Project Backlog - Team 8
Athlete Central Application

Team Members: Jane Billa, Jennie Kang, Jiaxun Li, Elijah Shiffer, Alice Tang, Ethan Whiteman

Problem Statement

High school and collegiate student athletes and coaches currently lack a centralized, secure, and user-friendly platform to record performance, monitor progress, and manage availability. This gap makes it more difficult to efficiently track data, provide timely feedback, and make informed team lineup decisions, especially when injuries occur. Most existing athlete/coach apps have features limited to logging workouts and tracking progress, our Athlete Central Application is geared towards competitive athletes and has features to predict future performance. This software aims to bridge the gap between coaches and athletes, as well as athletes with their fellow teammates, allowing them to keep track of their progress and make realistic goals for themselves based on algorithmic-based predictions.

Background Information

- **Audience**: Our primary audience includes both high school and collegiate athletes as well as their coaches. Athletes need a convenient way to log training and competition results, track progress over time, compare themselves with teammates, and receive feedback that helps them improve. Coaches require tools to manage athlete health and availability, give structured feedback, and make informed lineup or training decisions based on reliable performance data. Beyond this, the platform may also serve secondary stakeholders such as athletic directors, who seek summary reports of team performance, medical staff or trainers, who monitor injuries and recovery timelines, and parents of younger athletes, who may want limited visibility into their child's progress. By targeting both athletes and coaches as the core users while keeping these secondary users in mind, the platform ensures scalability and relevance across different sports programs.
- **Our Aim**: While there already exist numerous applications and websites targeted towards assisting athletes in various facets of their training and competition, such as logging workouts (e.g. MyFitnessPal, MySwimPro, Strava), feedback portals between coaches and athletes (e.g. Hudl), and recording performances (e.g. MaxPreps), Often these platforms are aimed specifically at one sport or one particular function. We aim to

create one centralized platform for all of these functions, and more, across multiple sports. One key feature of our platform that will set it apart from other sites and applications in the same space is our prediction module that will predict future outcomes based on previous results in competition and practice.

- **Limitations**: Existing applications for athletes and coaches face several limitations that reduce their overall effectiveness. Many of these platforms suffer from feature fragmentation, with tools like Strava or MySwimPro focusing primarily on workout logging, while Hudl and MaxPreps emphasize performance recording or video analysis. Few applications successfully combine logging, feedback, scheduling, and predictive analytics in a single system. Another limitation is sport-specific design, as many apps cater to only one sport (e.g., swimming, running, or football), which restricts their usefulness for multi-sport athletes and coaches managing different teams. Additionally, these platforms have limited predictive capabilities, tracking past results without leveraging algorithms to forecast future performance or adjusting for real-life factors such as rest, diet, or injury status. There is also weak integration across teams, meaning athletes often cannot easily compare performance with their teammates, and coaches lack consolidated tools for viewing attendance, monitoring health updates, or ranking athletes in real time. Finally, issues of data accessibility and communication gaps remain: few apps support structured feedback loops (such as notes, acknowledgments, or goal tracking), and communication often occurs externally through text, email, or third-party messaging apps rather than being built into the performance platform.

Functional Requirements

User requirements

1. As a user, I would like to be able to create an account.
2. As a user, I would like to be able to log into an account that is already created.
3. As a user, I would like to be able to choose between registering as a coach or an athlete.
4. As a user, I would like to be able to delete an account.
5. As a user, I would like to be able to edit my username and password;
6. As a user, I want to verify my email and reset my password via email/MFA
7. As a user, I want to manage my profile details (name, sport/position, units, timezone, notification prefs)
8. As a user, I would like to manage my active sessions/devices so that I can log out remotely for security.

