

# The Lighthouse

A Tournament Management System



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## 1. Introduction

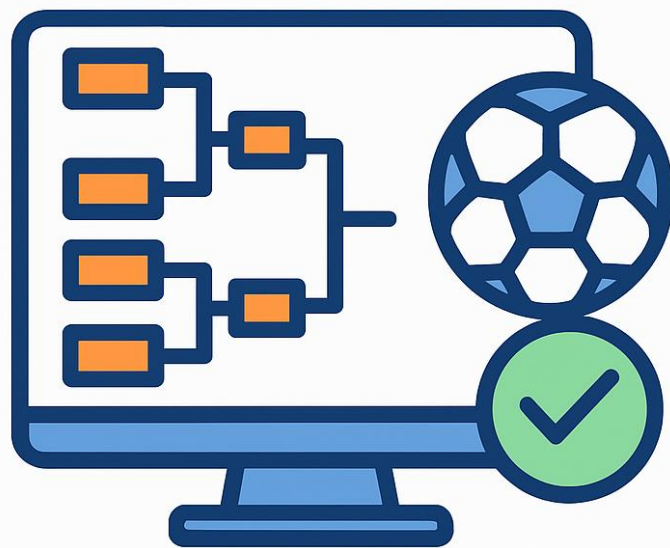
**The lighthouse** is a desktop application designed to simplify and automate the organization of sports tournaments for special education schools.

**Every year, the lighthouse** organizes soccer, korfbal, and volleyball tournaments for affiliated schools. Currently, everything from team registration to game scheduling and score tracking is done manually, which is time-consuming and prone to error.

**This system** will solve those problems by automating the most important tasks: registering teams, generating tournament schedules, entering live scores, calculating rankings, and displaying them on a big screen during the event.

**By making** the entire process easier and faster, the application will help tournament organizers save time, reduce mistakes, and create a more enjoyable and inclusive experience for everyone involved.

**This document** explains how the system will work, what features it will have, and how it will be used during the tournament. Our goal is to create a simple and useful tool that will make organizing these tournaments much easier and more enjoyable for everyone involved.



# SPORTS TOURNAMENT MANAGEMENT SYSTEM

## 2. Business goals

### Business Requirements for the lighthouse :

This table organizes the business requirements for clarity and provides a clear vision of the problems, solutions, and benefits associated with each requirement:

ID	Business Requirements	Stakeholder	Problem	Solution
B1	Automate tournament Scheduling.	Tournament Organizers	Scheduling is done manually, taking time and prone to errors.	Automate the scheduling process based on team registrations.
B2	Simplify team registration	School Representatives (PE Teachers & Team Coordinators)	Current registration process is manual and time-consuming.	Provide an online platform for schools to register their teams easily and receive instant confirmation.
B3	Enable Real-Time Score updates.	Organizers, Participants	Scores are updated manually, causing delays and inaccuracies.	Allow real-time score input and automatic standings updates.
B4	Facilitate Fair Progression.	Tournament Organizers	Manually selecting teams for the next rounds takes time and can lead to mistakes.	Automate the progression of teams to the next rounds based on tournament rules and results.
B5	Display live Standings and Scores on Screens.	Players, Coaches, Spectators	Current method of displaying scores and standings lacks real-time transparency and engagement.	Integrate with large screens to show live standings and scores at the venue.

## Business Requirements (Vision Statements):

ID	Vision Statement
B1	For tournament organizers, who spend too much time manually creating game schedules, the system will automatically generate game schedules. Unlike the current method, this solution saves time and reduces errors.
B2	Participating schools, who need a simpler way to register teams, the system will provide an online registration platform. Unlike the current manual process, this feature speeds up registration and reduces mistakes.
B3	Organizers and participants, who want accurate, live score updates, the system will allow real-time score input. Unlike manual scorekeeping, this ensures instant and accurate standings.
B4	tournament organizers, who want to select next-round teams fairly, the system will automate the progression of teams to subsequent rounds. Unlike manual calculations, this method is fast, fair, and error-free.
B5	For players, coaches, and spectators, who need real-time standings, the system will display live scores on big screens. Unlike a manual scoreboard, this feature keeps everyone engaged and informed.

**The vision** of this project is to create an efficient, automated, and user-friendly tournament management system that simplifies tournament organization while ensuring transparency, fairness, and accessibility. This system will replace the current manual approach with a structured digital platform, helping organizers, participants, and spectators have a seamless experience.

### 3. Context and data subjects

#### Stakeholder analysis:

##### Primary Stakeholders (Direct Users of the System):

1. **Tournament Organizers:** they manage the event and need tools for scheduling, tracking scores, and managing teams.
2. **School Representatives:** responsible for registering teams and ensuring their students participate in the tournament.
3. **Participants (Players and Coaches):** competitors in the tournament who rely on schedules, score updates, and standings.
4. **Spectators (Students, Parents, Teachers):** watch matches and check scores on big screens for real-time updates.
5. **Technical Team (Developers & System Admins):** maintain and update the system to ensure smooth operation and security.

##### Secondary Stakeholders (In-directly Affected by the System):

1. **School Management:** ensures that the tournament aligns with the school's academic and extracurricular goals.
2. **Sponsoring Organizations:** provide funding or resources and may require branding within the system.
3. **Regulatory Bodies:** guarantee the tournament follows educational and sports guidelines.

## Users (Personas):

### Persona 1: The School Representative



**Name:** Lisa Verhoeven, 35 years old

**Role:** PE Teacher & Team Coordinator at the school

#### Description:

Lisa is responsible for registering her school's teams for the Lighthouse tournaments. She finds it frustrating to fill out paper forms and send emails back and forth. She wants a simpler way to register and confirm her teams.



**Goals:**

- Wants an easy-to-use system for registering teams.
- Needs to confirm participation details without delays.
- Prefers to receive automatic updates about match schedules.

**Scenario:**

Lisa receives an email that registration is open for the volleyball tournament. She logs into the system, enters her school's teams and uploads necessary player details. She immediately receives a confirmation and can check the match schedule once it's generated.



## Persona 2: The Player



**Name:** Jamal de Vries, 14 years old

**Role:** Soccer Player for his school team

### Description:

Jamal loves playing soccer and looks forward to the tournament every year. However, he often gets frustrated when schedules change last minute or when he must ask teachers for score updates.

### Goals:

- Wants to check match schedules easily.
- Needs real-time access to scores and team standings.
- Prefers a system that updates him on game times and locations.

