Software Engineering

Homework 01

Project name: Pair Parallax

Group 14
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Introduction:

Pair Parallax is a Puzzle type single and multiplayer game. The game revolves around finding matching cards which have been flipped over. Each player gets 2 turns. If they can flip 2 cards which match, they get an extra pair of turns, else the other player gets to take 2 turns and so on until all cards have been flipped. The player with the highest score wins. The game can also be played alone which involves a simple timer where the player has to solve the puzzle in the least time possible.

The project is intended to be developed on Unity 3D following proper Software Engineering Techniques which we will study in class.

- · **Do you think you need mathematical verification of correctness of your system or a part of your system? Why?**

  Yes, mathematical verification can be applied in our game as the entire game can be verified through mathematics. It is a turn based game and each successful turn adds to scores and each score is earned by validation of 2 objects. Each turn has a fixed time duration and each player has to make the move in the given time. The turn switches as soon as the time runs out or the player makes a move. The player who manages to score more points wins the game. The probability of making a correct move can be calculated.

- · **Can you separate various concerns of your project from functional and quality perspectives? Highlight the concerns and describe how can you handle concerns separately?**
  The games menu can be separated and can be developed in parallel. The game can be developed in a crude manner at first and later be optimized.In functionality point of view, we can separate multiplayer from single player game styles. In multiplayer, we can further separate online multiplayer and same device multiplayer. We can also separate setup of ui from all the game mechanics. There is a little coupling involved but that will be covered in its respective section. All components can be done in parallel.

- · **Identify some functional modules in your system. Discuss coupling and cohesion aspects.**
  The modules that we identified are the menu, game levels, offline play, networking multiplayer, scoring, and the reward system that is based on the scoring module with a low coupling to it. Similarly other game rules that are added (and could be added in the future) can serve as a separate module. All the modules are cohesive. The only modules that have relatively high coupling is the networking and multiplayer module.

- · **Identify the potential future changes in your system. Pick one potential change and discuss how would you address it in your system?**

  We can add more levels, advertisements, push notifications and analytics into the game. We may also add features such as a hint or help in exchange for money or points already earned.

- · **Which increments would you suggest if you are asked to build your system incrementally?**

1. Create a playable prototype on paper
2. Test how it is supposed to work
3. Implement basic playable game on Unity
4. Make UI Functional
5. Add game mechanics
6. Add quality animations and textures to make the game more appealing
7. Add multiplayer feature into the game
8. Add hint option (Reward module where players may gain help in exchange of an advertisement or currency).