



**ITSS 4330**

**UTD Ballers: Final Report**

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**11-27-2018**

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## **Executive Summary**

Basketball. It's one of the most popular sports on the planet. At the University of Texas at Dallas, many students are fans of basketball. However, there is one big problem. The school's Activity Center holds different activities during the semester, and the students often have trouble getting information on whether or not the court has been occupied. In addition, even when the court is open, many students have different schedules, so gathering enough players for a simple pickup game can prove to be challenging. So, is there any solution to help our students get accurate information of court availability while also creating a community which assists students to engage with each other in order to have a better pickup game experience?

The objective of this mobile app will be able to set up a game meeting with other players within the UT Dallas campus. Such an app does not exist yet, and we would like to make it easier for the average UT Dallas student to play basketball. This would include information regarding location of the court, cost to play in the game, and roster information. After a game has been played, the user can rate the players on how they play as well. This would all be done on the user's smartphone. Additionally, the app will contain schedules of the gym, and whether or not the gym is being used for a class or an event. If the gym is available, meaning no events or classes are being held, then users can sign up for a time that works for their schedule. To help ensure the safety of the users, only UT Dallas students will be able to sign up and utilize the app. Users must log in with their UTD net ID, as they do on campus. Additionally, users can report other users if they are too aggressive on the court, or if they stalk or sexually harass other users. If a user has been reported too many times, he or she will be banned from using the application.

## **Project Background:**

- Students at UTD who have a passion for playing pickup basketball have a tough time finding an open gym
- Most of the time this happens because there are other events or actual games that occurs in the Activity Center
- There is no efficient way of finding out whether the gym is open for pickup ball use and even then, there is no guarantee if there are other players available to play with
- With this app, it would create a more efficient way for students to play in an organized pickup game at UTD

### Project Functionality (Objectives):

- App will require students to login via UTD net ID to validate he or she is a student at UTD
- App will have a calendar and will block off any dates or times which is already occupied by the UTD Activity Center
- All open days and times on the app calendar will follow the UTD Activity Center operating hours
- Students will be able to see current registered players and the opportunity to join them
- Once the minimum number of players has been filled, the app will create 2 captains randomly. The captains can then draft players from the player pool
- The app can send push notifications to the players when they have been selected on a team
- A temporary group chat will be created for the teams with their respective players. They can use that to talk about game strategies
- After a player completes 3 games in the app, they will be able to review other players and also other players will be able to review them
- For any case, if there is a player that is being abusive in any way, they can be reported via the app and the admin of the app can ban them from using the app
- Sometimes there may be weekend tournaments, and the app can send the tournament invite to the app users as a push notification

### Project Schedule

Work Breakdown Structure:

Task Name	Predecessor	Effort (Days)	Estimated Start Date	Estimated End Date	Assigned Resources
<b>1.0 Planning</b>					
<b>1.1 System Request</b>		3	01/09/19	01/12/19	Faisal, Jason
<b>1.2 Feasibility Analysis</b>	1.1	5	01/12/19	01/17/19	Faisal, Jason, Yusuf
<b>1.3 System Approval</b>	1.2	1	1/17/19	1/18/19	Professor Khan
<b>1.4 Project Requirements</b>	1.3	4	1/18/19	1/22/19	Faisal, Jason, Yusuf, Leon
<b>1.4 Project Scope and Functionality</b>	1.3	6	1/22/19	1/28/19	Faisal, Jason, Yusuf, Leon

<b>1.5 Project Work Plan</b>	<b>1.4</b>	<b>8</b>	<b>1/28/19</b>	<b>02/05/19</b>	<b>Yusuf, Leon, Jason</b>
<b>1.6 Project Proposal</b>	<b>1.4, 1.5</b>	<b>5</b>	<b>02/05/19</b>	<b>02/10/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>2.0 Analysis</b>					
<b>2.1 Analysis Strategy</b>	<b>1.6</b>	<b>2</b>	<b>02/12/19</b>	<b>02/14/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>2.2 Analysis Requirements</b>	<b>1.6</b>	<b>3</b>	<b>02/14/19</b>	<b>02/17/19</b>	<b>Yusuf, Leon</b>
<b>2.3 Process Model</b>					
<b>2.4 Context Diagram</b>	<b>2.2</b>	<b>4</b>	<b>02/17/19</b>	<b>02/22/19</b>	<b>Jason, Leon</b>
<b>2.5 Use Case Description</b>	<b>2.2</b>	<b>6</b>	<b>02/22/19</b>	<b>02/28/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>2.6 Use Case Diagram</b>	<b>2.5</b>	<b>4</b>	<b>03/01/19</b>	<b>03/05/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>2.7 System Proposal</b>	<b>2.1-2.6</b>	<b>2</b>	<b>03/05/19</b>	<b>03/07/19</b>	<b>Leon, Faisal</b>
<b>3.0 Design</b>					
<b>3.1 Design Strategy</b>	<b>2.7</b>	<b>2</b>	<b>03/07/19</b>	<b>03/09/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>3.2 Design Architecture</b>	<b>2.7, 3.1</b>	<b>3</b>	<b>03/09/19</b>	<b>03/12/19</b>	<b>Jason, Faisal, Yusuf</b>
<b>3.3 UI Design</b>	<b>2.7, 3.1, 3.2</b>	<b>10</b>	<b>03/12/19</b>	<b>03/22/19</b>	<b>Leon, Faisal, Yusuf</b>
<b>3.4 Develop Database</b>	<b>3.2</b>	<b>5</b>	<b>03/22/19</b>	<b>03/27/19</b>	<b>Jason, Faisal</b>
<b>3.5 Application Design</b>	<b>3.2-3.4</b>	<b>7</b>	<b>03/27/19</b>	<b>04/04/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>

