Project Part #2
(P-2)

Software Requirements Specification

Due Friday, November 1, 2024

Weight: 11% of course grade

File naming convention: P2_Txx.pdf, where Txx is your team #

Note: **<T3>** Team of 3 , **<T4>** Team of 4

0. Cover page

Should contain the following items:

- Department, university
- Project title
- Team number [optional: Team name]
- Team members
- Instructors
- External advisor(s)
- Date

1. Table of contents

2. Introduction

- A general description of 200 to 500 words.
  - You can reuse *some* text from the Project Concept (P-1) but try as much as possible to refine and enhance it.
  - Describe the more significant changes to the project, if any (compared to the previous project part). Explain why these changes were needed.

3. Summary of stakeholders' interviews

- Prepare at least 10 **<T3>, or** 12 **<T4>** questions and interview at least 3 project stakeholders (external advisors, users, at most one member of your development team)
- Ask each stakeholder interviewed all questions in the set
- Indicate the persons interviewed, and why you chose them for the interview.
- Include the questions asked, and ***summarize*** the answers received.
- If you are working on an industry sponsored project, try to interview as many project stakeholders from the company as possible.

4. Technical requirements specification

- *Functional requirements*, prioritized on 3 levels, and *non-functional requirements* (optionally prioritized on 3 levels), as complete as possible (see an example on slide 6 of this PPT set).
- Level 1 should include requirements that you plan to implement by the end of this semester (Fall '23), Level 2 should include additional requirements that you plan to implement by the end of next semester (Spring '24), and Level 3 should include requirements that would be useful and/or nice to have, but most likely will not be implemented.
- **NOTE: for projects with hardware components,** you should include in this section requirements pertaining to both software and hardware.

Requirements

Functional Requirements

FR1. [1] SOAP shall allow the user to execute squib sequences.
FR2. [1] SOAP shall allow the user to create a custom squib sequence.
FR3. [1] SOAP shall allow the user to load a canned squib sequence.
FR4. [1] SOAP shall allow the user to edit a custom squib sequence.
FR5. [1] SOAP shall confirm sequence timing is possible before running sequence.
FR6. [1] SOAP shall include a checksum for every squib to fire.
FR7. [1] SOAP shall allow a user to save a project.
FR8. [1] SOAP shall allow a user to load a project.
FR9. [1] SOAP shall allow for automatic universe setup/detection.
FR10. [1] SOAP shall give a schematic preview of the sequence to run.
FR11. [1] SOAP shall create valid packets to communicate with universe.
FR12. [1] SOAP shall display disabled squibs to user.
FR13. [2] SOAP shall allow the user to organize a visual representation of the universe.
FR14. [2] SOAP shall allow for manual universe setup/detection.
FR15. [2] SOAP shall give a visual preview of the sequence to run.
FR16. [2] SOAP shall allow the user to save sets of custom sequences for future use.
FR17. [2] SOAP shall display disabled firebox to user.
FR18. [2] SOAP shall display disabled lunchbox to user.
FR19. [3] SOAP shall correct errors detected from checksum.
FR20. [3] SOAP shall sync to music.
FR21. [3] SOAP shall allow for manual, on the fly control of squibs

Non-Functional Requirements

NFR1. [1] SOAP will run on Windows Vista/7/8.
NFR2. [1] SOAP will have an intuitive interface.
NFR3. [1] SOAP will have a short learning curve.
NFR4. [1] SOAP will use professional quality graphics.
NFR5. [1] SOAP shall communicate using the RS485 protocol.
NFR6. [2] SOAP shall be implemented in Java.
NFR7. [2] SOAP will run on OSX.
NFR8. [3] SOAP will minimize system resource usage.

5. Use case modeling

- Use case diagram: at least 10 **<T3>** or 12 **<T4>** use cases

(an example of use case diagram is on slide 8 of this PowerPoint set)

- Detailed use cases: concise text descriptions (2-4 lines each) for all the above use cases (see example on slide 9, top-left, in this set of slides).
- Detailed templates for 3 **<T3>**, or 4 **<T4>** use cases **. Note**: for detailed use case use templates (tables) see slides based on [Arlow & Neustadt 2005] – check class lecture slides of October 26,2023 (date and presentation to be confirmed) as well as slide 9, bottom-right, in this slides set.

