Problem Statement and Goals
Sandlot

Team 29
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Table 1: Revision History

Date	**Developer(s)**	**Change**
September 23, 2024	NFI, JL, CG, AV	Initial Draft
...	...	...

1 Problem Statement

1.1 Background

The McMaster GSA softball league is used every summer by 30-40 teams and as many as 1,000 unique participants. The league is currently organized through an old software platform accessible via a web browser, but it is outdated and does not include features for administrators to maintain the site without extensive knowledge of computer programming. The GSA league is aware that paid-for and ad-supported services are available, and features present in those applications should be explored and added if possible. The GSA league is a minimal-cost non-profit and would like a personalized platform by which to operate without committing to paid-for services. Some players find the current website UI difficult to use and unstable, and would prefer a more intuitive solution that needs little to no maintenance.

1.2 Problem

The platform will be responsible for including all functionalities of the current solution such as scheduling, division management, communication between captains, waiver management, rescheduling, score and league standings management, and other tasks identified by the stakeholders. Our solution would be an updated form of the existing website's capabilities with a modernized UI and the additional features of player-specific logins, real-time standings, and commisioner announcements. Additionally, enhanced stability is key in replacing the lack of maintainability of the current website.

1.3 Inputs and Outputs

1.3.1 Inputs

- Player/Captain/Commissioner login information
- Player/Captain/Commissioner contact information
- Team information
- Game score
- Captain/Team availability
- Reschedule requests
- Commissioner announcements

1.3.2 Outputs

- League standings
- League scheduling

- Commissioner announcements

1.4 Stakeholders

- The supervisor of the project, Dr. Jake Nease
- Commissioners of the league
- Captains/Players/Umpires of the softball league
- Administrators of the scheduling tool
- Spectators

1.5 Environment

Software Windows, Linux or Mac OS

Hardware Computers with access to the internet

2 Goals

Accomplish everything the existing league website does The original league website functionality should be recreated in the solution. The current website allows captains to log in and record their matches and scores. It allows scheduling and rescheduling, and provides a place to see the league rules, parking information and other information.

User interface should be intuitive to all users. The current interface is unintuiative and awkward to use. Users should understand how to log in and how to view their schedule just by looking at their homepage. No external information should be required.

Allow players to make accounts Currently, only captains have accounts in the system. Player accounts should only be able to view the contact information of their team captain, captains should only be able to view the contact of their players and other captains, and commisioners should be able to see everything.

Matches should be able to be scheduled and rescheduled. Team captains should be able to give their team's availablity and the software will algorithmically schedule the season's matches. If a team isn't available for a match after it has been scheduled, captains can send a reschedule request with a selection of possible alternative times that the opposition team's captain can agree to.

Solution should be maintainable and robust Currently, the website in use is maintained by one administrator, and requires constant maintainance. The website often breaks, requiring the current administrator to fix issues as they arise. Some site functions are prone to breaking or are broken. The new solution should be robust enough to not require frequent intervention from an administrator. The solution should be maintainable; if issues do arise, the solution should be well-documented such that non-domain experts are able to solve the issues.

3 Stretch Goals

Commisioners should be able to "rain out" matches After a match has been scheduled, commisioner level accounts should be able to force a reschedule if the weather makes the game unreasonable to play. This will send a notification to the two team captains so they can choose a date that works.

League template saving A season's teams and players should be able to be saved as a template that can be loaded the next season. This is useful as many teams remain the same or similar between seasons, and it would be convienient for all returning teams to avoid reinviting all returning players.

A mobile application companion Users would be able to perform some actions they can on the website, like viewing schedules and standings from their mobile device.

4 Challenge Level and Extras

4.1 Challenge Level

Challenge level: General

Rationale: Does not involve any extensive research and it is an improvement of an already existing solution.

4.2 Extras

- Code walkthroughs
- User documentation

Appendix — Reflection

Reflection – Nicholas Fabugais-Inaba

Majority of the deliverable went well resulting from the information the team had received in our initial meeting with the supervisor of the project, Dr. Jake Nease. He was able to detail many of the expectations he had relating to the information required for the deliverable such as the inputs, outputs, stakeholders, and goals. Only minimal brainstorming was required from the team to fill in the rest of the information for the deliverable.

