Justification: This was required to meet the new leaderboard requirements while keeping score storage separate from core gameplay logic, which is illustrated in the leaderboard data persistence diagram (https://dvn513-dotcom.github.io/ENG1-Group7/#leaderboard).
    - **Achievement System** – introduced to evaluate and award achievements at the end of a game session.
        - Justification: Achievement evaluation is handled after gameplay has finished, keeping this logic isolated from real-time simulation, as shown in the end-of-game sequence diagram (https://dvn513-dotcom.github.io/ENG1-Group7/#endgame).
    - **Professor Interaction System** – introduced to block player progression until required objectives are completed.
        - Justification: This allowed progression rules to be enforced cleanly without modifying existing movement or collision behaviour, as demonstrated in the hidden shortcut trigger logic diagram (https://dvn513-dotcom.github.io/ENG1-Group7/#shortcut).
    - **Entity Model** – extended to include a Professor entity.
        - Justification: A dedicated entity was required so the professor could be represented consistently within the ECS structure, as shown in the ECS class diagram (https://dvn513-dotcom.github.io/ENG1-Group7/#ecs).
    - **Score Processing Pipeline** – extended to support achievement evaluation and leaderboard updates at game end.
        - Justification: Final score data is now consumed by multiple systems in a defined order, as illustrated in the player score data flow diagram (https://dvn513-dotcom.github.io/ENG1-Group7/#playerscore).
    - **Event Handling** – extended to support additional positive, negative, and hidden events.
        - Justification: Existing event mechanisms were reused to introduce new gameplay effects without altering the overall architecture.
- No Changes Made To**:**
    - **Core ECS Framework** – retained without modification.
        - Justification: The original ECS framework already provided a solid and extensible foundation for adding new systems.
    - **Entity–Component Composition Model** – retained as originally designed.
        - Justification: The composition-based approach already allowed new behaviour to be introduced cleanly through additional components and systems.
    - **Message Bus Design** – reused without change.
        - Justification: The message-based communication model continued to provide effective decoupling between systems.
    - **Rendering Pipeline** – left unchanged.
        - Justification: None of the new features affected how visual elements were rendered or updated.
    - **Fixed/Variable Timestep Separation** – retained without modification.
        - Justification: This design already met performance and consistency requirements and naturally supported the introduction of pausing.

All diagrams to express change can be viewed on the website: ENG1 Group 7 – Game Website

Changes made to Method Selection and Planning:
Original: https://eng1-c1g11.github.io/assets/Plan1.pdf
Changed: Method Selection and Planning

- Changes made to method selection:
    - The previous team had a very similar approach to us so few changes were made
    - Described how our approach to Assessment 2 differed from our approach to Assessment 1.
        - Justification: This allowed us to reflect on our approach so that we could effectively plan out a new approach for Assessment 2 that would allow us to complete the project in an effective and timely manner.
- Changes made to plan:
    - We carried on the weekly plan based on our new plan for the project that we have inherited
        - Justification: This allowed us to plan out what we would do each week and describe our approach so that we understood what needed to be done and when.
    - Weekly plan was split into 2 sections; Assessment 1 and Assessment 2; to separate the project into stages of development.
        - Justification: This made the document easier to read and search through as all changes were made in the Assessment 2 section
    - Weekly plan was updated each week
        - Justification: This allowed us to keep track of where we were in the project at all times.
    - Created a new Gantt chart to display the overall plan for assessment 2
        - Justification: Provided a visual representation of the timespan of the project and our plans for when everything would be completed. The Gantt chart contained milestones in order to signify stages of the project as well as when meetings occurred.
    - Explained the new Gantt chart and the changes made to it to get to the final Gantt chart shown in the updated deliverable.
        - Justification: This allows the changes made, as well as our overall plan to be explained.
    - Created a series of tables (carrying on from the previous team)
        - Justification: This allowed us to detail our plans for each week and to reflect on the progress of our project on a weekly basis and plan for the week ahead.

Changes made to Risk Assessment and Mitigation:
Original: https://eng1-c1g11.github.io/assets/Risk1.pdf
Changed: Risk Assessment and Mitigation

- Updated management process:
    - We decided to keep the risk management process as it is as it was in line with our process of managing and discovery of the risks.
- Updated risk register:

- Redistributed ownership
    - Justification: The redistribution of ownership was necessary to monitor and mitigate the accounted and unaccounted risks.
- Added R15: Ethical issues in user evaluation
    - Justification: This was added to ensure privacy and protect the user during and after the testing.
- Added R16: Inconsistent Art Style
    - Justification: The inconsistent art style would make the visual of the game disturbing, therefore risk was added to mitigate it.
- Added R17: Accessibility limitation not counted
    - Justification: This was added prevent exclusion of the users due to the various circumstances
- Added R18: Make the link public, resulting in loss of project data
    - Justification: This was included to protect project files from losing from accidents such as making the link public before submission.
- Added R19: The deliverables's format and page number not meeting resulting in 0 mark
    - Justification: This was included to not lose the marks due to the minor mistakes, which resulted in creation of the check list.
- Added R20: Difficulty integrating previous team deliverables, codes, and website
    - Justification: This was added because integration and adaptation of the different team's work is hard to adjust based on the worked project.
- Added R21: Unbalanced game difficulty
    - Justification: The adapted project's game difficulty was medium, but added functions might make it difficult to keep the game difficulty consistent.
- Added R22: Incomplete or ineffective coverage of aspects during testing
    - Justification: This was added to make sure effective coverage should implement to prevent