### Scenario:

Jamal's team wins their first match, and he is excited to see where they stand. He opens the tournament application on his laptop and sees the updated rankings. He also checks when his next game is, so he can be prepared.

### Person 3: The Spectator (Parent)



**Name:** Marleen Bos, 41 years old

**Role:** Mother of a tournament participant

#### **Description:**

Marleen enjoys watching her son play in the tournament but often finds it hard to keep track of the schedule. She also wants to know the scores without waiting for updates from the coaches.

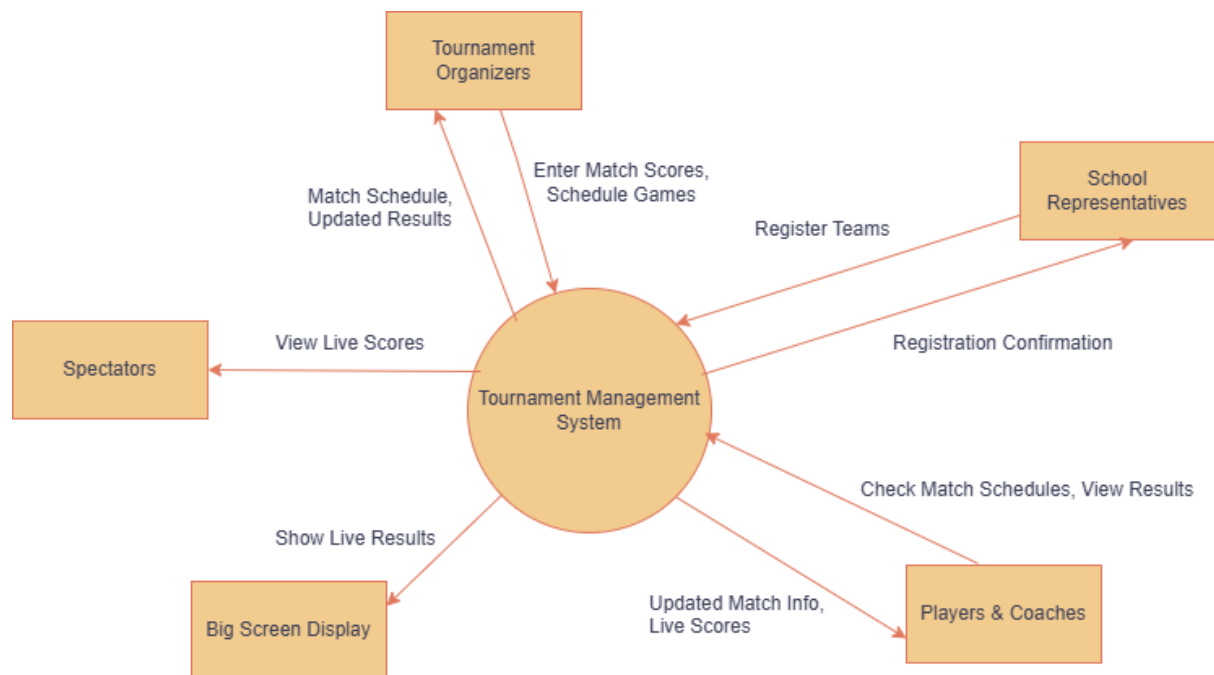
**Goals:**

- Wants to follow the tournament standings in real-time.
- Needs to know when her son's team is playing.
- Prefers an easy way to check results without asking others.

**Scenario:**

Marleen is at the venue watching the tournament. Instead of waiting for an announcement, she looks at the big screen displaying real-time scores. She sees that her son's team has made it to the next round and gets ready to cheer them on.

## System context diagram:



The upper "System Context Diagram" shows the interactions between the Tournament Management System (TMS) and its external entities:

- **Tournament Organizers:** can input schedules and scores, receiving updated match results in return.
- **School Representatives:** register teams and receive confirmation.
- **Players & Coaches:** access match schedules and live scores.
- **Spectators:** view real-time updates.
- **The Big Screen Display:** shows live results.

## Requirement Prioritization (MoSCoW):

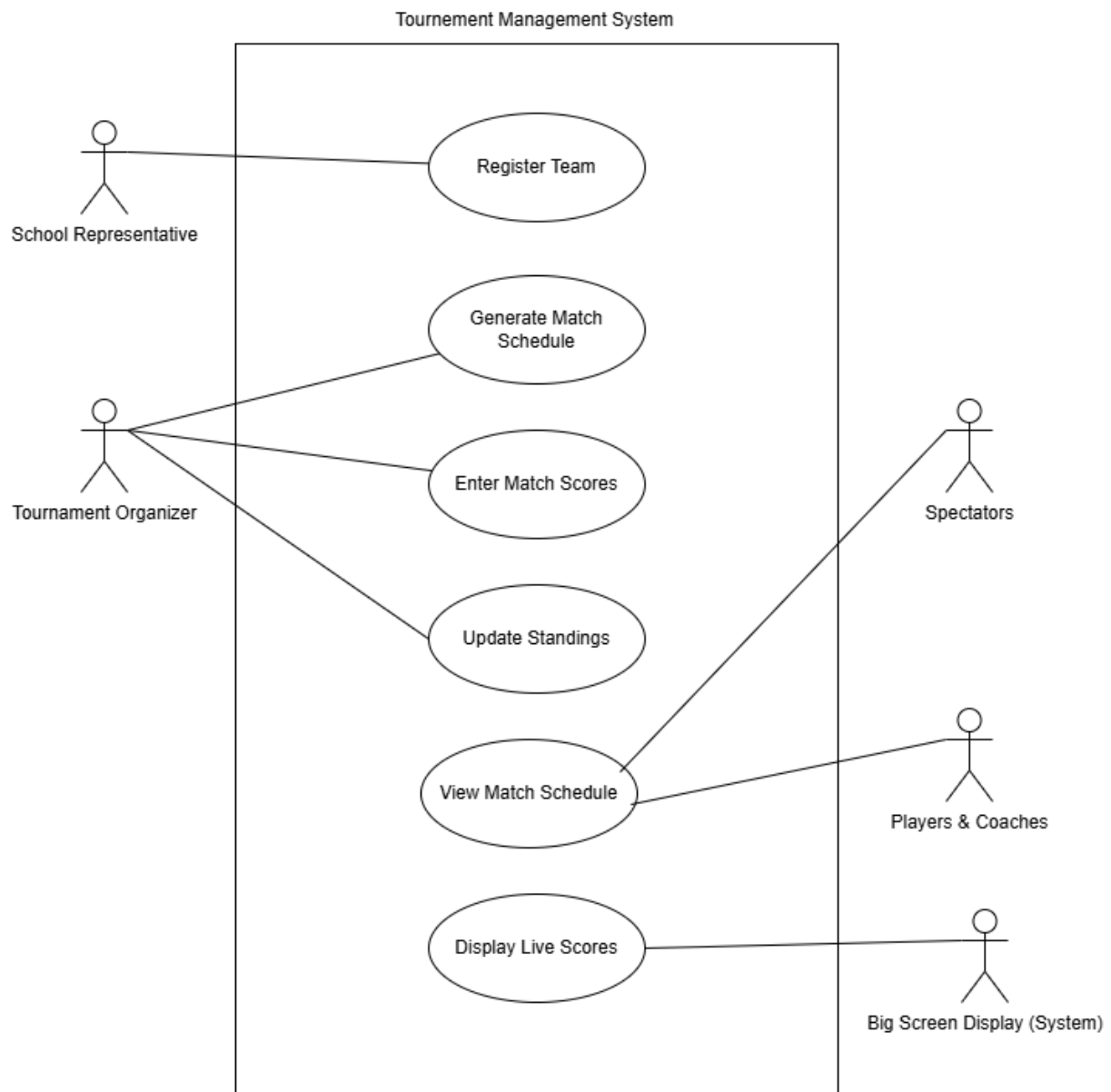
MoSCoW Priority	Requirements	Priority Matrix
Must	The system must generate match schedules automatically.	High
Must	Users must be able to register teams online.	High
Must	Organizers must be able to enter match scores in real time.	High
Must	The system must update team standings automatically.	High
Must	Live scores must be displayed on big screens.	High
Should	A mobile-friendly version of the system for participants.	Medium
Should	Notifications for schedule changes.	Medium
Should	An option to export tournament results.	Medium
Could	A chat function for team communication.	Low
Could	A media section for photos and videos of the tournament.	Low
Won't (Would)	AI-generated match predictions.	Future Consideration
Won't (Would)	Social media integration.	Future Consideration