Certain pain points the team did experience, while writing this deliverable, related to the problem the project would be addressing. Although some of the information was gathered from the project description, which was listed in the potential project document, provided to students, the team still needed to address other crucial information that may not have initially come to mind. This was resolved from the collective effort of the team, brainstorming further resolutions as to why this problem needs our specific solution.

The team was able to adjust the scope of the goals, based on complexity, by separating the primary goals of the project with the stretch goals. Goals such as replicating the current features the exisiting website possesses, having an easy-to-use interface, and a login system, make sure the Capstone project isn't too overly ambitious and definitely achievable. The stretch goals help to add complexity to create a senior design project as developing a mobile version of the system and other additional features are extra add-ons that add to the bulk of the work needed to be completed.

Reflection – Alex Verity

Writing the goals went smoothly, as we were able to use the notes taken during the initial supervisor meeting directly when making the goals. We also easily decided on extras for section four, as the supervisor requested for the code to be explained thorougly.

A particular pain point was finalizing the problem statement, as I find writing problem statements to be difficult. They require a lot of information given in a very short statement, which can be difficult. They also require the author to not describe a possible solution, but to only lay out the problem and I often feel compelled to add unnessecary details such as the language we plan to use. It is also difficult to make sure we are not missing out on any important elements of our problem.

We accounted for scope by making sure we are happy with our stretch goals if we require them to increase the complexity of our project. I believe they are useful additions that would make the project more interesting and present

additional layers if we choose to persue them. We also made sure we have plans for staying productive to make sure we can complete our goals, although we may course correct down the line if necessary.

Reflection – Casra Ghazanfari

Writing the "Challenge Level and Extras" section of this deliverable went very well for our team. From the beginning, we had no doubts about the challenge level of our project because the professor's description of the different levels had made it clear to us as a team which level our project fell into. Additionally, there was no disagreement on which extras we wanted to tackle for this project. We had a very short discussion discussing the extras we were interested in, which happened to almost perfectly match, making the decision very quick and easy.

A particular pain point our team faced during this deliverable was the inputs and outputs section. Initially, we found it difficult to think of our systems inputs and outputs without a particular implementation in our mind. We resolved this by shifting our thinking from implementation to high-level design. Through this mindset shift we were able to come up with more vague, high-level, and implementation agnostic inputs and outputs for our system that conveyed ideas rather than implementations.

Our team adjusted the scope of our goals using two key rules. First, we made sure that all of our goals were features/capabilities that the stakeholders of the project would consider necessary for the project to be considered "complete" or "fully-functional". This ensured that our goals didn't stray too far from the base idea of the project, meaning that they couldn't stray into either overly ambitious or low complexity territory. Second, we made a clear distinction in our minds between goals and stretch goals to ensure that we didn't blur the lines between them. Any goal that we deemed to be a "nice to have" feature or "not completely necessary" we classified as a stretch goal. We could not realistically guarantee any of these stretch goals would be met due to their lack of necessity and therefore made sure they were not considered goals, allowing us to keep our more ambitious ideas in check.

Reflection – Jung Woo Lee

For this deliverable, having the interview with the supervisor gave us all the necessary information to fill out this document with ease. The background, problem, inputs and outputs, goals and stretch goals were all discussed to some extent, giving us a lot of information to work with and confidence that what we have written is desired and makes sense.

One pain point was an apparent lack of outputs. This troubled me as I saw many inputs and thought there should be more outputs than we had. Discussion with the team relieved my worries as the current outputs are broad and

encompassing, as well as the fact that this first revision will not get everything correct and we will have the chance to revise this later. Another pain point were the goals, as I felt some were overlapping and could cause issues later. Discussion with my teammate led to the conclusion that although there are overlaps, the goals were important enough to expand upon on their own, even if another goal technically encompassed it. Lastly, I felt as though there were not enough goals relating to non-functional aspects of the solution, and thinking ahead, I believed it would be in our interest to include one. After discussion with the team, it was decided to replace one weaker goal with another non-functional goal of robustness and maintainability.

With the initial interview with the supervisor, the team was able to clearly differentiate between possible goals the solution would likely require, and goals that can be achieved once the main solution is completed. We avoided lofty goals and kept them grounded, ensuring the goals corresponded to the necessities of the solution. We ensured that the goals would allow us to challenge ourselves and force us to take on a learning curve that we deemed appropriate. For added complexity, stretch goals were made as discussed with the supervisor. These will be taken on if it is deemed that the solution is completed and the extra features are feasible.