Project Proposal
TurnGamesFW

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1 Introduction

TurnGamesFW is a framework that aims to help developers to create turn based games by providing the common parts in games of that nature.

This framework will be open source and will have, already implemented, the basic functions of user and game management directed to turn based games plus a few specific functionalities related with board games. Even though the common parts will already be done, it will still be possible to make changes specific to the application, considering that the game logic and most of the user interface are not included in the framework.

2 Context

The creation of a turn based game requires the creation and implementation of code pieces that are not specific to the game. An example of this is user registration and login, that has some difficulty associated with it.

3 Problem

Currently there are a lot of frameworks specialized on user interface and there are some services focused on user management, but is hard to find something that specifically helps with turn based games.

A developer trying to make a board game always needs to create a board, fill it with tiles or squares, add the pieces to their right position and keep track of them during the game. This not only is repetitive but also leaves chance of creating errors that will need to be debugged. This also applies to card games based on turns even though they have more variations on their basics.

4 Solution

The problem is the lack of options for a problem that surrounds repetitive tasks, by creating a framework that can handle this problem, it will be faster to start a new turn based project and it will be easier to ensure code moduling/separation.

5 Architecture and Technologies

The project aims to deliver two libraries to facilitate the creation and management of turn based games.

The back-end library provides tools to manage users and games, and it can access a database to do so.

To build it, we will use the Spring[1] framework, to handle the requests and responses, and a SQL database to store all relevant information.

The front-end library will include pre-built components that can be used and customized by the developer to make the user interface. To build it, we will use React[2] with TypeScript to prevent type based errors.

Both of this libraries will be documented and tested. We will also do two games that will be used as examples, the first game will be one that already exists in the real world to prove that it works with established games, and the second will be created by the group to prove that it works with personal ideas.

The developer will need to use both libraries, following their documentation, in conjunction with its own specific components to build the intended game.

6 Requirements

To make the implementation work as intended, we will need to:

- Create a relational data base schema to define how the elements will be stored;
- Create a back-end library with user and game management;

- Make a user guide;
- Implement React[2] front-end library that uses the API;
- Make two fully functional games using the library, one self created and one established;

We also intended on adding this optional features:

- Allow turn games based on more than 2 players;
- Add user customization;

7 Project Plan

In total we have 20 weeks to complete the project:

7.1 Phase 1: Planning and Design — Week 0-3

During this phase, we will define the scope of the project, gather requirements, and design the system architecture. Key activities will include:

- Define project goals and objectives
- Design the database schema and API endpoints
- Define the development and testing environment
- Create a project plan with milestones and deliverables

7.2 Phase 2: Back-end library — Week 3-9

During this phase, we will build and test the back-end library and supporting components. Key activities will include:

- Implement the database schema and data access layer
- Build the HTTP API endpoints for user and game management
- Implement basic and common functions for games
- Test and validate the library

7.3 Phase 3: Front-end library — Week 8-14

During this phase, we will implement the front-end library with React[2]. Key activities will include:

- Build/Integrate the front-end with back-end library
- Create two games to serve for testing, one established and one self made
- Test the integrated system end-to-end

7.4 Phase 4: Debugging and Improvement — 15-20

During this phase, we will debug and improve both libraries. Key activities will include:

- Debug back-end and front-end library
- Improve code on both libraries
- Add optional requirements

7.5 Phase 5: Documentation and Release — Week 17-20

During this final phase, we will create documentation and release the TurnGamesFW library to the public. Key activities will include:

- Write and review the user guide for both libraries
- Prepare release notes and a changelog
- Publish the libraries to a public repository

8 Deliverables

This are the dates already set to deliver parts of the project:

- 20 March 2023 - Project Planning
- 24 April 2023 - Progress
- 5 June 2023 - Beta version
- 10 July 2023 - Final Version

References

[1] VMware, Inc. Spring. https://spring.io/, 2023. [Online; accessed 20-March-2023].

[2] Meta Platforms, Inc. React. https://react.dev/, 2023. [Online; accessed 20-March-2023].