## 4. Requirements

Use case diagrams:

**This Use Case Diagram** shows how different users interact with the **Lighthouse Tournament Management System**. It helps explain who does what in the system.





## An Explanation for the “Use Case” of the system:

### Users (Actors):

- School Representative : Registers teams for the tournament.
- Tournament Organizer : Creates match schedules, enters scores, and updates standings.
- Players & Coaches : Check match schedules.
- Spectators : View live scores and match schedules.
- Big Screen Display (System) : Shows real-time match standings.

### System Functions (Use Cases):

- Register Team : School representatives add teams to the system.
- Generate Match Schedule : The system creates the schedule automatically.
- Enter Match Scores : Organizers enter results after each match.
- Update Standings : The system updates rankings based on scores.
- View Match Schedule : Players, coaches, and spectators check match details.
- Display Live Scores : The system updates the big screen with match results.

Each user is connected to the actions they perform in the system. The users are placed outside the system and the use cases are inside.

## User and system requirements:

### 4. Requirements

#### Feature: Team Registration:

ID	Requirement Description	Prio	Source
U1.1	As a school representative, I want to register teams online so we can join the tournament easily.	Must	Client Letter
S1.1	The system should provide a simple form to allow schools to register teams.	Must	Client Letter

#### Feature: Match Scheduling:

ID	Requirement Description	Prio	Source
U2.1	As an organizer, I want the system to create the match schedule automatically.	Must	Interview
S2.1	The system should generate the schedule based on the registered teams using pools and knockout rounds.	Must	Interview

**Feature: Score Entry and Standings:**

ID	Requirement Description	Prio	Source
U3	As an organizer, I want to enter scores during the event, so the standings update automatically.	Must	Interview
S3	The system should allow score input and automatically update team rankings.	Must	Interview

**Feature: Big Screen Display:**

ID	Requirement Description	Prio	Source
U4	As a spectator or player, I want to see the schedule and scores on a big screen.	Should	Interview
S4	The system should display live match info and standings on an external screen.	Should	Interview

**Feature: Tournament Progression:**

ID	Requirement Description	Prio	Source
U5	As an organizer, I want the system to decide which teams move to the next round.	Must	Interview
S5	The system should automatically determine progression using the rules and team points.	Must	Interview

***Please check "Appendix C" for Ensuring S.M.A.R.T Requirements!***

## Quality requirements:

1. Availability		Prio	Source
Q1.1	The system must be available and working for 99.9% of the time on tournament day.	M	Interview
Q1.2	The system must work without any internet connection, since there is no Wi-Fi in the sports hall.	M	Interview
Q1.3	The big screen should update every 10 seconds with the newest scores and standings.	S	Advice

2. Integrity		Prio	Source
Q2.1	A backup of the tournament data must be made every hour on an external hard drive.	M	Interview
Q2.2	The scores and match results should not be editable after the tournament is finished.	S	Advice

3. Usability		Prio	Source
Q3.1	Every main action (like adding teams or scores) must be doable in 3 clicks or less.	M	Advice
Q3.2	The screen design must be simple, with big fonts and symbols so that all students, including those with reading difficulties, can understand it	M	Interview

4. Performance		Prio	Source
Q4.1	The schedule for all matches must be generated by the system in under 5 seconds.	M	Advice