<b>3.6 System Specification</b>	<b>3.1-3.5</b>	<b>3</b>	<b>04/04/19</b>	<b>04/07/19</b>	<b>Yusuf, Faisal, Jason</b>
<b>4.0 Implementation</b>					
<b>4.1 System Construction</b>	<b>3.0-3.6</b>	<b>6</b>	<b>04/07/19</b>	<b>04/13/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>4.2 UI Implementation</b>	<b>3.3</b>	<b>7</b>	<b>04/13/19</b>	<b>04/20/19</b>	<b>Faisal, Leon</b>
<b>4.3 Test Cases</b>	<b>4.1, 4.2</b>	<b>3</b>	<b>04/23/19</b>	<b>04/26/19</b>	<b>Jason, Yusuf</b>
<b>4.4 System Installation</b>	<b>4.3</b>	<b>3</b>	<b>04/26/19</b>	<b>04/29/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>4.5 Application Implementation</b>	<b>4.4</b>	<b>3</b>	<b>04/29/19</b>	<b>05/02/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>
<b>5.0 Post-Testing and QA</b>					
<b>5.1 Testing</b>					
<b>5.1.1 Performance Testing</b>	<b>4.5</b>	<b>2</b>	<b>05/02/19</b>	<b>05/04/19</b>	<b>Yusuf, Faisal</b>
<b>5.1.2 Functional Testing</b>	<b>4.5</b>	<b>2</b>	<b>05/04/19</b>	<b>05/06/19</b>	<b>Leon, Jason</b>
<b>5.1.3 Usability Testing</b>	<b>4.5</b>	<b>2</b>	<b>05/06/19</b>	<b>05/08/19</b>	<b>Faisal, Jason</b>
<b>5.1.4 Security Testing</b>	<b>4.5</b>	<b>2</b>	<b>05/08/19</b>	<b>05/10/19</b>	<b>Yusuf, Leon</b>
<b>5.1.5 Destructive Testing</b>	<b>4.5</b>	<b>3</b>	<b>05/10/19</b>	<b>05/13/19</b>	<b>Yusuf, Jason, Leon</b>
<b>5.2 QA Tasks</b>					
<b>5.2.1 Maintenance and Support Plan</b>	<b>4.5</b>	<b>3</b>	<b>05/13/19</b>	<b>05/16/19</b>	<b>Faisal, Jason, Yusuf, Leon</b>

**Project Scope:**

This project will consist of creating a usable app which provides court schedules and pick up game arrangements for students at UTD. The project will be completed by December 2018.

- The app will target UTD students as the main users
- The app will initially be implemented on Apple iOS.
- The app will be a software implementation which will be applied across mobile devices.
- The app will not require any hardware processes

**Project Deliverables:**

- Scope Statement
- Progress Reports
- Issues Reports
- Weekly Meeting Notes
- Final App

**Project Success:** The project will be determined successful if the app was used by 200 UTD students.

**Functional and Non-Functional Requirements:****Functional:**

- Being able to match the court schedule of the UTD Activity Center and being able to update the schedule in real time
- Capable of creating a pickup game community for students
- Able to give reviews and follow other users

**Non-Functional:**

- Can be downloaded for free in the Apple store
- Minimum compatibility requirement will be iOS 10
- Being able to protect the user's basic information
- Servers need to be maintainable and updatable
- Have scalability which can deal with increasing use