Use Case Diagram

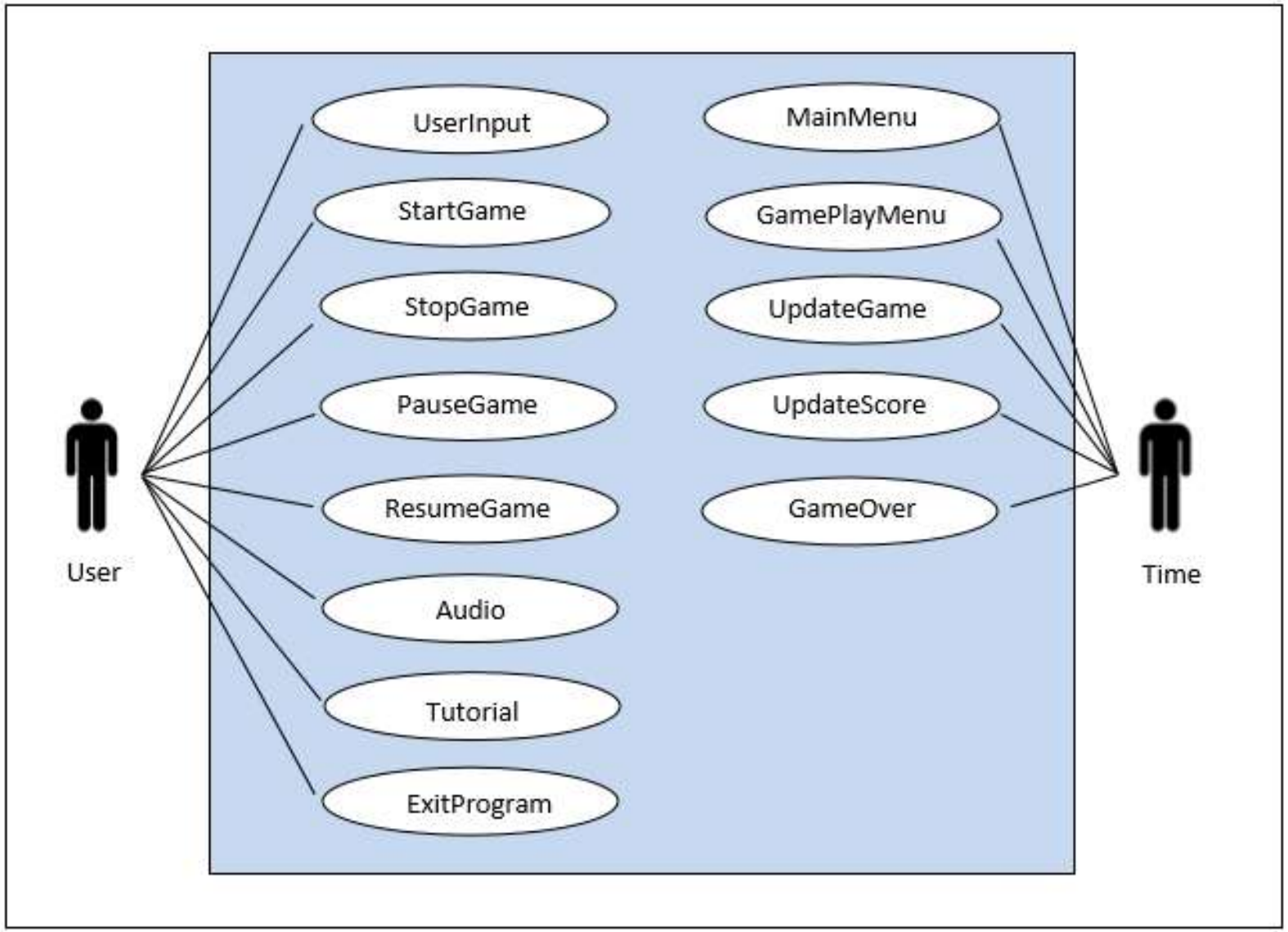


Figure 1: Use Case Diagram.