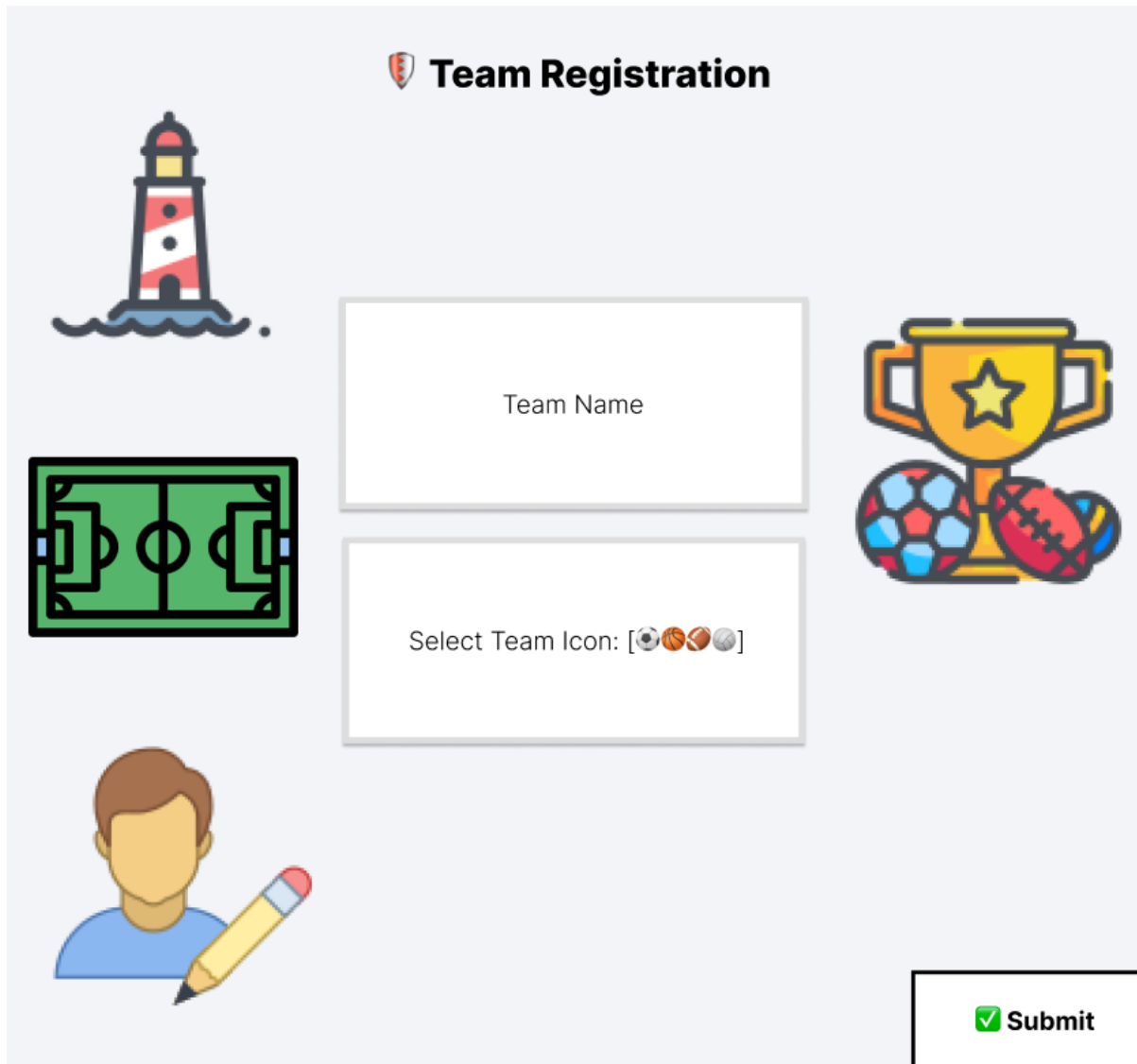
5. Robustness		Prio	Source
Q5.1	The system must still work even if two teams don't show up and allow quick match changes.	M	Interview
Q5.2	The system should support at least 2 people using it at different times (before and during the tournament) without crashing.	S	Interview

6. Security		Prio	Source
Q6.1	Only the organizer and game coordinator must be able to enter or edit match data.	M	Interview
Q6.2	After the schedule is created, it should be locked to avoid mistakes or unauthorized changes.	S	Advice

**The tables above** explain key quality requirements for the system. These requirements describe how the system should perform overall. They help make sure the system works smoothly, quickly, and safely, making it reliable and easy for everyone to use.

## 5. Wireframes

### Team Registration Wireframe:



The wireframe for the Team Registration screen features a light blue background. At the top center is a shield icon followed by the title "Team Registration". On the left side, there are three icons: a lighthouse, a soccer field, and a person with a pencil. On the right side, there is a trophy icon. The central form consists of two stacked white boxes with gray borders. The top box is labeled "Team Name". The bottom box is labeled "Select Team Icon: [🏀🏈🏉🏊]" and contains four sport icons. In the bottom right corner, there is a white button with a green checkmark and the text "Submit".


**This screen** shows a simple form where the tournament organizer can add a team to the system.


The organizer enters the team's name and selects an icon to represent the team. This helps students, especially younger ones, recognize their team more easily. After filling in the form, the organizer clicks the **"Submit"** button to add the team.

This supports these requirements:

- **B2:** Makes registration easier and faster.
- **U1:** School representative register online without paperwork.
- **S1:** System saves team info in the database.

## Game Schedule Wireframe:

 **Game Schedule**









**Tournament Schedule:**

Select Sport ▼

☒ Generate Schedule

**Generated Matches Table:**

Match	Teams	Time	Location
Match 1	 Team A vs  Team B	10:00 AM	 Hall 1
Match 2	 Team C vs  Team D	10:30 AM	 Hall 2

Export to PDF

Send via Email

**This Wireframe** lets organizers create the tournament match schedule.

They can choose a sport from the dropdown, then click "Generate Schedule" to automatically make the match list. The table shows the match details like “ **Teams,Time,Location** ”.

**The icons** help children recognize their team easily.

This supports these requirements:

- **B1:** Auto-schedules the games.
- **U1:** Saves time and reduces mistakes.
- **S1:** Matches are created based on team info.



## Real-time Score Entry Wireframe:

### Real-time Score Entry

Select Match ▼

[ 🏠 Team A vs 🏠 Team B ]

1

0

🏠 Team A Score: [ ] 🎯

🏠 Team B Score: [ ] 🎯

✓ Submit Score


📊 Updated Standings					
🏆 Rank	🏠 Team	🔄 Played	🏆 Wins	❌ Losses	📈 Points
1	🏠 Team A	2	2	0	6
2	🏠 Team B	2	1	1	3
3	🏠 Team C	2	1	1	3
4	🏠 Team D	2	0	2	0


The **wireframe** is for entering scores during the tournament. The organizer selects a match and types in the scores for both teams. When they click "**Submit Score**", the standings update automatically in the Upper table.








This supports these requirements:

- **B3:** Live scores update the system.
- **U2:** Organizers don't have to calculate by hand and paper.
- **S2:** System updates point and ranks automatically.