**Expected Value:**

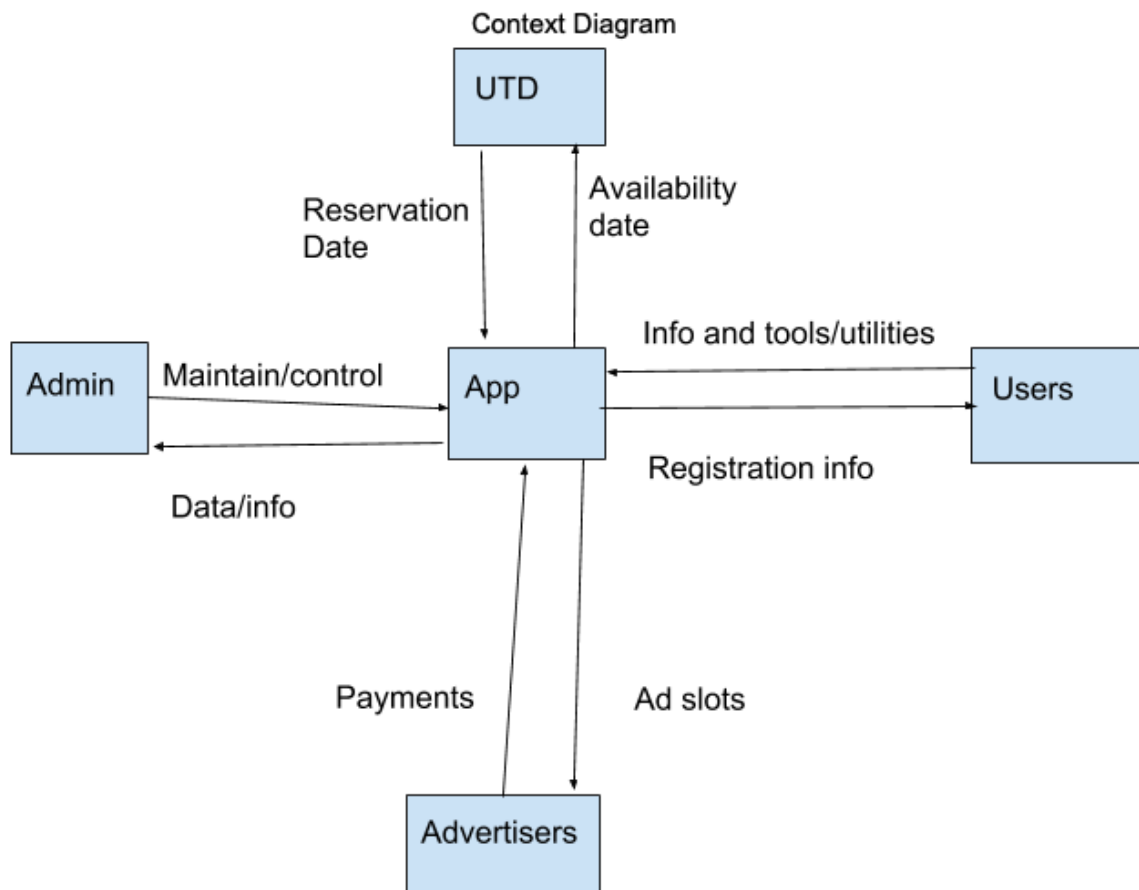
- Aid students to check the court schedule
- Help students to get in an organized pickup game
- Creating a campus basketball community

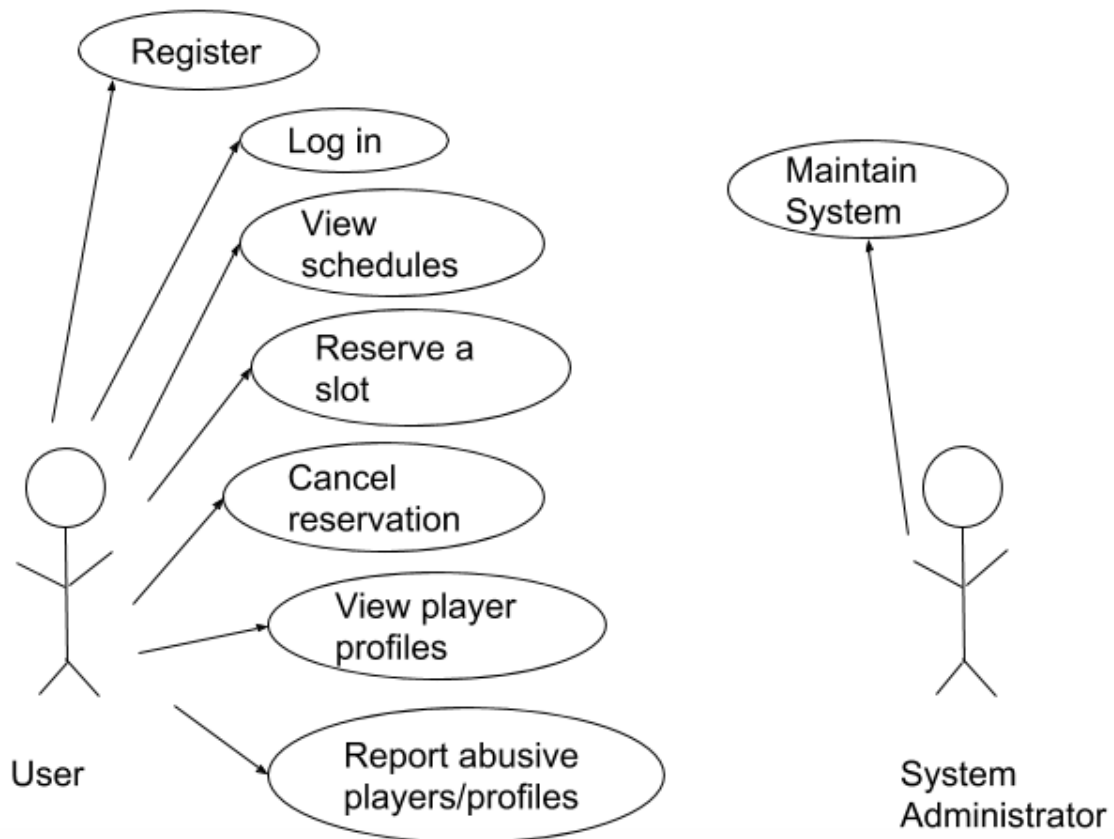
The expected value for the UTD Ballers app will be helping students to get a better pickup game experience at the UTD campus and also create a student community about basketball. The app will also increase the UTD court's utilization and efficiency. The app will implement a review system and social functionality such as following other users. This will also help promote the basketball pickup game into a social activity which can help students connect to each other.