Use Case Descriptions

Brief text description

Use Case Descriptions		
UC01	UserInput	The Wii Sensor bar will determine player position and control input to the user program. Input will be used when selecting menu items and during game play.
UC02	StartGame	The user selects Start New Game from the Main Menu. User(s) are redirected to a virtual field, where scores are initialized to zero (0) and virtual players and a ball are rendered.
UC03	StopGame	The user selects the Home button, located on the Wii Remote, and selects Quit, to return to the main menu.
UC04	PauseGame	The user selects the Home button. They are automatically presented with a Game Play Menu, where they have the option to resume game play, receive audio help, and return to the main menu.
UC05	ResumeGame	When a game is paused, the user selects Resume Game from the Game Play Menu to return to the current game.
UC06	Audio	The program will rely on audio output to communicate with users. The Main Menu, Game Play Menu, tutorials, and game play will depend on audio as a form of communication.
UC07	Tutorial	Provides users with a deep overview of game play and how to

Template description (from a different project)

Use Case: ValidateSequence

ID: UC11

Actor(s):
User, Time

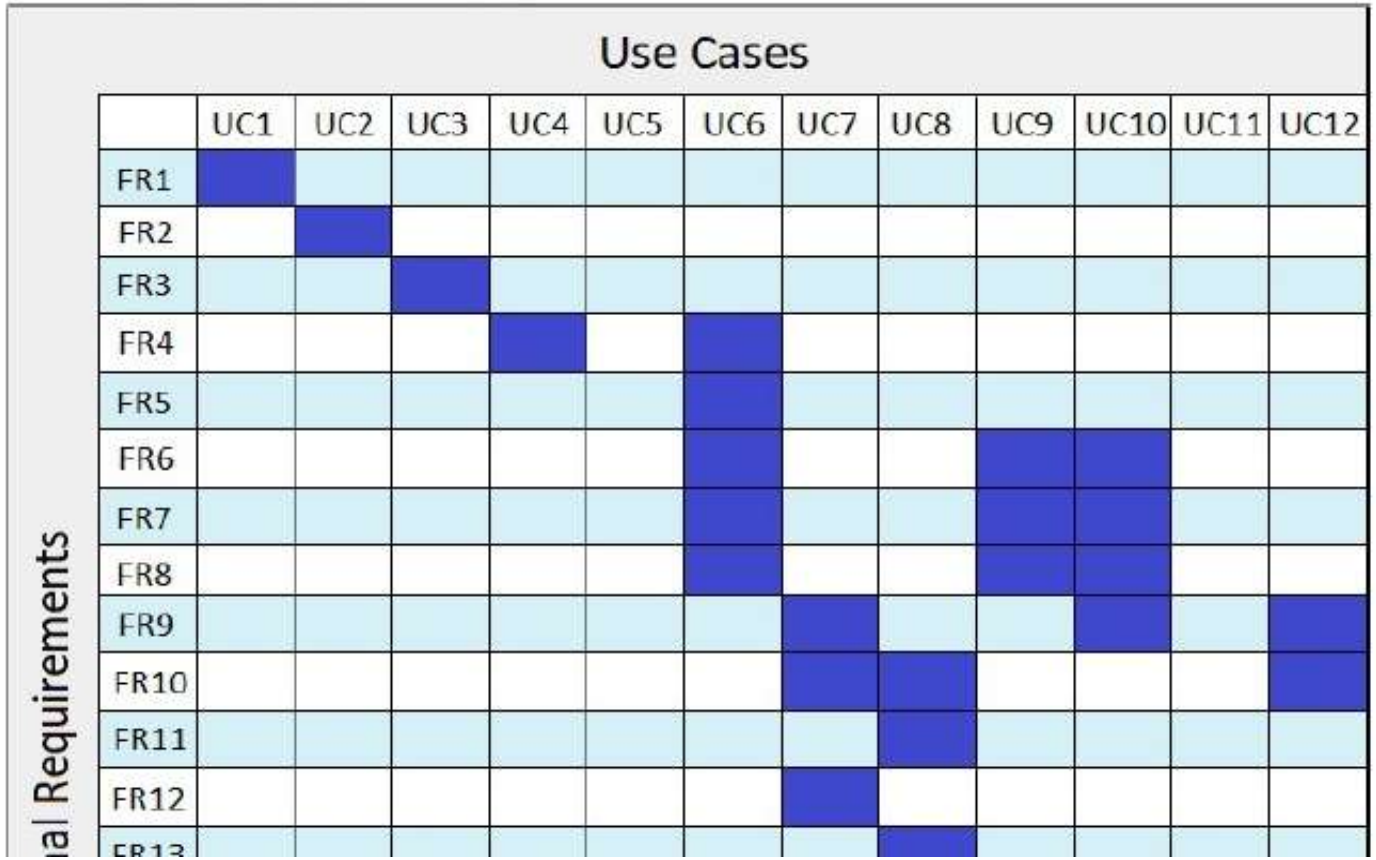
Precondition(s):
1. The user has made a change to the sequence