Next Round Selection Wireframe:



 **Tournament Progression**



 **Current Standings:**

 Rank	 Team	 Played	 Points
1	 Team A	3	9
2	 Team B	3	6
3	 Team C	3	3
4	 Team D	3	0

Proceed to Next Round

 **Next Round Match-Ups:**

Match 1:  Team A vs  Team D

Match 2:  Team B vs  Team C

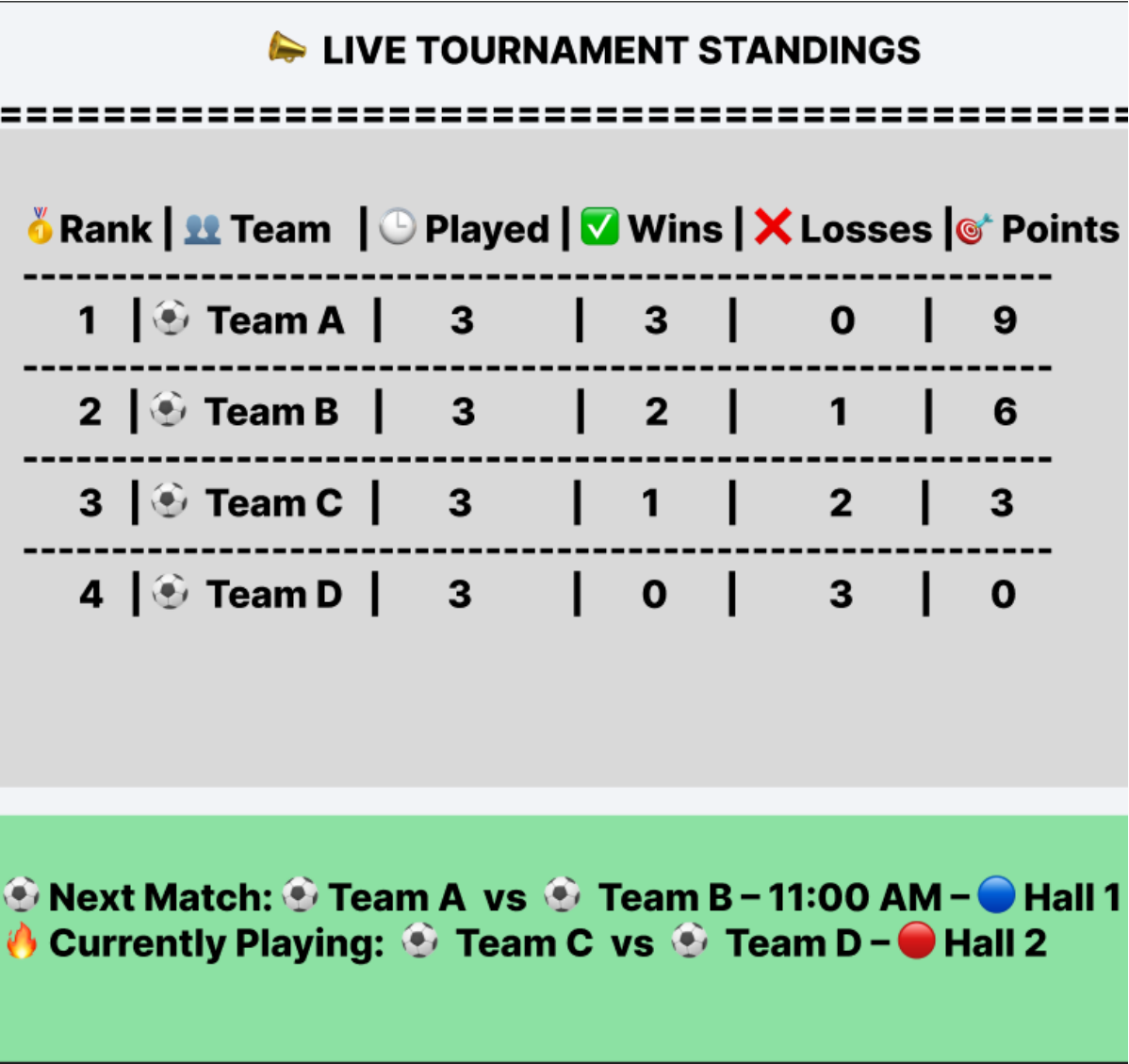
Note: Match-ups based on rankings and bracket rules.

The upper wireframe shows the current standings and lets the organizer move to the next round. After clicking the "Proceed to Next Round" button, the system creates new matches based on rankings. The new matchups are shown in the upper table.

This supports these requirements:

- B4: System selects next-round teams fairly
- U4: Organizers don't have to decide manually
- S4: Uses a rule-based system to create new games

Big Screen Display Wireframe:



## 6. Conclusion

**This is the end of our document.** In this report, I talked about the Lighthouse Tournament Management System , what it will do and why we are making it. The main reason is to help the organizers of the Lighthouse sports tournaments save time and avoid problems. Right now, they do everything by hand, like making the schedule, collecting scores, and keeping track of teams. Our system will help make all that easier.

I learned a lot during this project. The most important thing is that the system must be simple and clear. It should work without internet, because there is no Wi-Fi in the sports hall. It should also show scores on a big screen and help make sure everything is fair and well-organized. We also found out that the users don't want anything too fancy - just something that works and saves time!

In the next steps, first, we will build the basic features like registering teams, creating the schedule, and adding scores. After that, if there's enough time, we can add more features like apps for referees or online registration for schools.

At the end, we want to thank Hannah for the interview. She gave us a lot of helpful information about how the tournament works. Her inputs made this project much easier to understand and plan.

## Appendix A: The Interview

**Date:** Tuesday, 18th of February, 2025

**Time:** 9:00 A.m.

**Location:** D3.51

**Interviewee:** Hannah (Tournament Organizer)

**Interviewers:** Kiarash Delavar– DHI1V.Sp + other groups

**Purpose:** To understand the full business and system requirements for a tournament management system for Lighthouse Special Education schools.

**Q1: How do you organize the tournament currently?**

**A1:** We send out emails to the schools in France, especially our partner special schools. In the email, we mention what sport it will be (e.g., volleyball, soccer), and they reply with how many teams they'll bring. Sometimes that number changes at the last minute. We register everything, but the game schedule is created manually just a few days before the event.

**Q2: Do you register the schools and their teams yourself?**

**A2:** Yes, I want to register the school and how many teams they're sending. They also send me the names of the referees from their school. We use that to make sure we have enough referees.

**Q3: Who will be the primary users of the system?**

**A3:** There will be three types of users:

1. Me, the tournament organizer - I send the emails, handle the registrations, and create the game schedule.
2. Simon, the game coordinator - he's in charge during the tournament, entering scores into the system.
3. Spectators and teams - they look at the public screen to follow the schedule and standings.

**Q4: What is your role in the organization?**

**A4:** I'm the organizer of the tournament. I handle the emails, registrations, team counts, scheduling, and referee assignments. I'm also responsible for preparing printed schedules and scorecards for the schools.

**Q5: Will the system be used by more than one person?**

**A5:** No, not really. It will be used on one laptop. I use it before the tournament, and Simon uses it during the tournament. So there's no need for logins or user accounts at this point.