**Constraints:**

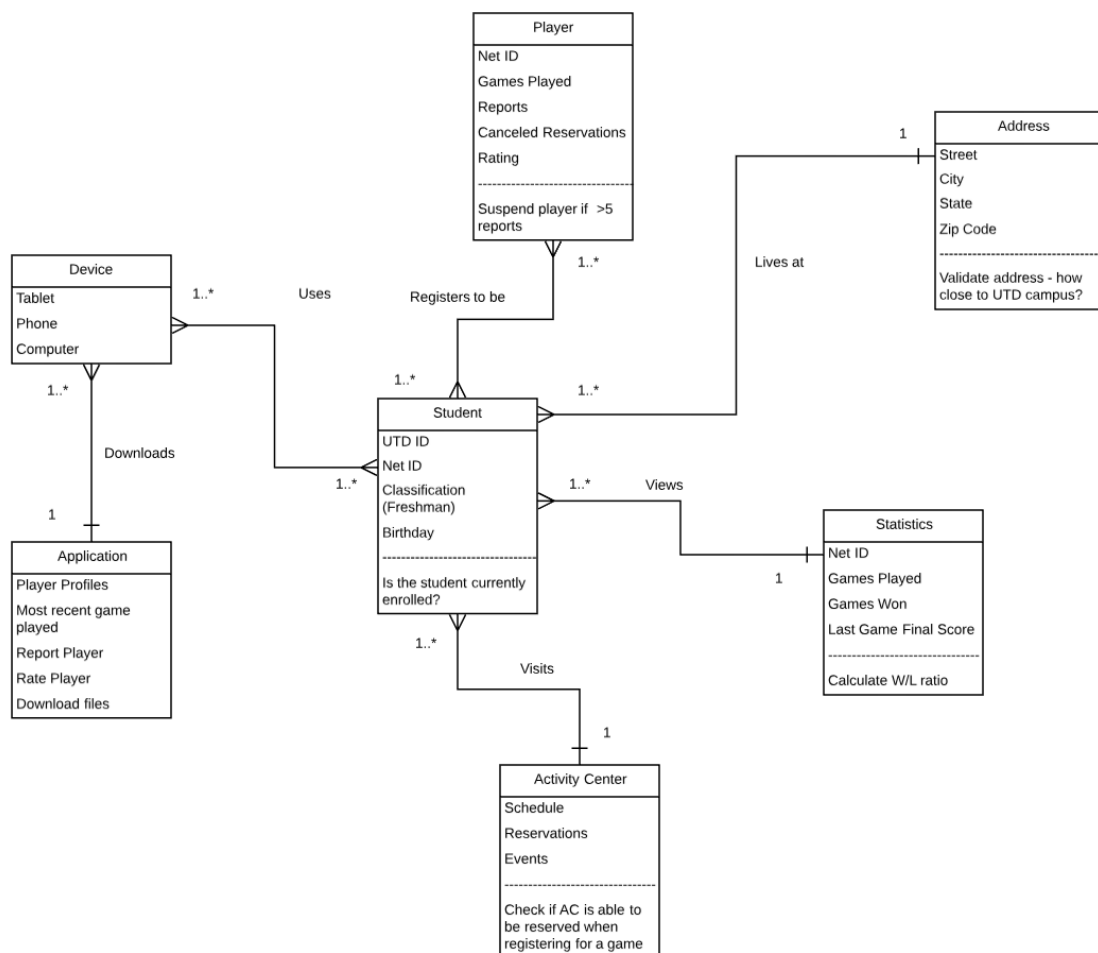
- Time limitation of less than 2 months to complete the entire project
- Need to get access from UTD in order to connect net ID and comet card to the app
- Limitation of funding
- Lack of human resources

