University of Waterloo

SE464

Section 001

Project Proposal

Group 25

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Project Title: ShuttleQL (Shuttle Queueing Logistics)
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1 Introduction

1.1 Motivation

Around the world, there are 100s of recreational badminton clubs which host regular sessions at set locations for members to drop in and play at. Traditionally, the operation of a badminton club was done manually through the combined efforts of the clubs executive staff. There are several burdenous and repetitive tasks that the staff members need to do on a regular basis in order to keep the club running smoothly. For example,

- Registering new club members
- Checking in/out members during a club session
- Scheduling members into courts for each rotation

These tasks negatively impact the productivity of the staff and are prone to human error. In addition, there is no effective means for the club execs to communicate with the members in real-time. Finally, there is no easy way for a member to get feedback on their own performance unless they hire a coach or ask for critique from a staff member.

1.2 Idea

ShuttleQL is an all-in-one badminton club management platform which not only automates repetitive administrative tasks but also acts as a communication hub between the club executives and its members. It also offers insights and analytics into performance of the players in the club.

The platform will be entirely web-based. It will consist of two components: a club member mobile web based dashboard and an admin desktop web based dashboard. The platform from the club member's perspective will be a mobile web based app since they are more likely to have access to a phone than a laptop when they come to session. The admin dashboard will be desktop web based since it requires heavy user interaction which will be easier on a laptop rather than on a phone.

1.3 Originality

Although existing software solutions exist for a similar purpose, they are often incomplete relative to ShuttleQL and don't leverage many of todays technologies. ShuttleQL aims to fix most if not all of the pain points associated with managing a badminton club. It also applies new concepts such as data analytics and machine learning into processes such as matchmaking and coaching, which has not yet been done in existing solutions.

2 Project Properties

2.1 Functional

1. Match making algorithm that allocates players to open badminton courts
2. Send notifications to users once they are able to play
3. Allow executives to broadcast announcements to users
4. Allow executives to override the match making algorithm
5. Display current players that should be on each court
6. Show the match history of each member
7. Track match-making-rating of club members in ladder matches
8. Registering new club members
9. Track when users attends and leaves the club

2.2 User Scenarios

There are two different types of users in our system. The first type of user is a badminton club executive. They have access to a variety of different admin-level actions such as player management, court management, and communication. For example, they can override the match making done by system. This will be useful in the scenario that a member is scheduled to play on a court but they have to leave early, so the executive can simply replace the member that's leaving with a new member that isn't playing.

The second type of user is the normal badminton club members. They would interact with our system by viewing on their phones the current players playing on each court. This reduces crowding between rotations if this information was displayed in on centralized location in real life. In addition, they get notifications when it's their turn to play. Using notifications eliminates the need for the member to constantly check whether they are playing or not.

2.3 Non-functional

The two non-functional properties that our system needs to support are dependability, adaptability, and efficiency.

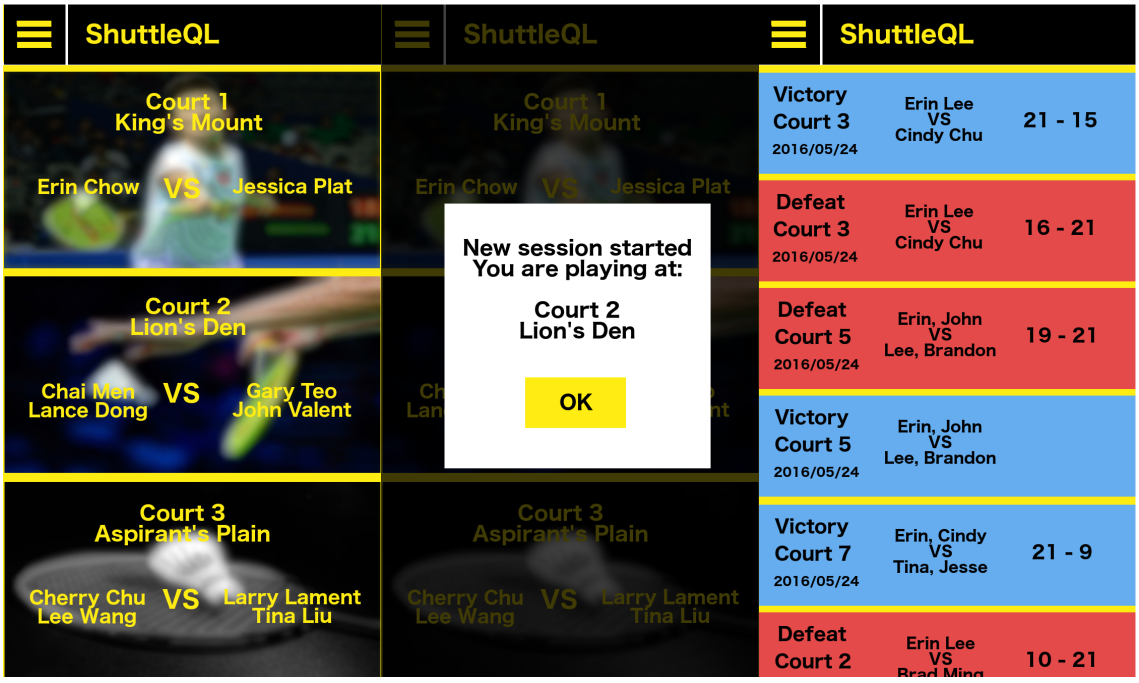
Dependability describes the reliability of the system. There should be no crashes or unexpected software failures. Dependability also describes how accurate the software features meets the specifications. The system should behave exactly as the specifications describe without encountering any software bugs. This property is important because our system needs to be reliable for every badminton club session. It is crucial that every user has correct matches in order to have good user experience.

Adaptability describes how well the system adapts to new requirements to the software. Every time that a new requirement needs to added to the system, the system must be able to function as expected. For example, the match making system should function as expected even if the maximum number of players on a court change. This property is important to our system because there will be a lot of requirement changes throughout the lifetime of the club.

Efficiency describes the system's performance requirements. The match making algorithm should run fast enough such that matches get generated within seconds. Furthermore, users should get instant notifications once it is their turn to play on the court. This property is important because users need to have maximal playing time and cannot be delayed by performance issues.

Scalability describes how easy it is to add new features to the system and how maintainable the system becomes after. The system needs to be modular, have extensive documents and separation of concerns. This property is important because more features will most likely need to be added in the future by contributors outside of our group.

3 Mockups


ShuttleQL
Court 1
King's Mount
Erin Chow VS Jessica Plat
Court 2
Lion's Den
Chai Men
Lance Dong VS Gary Teo
John Valent
Court 3
Aspirant's Plain
Cherry Chu
Lee Wang VS Larry Lament
Tina Liu
ShuttleQL
Court 1
King's Mount
Erin Chow VS Jessica Plat
New session started
You are playing at:
Court 2
Lion's Den
OK
Court 3
Aspirant's Plain
Cherry Chu
Lee Wang VS Larry Lament
Tina Liu
ShuttleQL
Victory
Court 3
2016/05/24
Erin Lee
VS
Cindy Chu
21 - 15
Defeat
Court 3
2016/05/24
Erin Lee
VS
Cindy Chu
16 - 21
Defeat
Court 5
2016/05/24
Erin, John
VS
Lee, Brandon
19 - 21
Victory
Court 5
2016/05/24
Erin, John
VS
Lee, Brandon
Victory
Court 7
2016/05/24
Erin, Cindy
VS
Tina, Jesse
21 - 9
Defeat
Court 2
Erin Lee
VS
10 - 21