**Q6: Do you need different privileges (users vs. admins)?**

**A6:** Not for now, since it's only one laptop and used by me and Simon. Later maybe, but not in this version.

**Q7: Will the referees use the system?**

**A7:** Right now, referees fill in scorecards by hand and give them to Simon. In the future, it would be nice if they could use an app to send scores directly to the system, but that's for a later version.

**Q8: Can schools register online in the future?**

**A8:** That would be great. Right now, they send emails. But later on, it would be nice if schools could register their teams through the system.

**Q9: What are all your responsibilities as organizer?**

**A9:**

- Choosing the sport and date
- Contacting the schools
- Entering school/team info
- Creating the game schedule (with pools and knockouts)
- Assigning referees
- Printing and handing out schedules and scorecards
- Making changes when teams don't show up
- Combining matches if needed
- Making sure everything runs smoothly during the tournament

**Q10: How many rounds are there typically?**

**A10:** It depends on how many teams we have. Usually, we have 25 to 30 teams, so we do about 3 or 4 rounds, like quarterfinals and semifinals. We try to keep it short because not all teams make it to the final stages.

**Q11: What happens if a team doesn't show up?**

**A11:** If one team doesn't show up, the other team just wins by default. Sometimes I can combine matches to keep things running.

**Q12: How do you share the schedule with teams during the event?**

**A12:** We print out schedules and scorecards, but we also use one big screen in the hall connected to the laptop. That way, everyone can see the schedule and standings live.

**Q13: Will there be more than one screen?**

**A13:** No, just one big screen. We don't have Wi-Fi in the hall, so we can't connect multiple screens. The screen is also specially made to survive getting hit by balls.

**Q14: Do you prefer a cloud-based system or local system?**

**A14:** Local. There's no Wi-Fi in the sports hall. The system must work completely offline, on the laptop. Later, we might add referee input via QR codes or a local network, but not now.

**Q15: Should historical data be saved for future use?**

**A15:** Yes. We don't use past data much, but we do keep it. For example, if a school wins the tournament three years in a row, they get to keep the trophy. So we track that.

**Q16: What do you want displayed on the public screen during the event?**

**A16:**

- Next games (who plays who)
- Field locations
- Standings
- Live updates
- Total scores per school at the end
- Some visual or animation when announcing the winner would be nice

**Q17: What kind of data do you store for each team?**

**A17:** Just the school name and a team number. We don't get individual player names. So it's something like "School A – Team 1."



**Q18: Do you want any visuals or symbols for the teams?**

**A18:** Yes, that could help, especially since the children may have learning disabilities like dyslexia. Maybe use simple symbols or school logos.

**Q19: How is the winning school determined?**

**A19:** We add up the total points from all the teams from one school. The school with the most points wins. If they win three times in a row, they keep the trophy.

**Q20: Can a school have multiple teams?**

**A20:** Yes. Each school usually sends between 3 and 10 teams. In total, we get about 30 teams across all schools.

**Q21: What point system do you use?**

**A21:**

- Win = 3 points
- Draw = 1 point
- Loss = 0 points

**Q22: Do you need a backup system in case of crash?**

**A22:** Yes, definitely. If the laptop crashes, we lose everything. A backup on an external hard drive would be good.

## Appendix B: Tests

### Traceability Matrix

Requirement / Testing Cases	TC1.1 (Register Valid)	TC1.2 (Invalid Email)	TC1.3 (Generate Schedule)	TC1.4 (Export PDF)	TC1.5 (Send Email)	TC1.6 (Submit Score)	TC1.7 (FXML Error)	TC1.8 (Empty Score Submit)
S1.1 (Team Registration)	x	x						
Q3.2 (Input validation / UI)		x						x
S2.1 (Match Scheduling)			x		x			
Q2.1 (Export / Backup)				x				
Q1.1 (Send Schedule / Email)					x			
S3 (Score Input / Standings)						x		x
Q3.1 (Usability – ease of use)						x		x
S5 (Next Round Progression)							x	

## Test cases

TC 1.1 – Register Team (Valid Input) (Good Weather)		
Name	Register Team – Valid Input	
Description	User registers a team with valid team name and email.	
Requirements	S1.1	
Preconditions	System is running, team registration screen is open.	
Step	Action	Expected results
1	Enter “Team Name” and valid email (like <a href="mailto:kia@gmail.com">kia@gmail.com</a> )	Input fields accept values
2	Click on “Submit”	Confirmation popup: “Team registered” appears
Postconditions	Team is stored and visible for scheduling.	

TC 1.2 (Bad weather)		
Name	TC1.2 – Register Team (Invalid Email)	
Description	User attempts to register with a bad email format.	
Requirements	Q3.2	
Preconditions	Team registration screen is open.	
Step	Action	Expected results
1	Enter invalid email like “kia” (not in email format)	Error popup: “Invalid email format” appears
Postconditions	Team not registered.	

TC 1.3 (Good Weather)		
Name	Generate Schedule	
Description	System generates a match schedule for a selected sport.	
Requirements	S2.1	
Preconditions	At least 2 teams registered, dropdown selected.	
Step	Action	Expected results
1	Select a sport from dropdown	Matches filtered by sport type
2	Click “Generate Schedule”	Matches shown in table (Match 1, Match 2, etc.)
Postconditions	Schedule saved and shown on screen	

TC 1.4 (Good Weather)		
Name	Export Schedule as PDF	
Description	Test if generated schedule can be exported as a PDF.	
Requirements	Q2.1	
Preconditions	Matches are generated.	
Step	Action	Expected results
1	Click "Export to PDF"	Popup: "PDF created: GameSchedule.pdf"
Postconditions	PDF is saved in the same folder ( in the prototypes folder with the name of GameSchedule.pdf)	

TC 1.5 (Good Weather)		
Name	Send Email with Schedule	
Description	Verify that user can send match details via email.	
Requirements	Q1.1	
Preconditions	Schedule is already generated.	
Step	Action	Expected results
1	Enter valid email and click OK	Popup simulates "email sent" with match info
Postconditions	Simulated email sent confirmation displayed.	

TC 1.6 (Good Weather)		
Name	Score Submission During Match	
Description	User enters a score between two teams and submits.	
Requirements	S3	
Preconditions	Game is selected from dropdown.	
Step	Action	Expected results
1	Select two teams	Dropdown updates
2	Enter score and click "Submit"	Confirmation message: "Score recorded"
Postconditions	Standings updated instantly.	