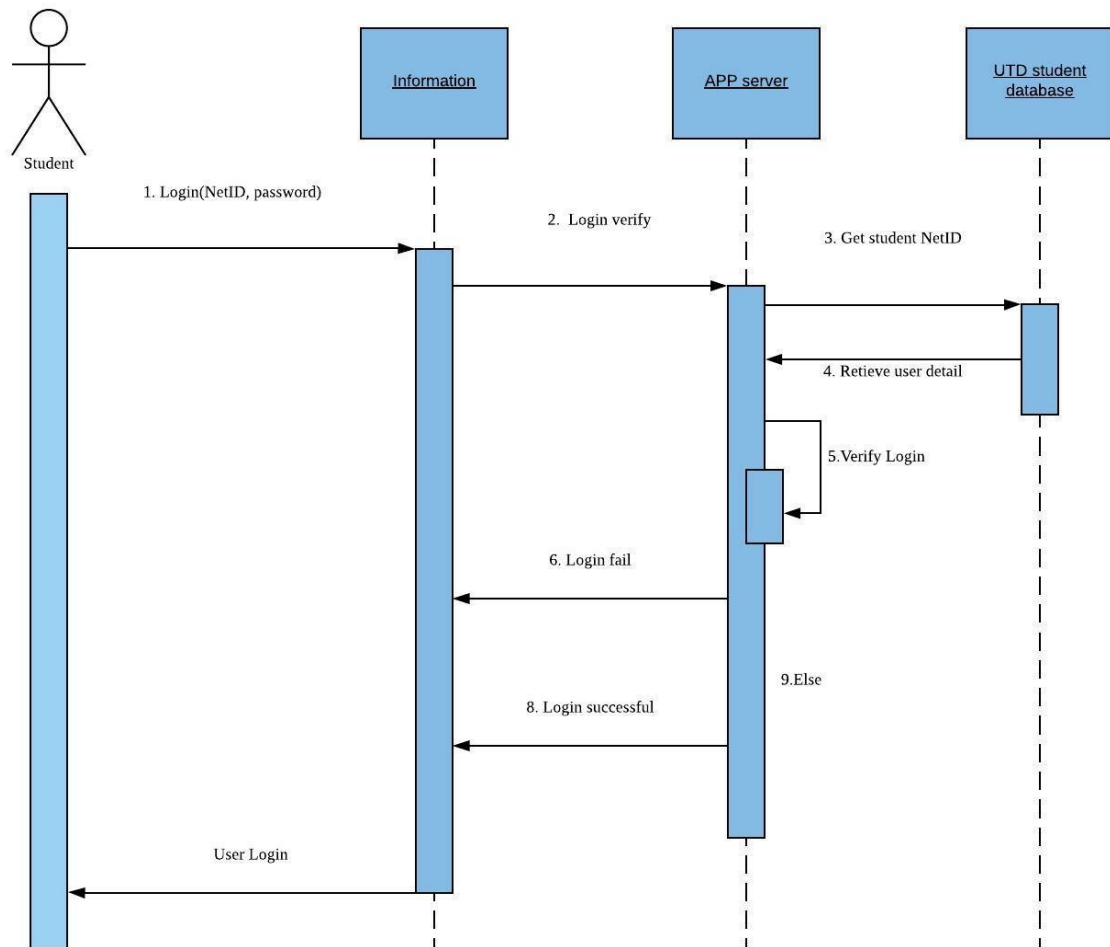


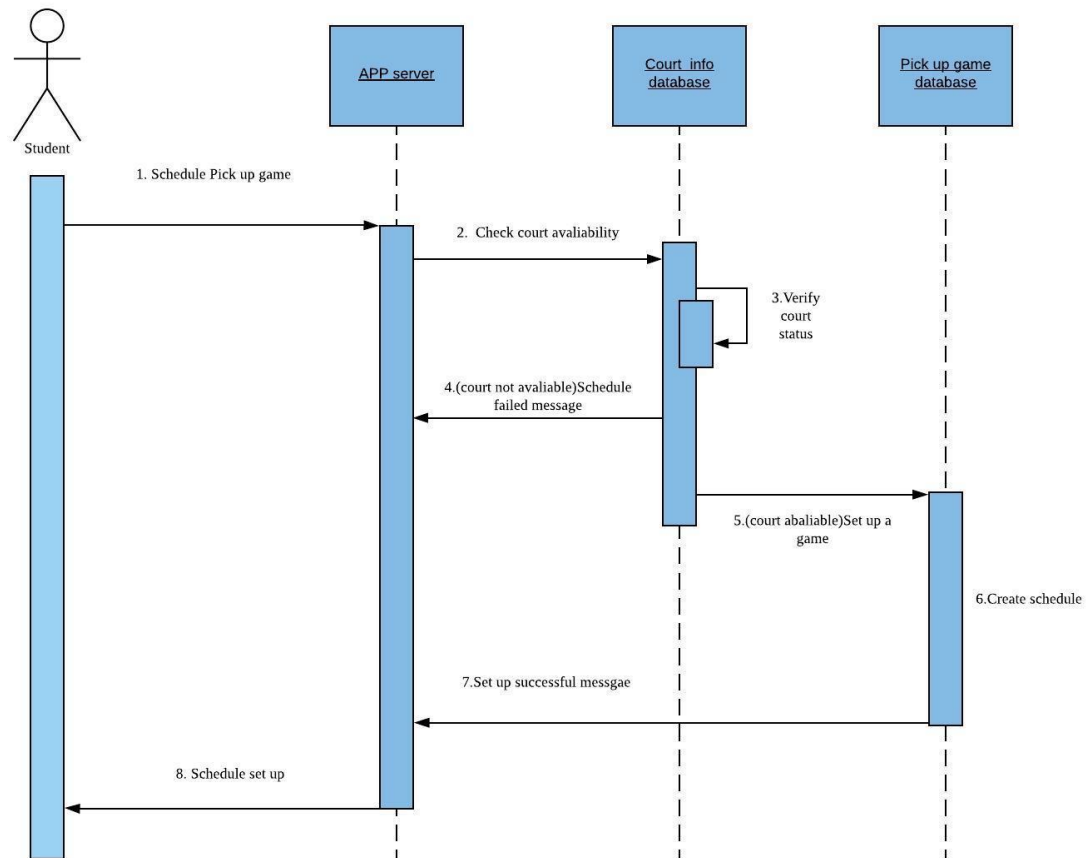
**Context Diagram:**

**Use Case