Flow of Events:
1. The use case starts when the user finishes editing the sequence.
2. The system first scans for simultaneous fires from the same lunchbox.
   2.1. If such a conflict arises, the user will receive an error message stating that there is an overlap conflict with lunchbox N at time T.
3. Next, the system scans to see if an lunchboxes on a chain are fired too close together, where the firebox would not have time to recharge the entire constellation.
   3.1. If such a conflict arises, the user will receive an error message stating a timing conflict exists on firebox N, at time T.
4. If errors were present, the user is brought back to the edit sequence scene with erroneous commands highlighted.

Postcondition(s):
1. The user may run a simulation of their designed sequence.

8. Requirement traceability matrix

- Provide in this matrix (table) the mapping between use cases and functional requirements. A simple (partial) example is given below.



7. Initial snapshots of the user interface

- **Initial snapshots** of the system's potential user interface: at least 4 **<T3> or 5 <T4>**with brief descriptions (but no more than 10 snapshots as detailed GUI design will be part of Project Part 3).

System Snapshots

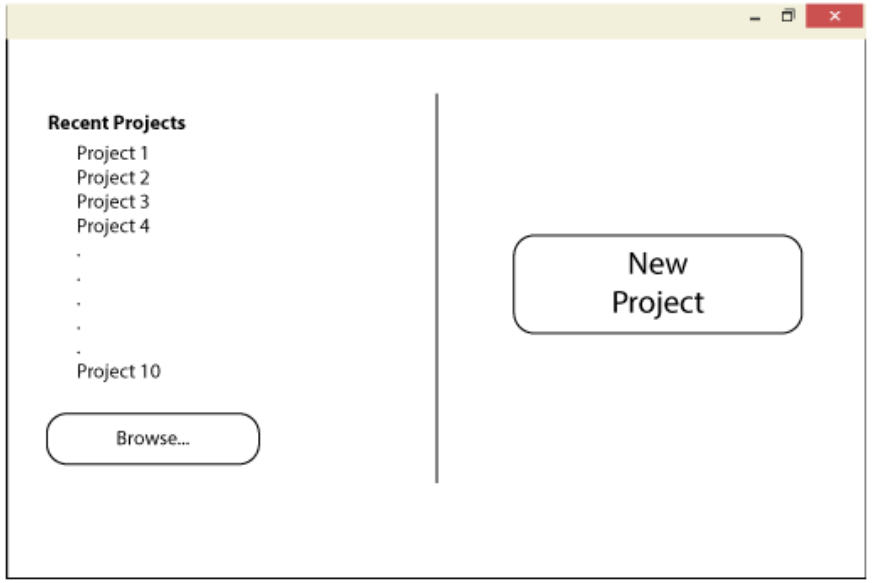


Figure 2: Snapshot 1/8, Starting a new project, user is presented with options to load recently opened projects, which can be opened by simply clicking the project name, they can browse for an existing project, or they can begin creating a new project. This is a similar structure to Adobe Premiere video editing software.

8. Glossary of terms

- Include at least 15 **<T3>**, or 20 **<T4>**, terms related to your project's problem domain.

9. List of references

Include:

- A related “problem domain book”
- At least 2 **<T3>,** or 3 **<T4>** reference articles (journal, conference or web scientific publications)
- At least 1 **<T3>**, or 2 **<T4>** project related websites with useful resources

Provide for all the above brief descriptions (40 to 80 words each)

10. Contributions of team members

- Provide an estimate on how much time each team member worked on **this project part** (**P#2**), and on what specific activities.
- For estimated time use multiple of 0.5 hour for each team member (e.g., 4.5 hours, 5.0 hours, etc.).

Grading of Project Part 2: Specification

1. Overall presentation of the SRS, and sections 0, 1, and 2	10 points
2. Stakeholders' input & requirements (sections 3 and 4)	32 points
3. Use case modeling and req. traceability matrix (sections 5 and 6)	28 points
4. Sections 7, 8, 9, 10	30 points
Total	100 points