TC 1.7 (Bad Weather)		
Name	Next Round - FXML Load Error	
Description	System fails to load next-round.fxml when proceeding.	
Requirements	S5	
Preconditions	Match completed and standings updated.	
Step	Action	Expected results
1	Click "Proceed to Next Round"	Error message shown: "Failed to load next-round.fxml"
Postconditions	User cannot proceed until fixed.	

TC 1.8 (Bad Weather)		
Name	Submit Score – Missing Input	
Description	Attempt to submit the score without filling required fields.	
Requirements	Q3.1, S3	
Preconditions	The score entry screen is open with no score typed.	
Step	Action	Expected results
1	Leave Team A Score and Team B Score blank	Validation triggers: “Please complete all fields.”
2	Click “Submit Score”	No data submitted; red warning is shown
Postconditions	User is forced to fill all fields before proceeding.	

## Appendix C: Ensuring SMART Requirements

**This appendix** provides a detailed breakdown of how each User Requirement and System Requirement meets the SMART (Specific, Measurable, Achievable, Realistic, Time-bound) criteria.

### User Requirements:

ID	Requirement Description	SMART Criteria
U1	School Representatives must be able to register their teams online.	<p><b>Specific:</b> The system allows team registration through an online form.</p> <p><b>Measurable:</b> The number of successful team registrations tracked in the system.</p> <p><b>Achievable:</b> Schools only need basic access to register, making it easy to implement.</p>

		<p><b>Realistic:</b> Web-based registration is a common and feasible feature.</p> <p><b>Time-bound:</b> The feature must be implemented before the tournament starts.</p>
U2	Tournament Organizers must be able to input real-time scores.	<p><b>Specific:</b> Organizers can enter match scores directly into the system.</p> <p><b>Measurable:</b> Scores update in real-time without manual recalculations.</p> <p><b>Achievable:</b> Score-entry interfaces are standard in sports management systems.</p> <p><b>Realistic:</b> Requires a simple web/mobile interface, which is feasible.</p> <p><b>Time-bound:</b> Must be ready before the first tournament phase.</p>
U3	Spectators and Participants should be able to view live standings on big screens.	<p><b>Specific:</b> Live scores and standings will be displayed on screens at the venue.</p> <p><b>Measurable:</b> Updates will refresh every few seconds automatically.</p> <p><b>Achievable:</b> Uses a common digital signage solution integrated with the system.</p> <p><b>Realistic:</b> Feasible with real-time data push technology.</p> <p><b>Time-bound:</b> Must be operational by the tournament launch.</p>
U4	Tournament Organizers must automate team progression to the next round.	<p><b>Specific:</b> The system automatically determines</p>



		<p>which teams advance based on scores.</p> <p><b>Measurable:</b> The bracket updates dynamically after each game.</p> <p><b>Achievable:</b> Algorithms for round-robin and knockout tournaments are well-established.</p> <p><b>Realistic:</b> The rules can be programmed based on predefined logic.</p> <p><b>Time-bound:</b> The feature must be fully functional before the tournament begins</p>
U5	As an organizer, I want the system to decide which teams move to the next round.	<p><b>Specific:</b></p> <p>The system automatically calculates rankings based on team scores and determines which teams qualify for the next round without manual input.</p> <p><b>Measurable:</b> Qualification is based on predefined logic (e.g., highest points or win/loss ratio), tracked in the standings table.</p> <p><b>Achievable:</b> Score calculation and progression logic are already functional and based on existing match data.</p> <p><b>Realistic:</b> Auto-progression is common in tournament systems; logic can reuse existing ranking data.</p> <p><b>Time-bound:</b> Functionality must be active and tested before the end of the group-stage matches during the event.</p>

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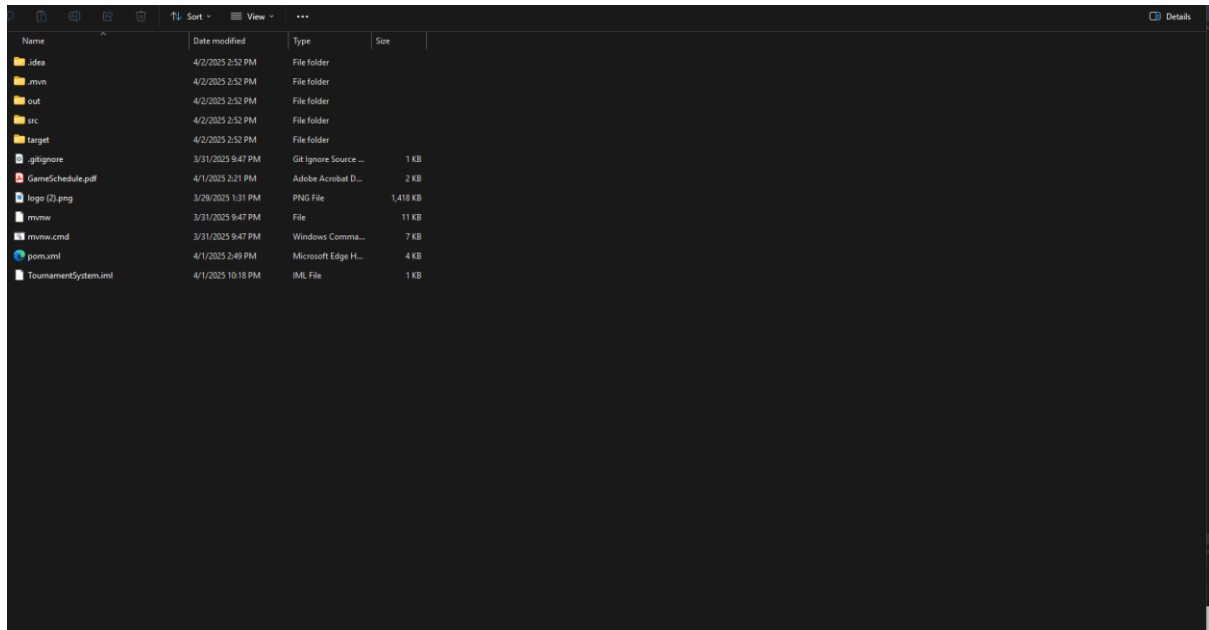
## System Requirements:

ID	Requirement Description	SMART Criteria
S1	The system must allow online team registration.	<p><b>Specific:</b> A web-based form will collect and store team details.</p> <p><b>Measurable:</b> The number of registered teams is recorded in the database.</p> <p><b>Achievable:</b> Uses standard web technologies.</p> <p><b>Realistic:</b> Many existing platforms offer similar functionality.</p> <p><b>Time-bound:</b> Must be implemented before the next tournament cycle.</p>
S2	The system must support real-time score input.	<p><b>Specific:</b> Organizers can enter scores into a digital interface.</p> <p><b>Measurable:</b> Score updates occur within seconds of data entry.</p> <p><b>Achievable:</b> Uses simple data entry fields and instant processing.</p> <p><b>Realistic:</b> Score input is a basic requirement in sports applications.</p> <p><b>Time-bound:</b> Fully functional before tournament start.</p>
S3	The system must integrate with big screens for live standings.	<p><b>Specific:</b> Match standings will be displayed on large screens.</p>

		<p><b>Measurable:</b> Live updates appear every few seconds.</p> <p><b>Achievable:</b> Uses real-time database updates and display interfaces.</p> <p><b>Realistic:</b> Digital signage integration is standard practice.</p> <p><b>Time-bound:</b> Implemented before the tournament launch.</p>
S4	The system must automate next-round team selection.	<p><b>Specific:</b> Teams will advance based on predefined rules.</p> <p><b>Measurable:</b> Brackets update automatically when results are entered.</p> <p><b>Achievable:</b> Uses tournament logic (points, goal difference, etc.).</p> <p><b>Realistic:</b> Commonly used in sports management systems.</p> <p><b>Time-bound:</b> Must be ready before the first elimination round.</p>
S5	The system should automatically determine progression using the rules and team points.	<p><b>Specific:</b> The system calculates team progression automatically using predefined rules such as total points, wins, and tie-breaker logic.</p> <p><b>Measurable:</b></p> <p>Progression results are shown clearly through the standings table and next-round bracket — ensuring all decisions are traceable.</p> <p><b>Achievable:</b> Uses existing score-tracking and ranking logic to determine which</p>

		<p>teams advance without manual edits.</p> <p><b>Realistic:</b> This is a standard feature in tournament systems and can be implemented using conditional logic and table sorting.</p> <p><b>Time-bound:</b> Must be completed and tested before the knockout stage begins to ensure smooth tournament flow.</p>
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## Appendix D: Prototype



### Note:

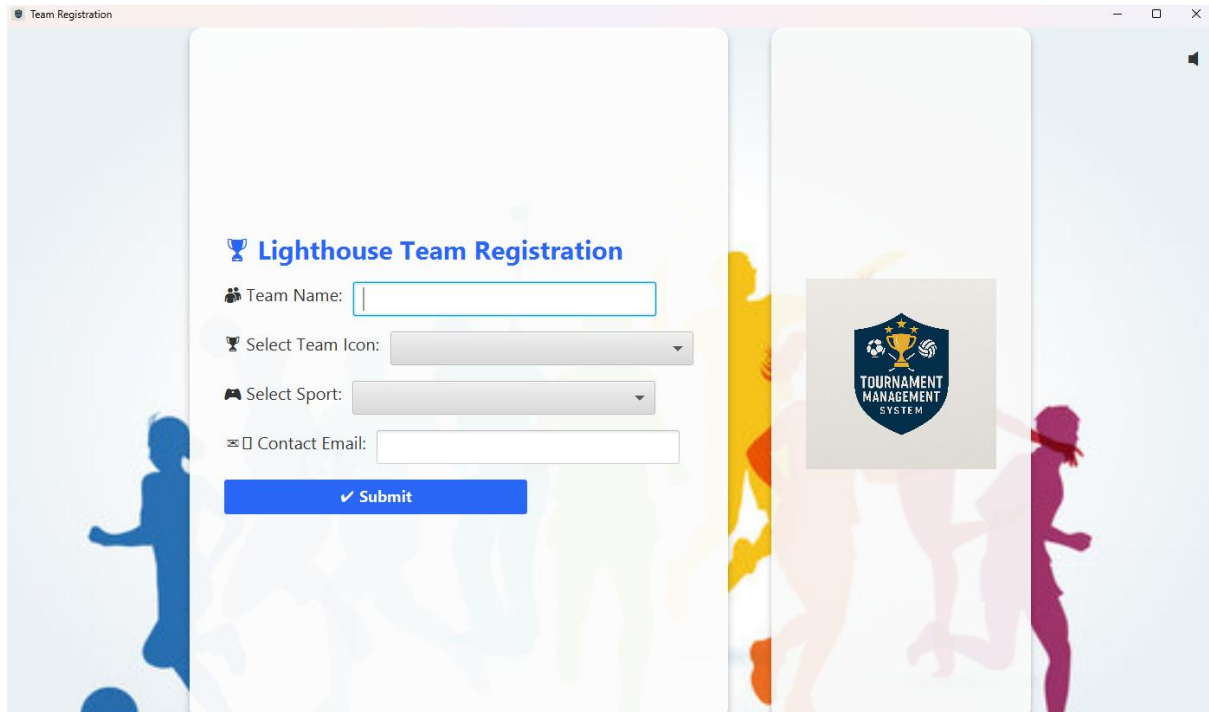
All the source code and the working version of the **tournament system application** are included in the attached folder named "**Prototypes**" and you should run the "HelloPrototype.java" file to see the Application. Also, when you export the pdf of game's schedule, it will export it as a "**GameSchedule.pdf**" which is located below the ".gitignore" file.

**The final prototype** design might look slightly different from the wireframes shown earlier in the document. This is because some adjustments were made during development to improve usability and better match real tournament requirements. Also, I added new prototypes which are not in wireframes ( like the Award Ceremony Page ).

However, there is a known issue in the prototype:

**1- The ".exe" file** is located in the "**out**" folder of the **Prototypes** directory. I tried to solve problems with launching the executable version, but it still does not work correctly and fails to open properly.

The picture below shows the first page of the application ( when you run codes, you will see that ) and also you can hear a music for the whole application ( I updated the application's functionality and designs a lot! ) :



The screenshot shows a web application window titled "Team Registration". The background features a light blue gradient with faint silhouettes of athletes in various colors (blue, yellow, orange, pink, purple). On the left, there is a vertical blue bar with a white silhouette of a runner. The main content area is a white card with the following elements:

- Lighthouse Team Registration**: A title with a trophy icon.
- Team Name:** A text input field.
- Select Team Icon:** A dropdown menu.
- Select Sport:** A dropdown menu.
- Contact Email:** A text input field with an email icon.
- Submit**: A blue button with a white checkmark icon.

On the right side of the card, there is a shield-shaped logo with a trophy and the text "TOURNAMENT MANAGEMENT SYSTEM".