Diagram:**

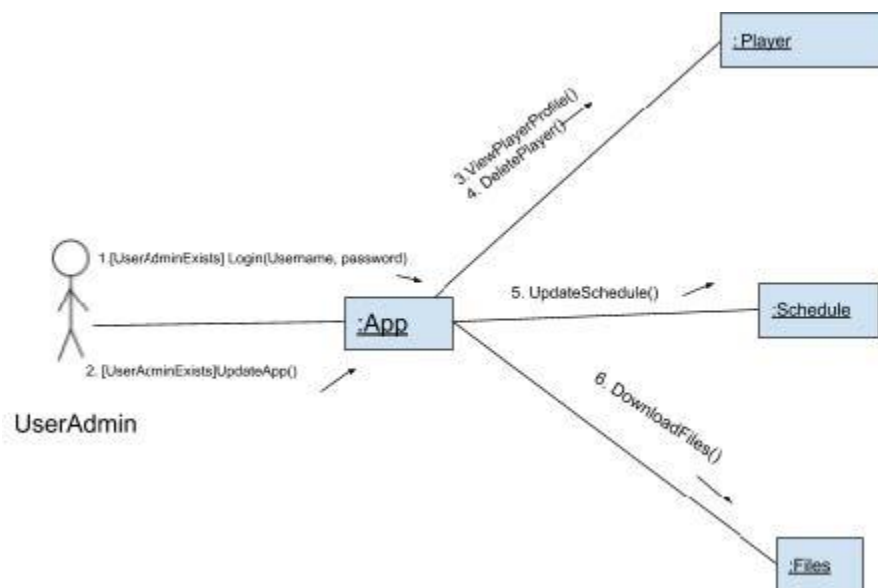
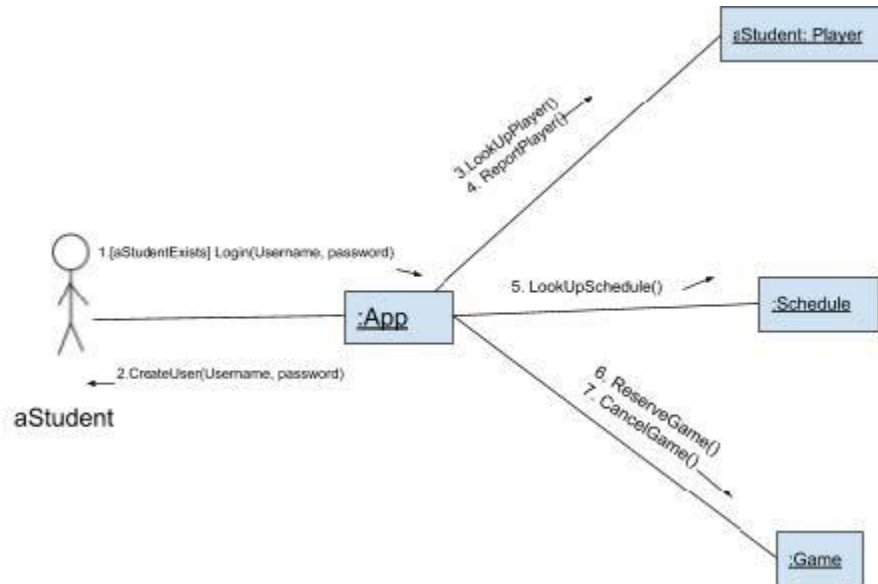
## Class diagram:



**Sequence diagrams:**



## Communication Diagrams:



**Use Case Documentation:**

## Use Case 1: Register

Use case name: Register	ID: 1	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: Register to use product		
Brief description: This use case describes how customers are able to register and create an account for the reserve court app		
Trigger: User interest in product		
Subflows: Optional, None		
Normal flow of events: 1. User clicks register button 2. User fills out the registration form 3. User enters UTD net ID 4. User creates password 5. User re-enters password 6. User selects year at UTD 7. User saves preferences 8. User registration complete		
Alternate: Exceptional flows: 3a) Invalid email address 1. Please enter a valid UTD email address. Only UTD students may register 4a) If passwords don't match 1. Please re-enter password		

## Use Case 2: Log-in

Use case name: Login	ID: 2	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: Log-in to use/activate app		
Brief description: This use case describes how customers are able to log-in after registering and create an account on the basketball app		
Trigger: Account registration complete Application access desired		
Subflows: Optional, None		
Normal flow of events: 1. User clicks login button 2. User enters UTD email address 3. User enters password 4. User clicks submit 5. User logs in successfully		
Alternate: Exceptional flows: 4a) Failed login 1. Please re-enter password or email address		



## Use Case 3: View schedules/Reserve

Use case name: View schedules	ID: 3	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: View schedules		
Brief description: This use case describes how clients are able to view schedules for an open court		
Trigger: Application utility required. Desire to use the app		
Subflows: Optional, None		
Normal flow of events: <div><div>1. User selects view schedule button</div><div>2. User picks a date from the calendar</div><div>3. User selects an hour and minute from the “From” field</div><div>4. User selects an hour and minute from the “To” field</div><div>5. The schedules show up. Shows available/unavailable options in a block</div><div>6. The user taps on a block he or she would like to register for</div><div>7. The user selects an hour and minute from the “Start game” field</div><div>8. The user selects an hour and minute from the “End game” field</div><div>9. User hits reserve court</div><div>10. Court reservation is successful</div></div>		
Alternate: Exceptional flows: <div><div>2a) Invalid date</div><div><div>1. Please enter a valid date</div></div></div> <div><div>3a) Invalid figure</div><div><div>1. Please re-enter an hour from 1-12 am/pm    Please re-enter minutes from 0-60</div></div></div> <div><div>4a) Invalid figure</div><div><div>1. Please re-enter an hour from 1-12 am/pm    Please re-enter minutes from 0-60</div></div></div> <div><div>5a) Unable to view schedule</div><div><div>1. Please double check correct dates and times have been entered</div></div></div> <div><div>6a) Unable to tap on block</div><div><div>1. Please select an available block from the schedule</div></div></div> <div><div>7a) Invalid figure</div><div><div>1. Please re-enter an hour from 1-12 am/pm    Please re-enter minutes from 0-60</div></div></div> <div><div>8a) Invalid figure</div><div><div>1. Please re-enter an hour from 1-12 am/pm    Please re-enter minutes from 0-60</div></div></div> <div><div>10a) Unable to reserve court</div><div><div>1. Please double check the correct time has been entered</div><div>2. Reservation must be a minimum of 30 minutes in duration</div></div></div>		

## Use Case 4: Cancel reservation

Use case name: View schedules	ID: 4	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: Cancel existing reservation		
Brief description: This use case describes how clients are able to cancel an existing court reservation		
Trigger: Halt in application utility required. Desire to stop using the app		
Subflows: Optional, None		
Normal flow of events: 1. User clicks My Reservations 2. User clicks Cancel Reservation 3. User clicks Yes to "Are you sure you would like to Cancel?" 4. Cancellation is successful		

## Use Case 5: View player profiles

Use case name: View schedules	ID: 5	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: View player profile		
Brief description: This use case describes how clients are able to view profiles for the game he or she will be playing with/against		
Trigger: Application utility required. Desire to view profiles		
Subflows: Optional, None		
Normal flow of events: 1. User clicks My Reservations 2. User selects view upcoming/previous games 3. User selects view Player profiles. 4. User selects a profile from the list of names 5. User views the player's rating, and how many games they have played 6. After the game is played, the user has the opportunity to rate any player he or she has played against		

## Use Case 6: Report abusive profiles/players

Use case name: Report abusive players	ID: 6	Importance level: High
Primary actor: User	Use case Type: Essential, Internal	
Stakeholders and interests: User/Customer: Report abusive profiles, safety		
Brief description: This use case describes how clients are able to report abusive or aggressive players.		
Trigger: Application utility required. Desire to report aggressive players		
Subflows: Optional, None		
Normal flow of events: 1. User clicks my Reservations 2. User selects view upcoming/previous games 3. User selects view Player profiles 4. User selects the profile of interest from the list of names 5. User hits "Report Player" 6. User selects an option as to why he or she is reporting the player 7. User reported the behavior successfully 8. The data gets sent to the administrators		
Alternate: Exceptional flows: 6a) User does not select an option 1. Please select an option from the list		

## Use Case 7: Maintain system

Use case name: Maintain system	ID: 7	Importance level: High
Primary actor: System administrator	Use case Type: Essential, Internal	
Stakeholders and interests: System administrator - Maintain system operation		
Brief description: This use case describes how system administrators are able to access their role in maintaining the Basketball app		
Trigger: Desire to maintain application		
Subflows: Optional, None		
Normal flow of events: 1. Admin enters email address 2. Admin enters password 3. Admin hits submit 4. Successful admin login 5. Admin can view files, tables, accounts, etc.		
Alternate/Exceptional flows: 4a) Failed login 1. Please re-enter password or email address		

**User Interface Diagrams:**

UTD BALLERS

UTD email address

password

LOGIN

Need an account? Hit the button below

CREATE ACCOUNT

UTD BALLERS

REGISTRATION

UTD NET ID

Enter Password

Confirm Password

Select year at UTD

Freshman

REGISTER

UTD BALLERS

HOME

VIEW SCHEDULE

MY RESERVATIONS

UTD BALLERS

MY RESERVATIONS

View upcoming/previous games

Cancel reservation

Are you sure you want to cancel your reservation? This cannot be undone.

Yes

No

UTD BALLERS

VIEW SCHEDULE

Select a date

mm/dd/yyyy

↓

From

hh:mm

To

hh:mm

Find available courts

UTD BALLERS

VIEW SCHEDULE

Schedule for: 12/01/2018

From: 12:00 PM

To: 4:00 PM

12:00 PM to 1:30 PM

OPEN

1:30 PM to 2:30 PM

CLOSED

2:30 PM to 4:00 PM

OPEN

UTD BALLERS

VIEW SCHEDULE

You have selected the slot from

From: 12:00 PM

To: 1:30 PM

Start game

hh:mm

End game

hh:mm

Reserve court

UTD BALLERS

VIEW UPCOMING/PREVIOUS GAMES

You have an upcoming reservation

12/01/2018

From: 12:00 PM to 1:30 PM

UTD Activity Center

Previous games:

11/30/2018

From: 8:00 PM to 10:30 PM

UTD Activity Center

11/15/2018

From: 10:00 AM to 12:30 PM

UTD Activity Center

View player profiles

UTD BALLERS

VIEW PLAYER PROFILES

Previous Game: 11/30/2018

Adams, Alex

Brown, Julian

Khan, Shahrukh

Surani, Faisal

Thomas, Adam

Previous Game: 11/15/2018

Bob, Billy

Gray, Dorian

Lai, Zheng

Sparrow, Jack

UTD BALLERS

VIEW PLAYER PROFILES

Player Profile: Dorian Gray

Rating: 4.5

Games Played: 5

Games Played with you: 2

Most recent game played:  
11/29/2018 4:00 PM

Rate Player

Report Player

UTD BALLERS

VIEW PLAYER PROFILES

Report Player: Dorian Gray

Please select a reason:

Player is too aggressive

Additional comments:

He pushes and shoves people. He also uses foul language.

Report player

UTD BALLERS

ADMIN MODE

View Player Profiles

Update Firmware

View/Delete Abusive profiles

Update schedules

Download files



**Meeting Minutes:**

Meeting number	Meeting Date	Beginning	End	Members Present	Objectives discussed	Notes
01	08-27	4:00 pm	5:00 pm	Zheng, Faisal, Jason	Brainstorming	
02	09-01	7:00 pm	8:00 pm	Zheng, Yusuf, Jason	Create Proposal	
03	10-09	4:00 pm	5:30 pm	Zheng, Faisal, Jason	Design WBS and Diagrams	Diagrams created: Class Diagram, Context Diagram
04	10-10	4:00 pm	5:00 pm	Zheng, Faisal, Jason	Design Use Case scenarios	
05	11-25	3:00	5:00	Zheng, Faisal, Jason	Design Sequence Diagrams and User Interface	
06	11-26	5:00	6:00	Zheng, Faisal, Jason, Yusuf	Final compilation and review	