Athlete Requirements

9. As an athlete, I would like to be able to join a private group with my coaches and teammates.
10. As an athlete, I would like to view my past training performances as a graph or table so that I can track my progress.
11. As an athlete, I would like to view my past competition performances
12. As an athlete, I would like to be able to accurately predict my future competition results.
13. As an athlete, I would like to be able to adjust performance predictions based on how well rested I am for competition.
14. As an athlete, I would like to be able to adjust performance predictions based on diet before a competition
15. As an athlete, I would like to receive structured feedback notes from my coach so that I can improve my performance.
16. As an athlete, I want to acknowledge feedback and check off goals/tasks.
17. As an athlete, I would like to update my health status (active, injured, unavailable) so that my coach knows my availability.
18. As an athlete, I would like to be able to create goals for both short-term and long-term improvements
19. As an athlete, I would like to be able to view a schedule of all practices and events
20. As an athlete, I would like to be able to message my coaches
21. As an athlete, I would like to be able to receive email notifications of upcoming events
22. As an athlete, I would like to be able to receive email notifications of messages and feedback from coaches
23. As an athlete, I would like to be able to receive text notifications if wanted
24. As an athlete, I would like to see how my teammates perform on test pieces
25. As an athlete, I would like to see my overall standing compared to my teammates
26. As an athlete, I would like to see how much work my teammates are logging in
27. As an athlete, I would like to see my teammate's attendance

Sport-specific requirements

28. As a swimmer, I would like to be able to switch between course lengths when viewing and predicting results (meters vs yards, short vs long course)
29. As a swimmer, I would like to be able to convert results in one course length to an approximately equivalent result in a different course length

30. As a swimmer, I would like to be able to predict results in events I have not previously competed in based on results in related events

31. As a rower, I would like to be able to switch between viewing individual vs group performances

32. As a rower, I would like to see expected race results based off of specific lineups

33. As a rower, I would like to see what time per 500m I need to pull to achieve a certain time

34. As a rower, I would like to see my watts per kg after a test piece

35. As a runner, I would like to be able to switch between outdoor and indoor track lengths

Coach Requirements

36. As a coach, I would like to enter and update athlete scores so that training and competition results are recorded accurately.

37. As a coach, I would like to generate visual reports so that I can quickly summarize team performance.

38. As a coach, I would like to analyze performance predictions so that I can adjust training plans proactively.

39. As a coach, I want to simulate "what-ifs" (rest, diet, training load, weather/altitude, travel fatigue).

40. As a coach, I would like to be able to provide feedback to my athletes on how they can improve.

41. As a coach, I would like to track athlete health and availability so that I can manage lineups effectively.

42. As a coach, I would like to be able to create a group for myself, my fellow coaches, and my athletes

43. As a coach, I would like to be able to join a group with my fellow coaches and my athletes.

44. As a coach, I would like to be able to invite new athletes/coaches and remove old ones from the group.

45. As a coach, I would like to be able to message my fellow coaches.

46. As a coach, I would like to be able to message an athlete individually

47. As a coach, I would like to be able to message a select group of athletes at the same time.

48. As a coach, I would like to be able to contact the entire team at the same time

49. As a coach, I would like to be able to create a calendar for practices and events

50. As a coach, I would like to be able to receive email notifications of events
51. As a coach, I would like to be able to receive email notifications of messages from coaches and players
52. As a coach, I would like to receive text notifications if wanted
53. As a coach, I would like to send text notifications if wanted
54. As a coach, I would like to track my athlete's attendance
55. As a coach, I would like to see everyone's ranking relative to each other
56. As a coach, I would like to see potential competition for select races/events
57. As a coach, I would like to be able to see athlete's goals
58. As a coach, I would like to be able to suggest goals for my athletes

Non-Functional Requirements
1. The platform should ensure data privacy and restrict unauthorized access.
   - Integration of firebase login authentication, allowing easy account creation/login and user privacy.
2. The system should ensure data security by enforcing role-based access control (athletes only see their own data; coaches see their athletes' data).
3. Predictive analysis of a sport should be reasonably accurate and quick to load
   - Within 5% margin of error on average when predicting future results.
   - Result prediction should take less than 5 seconds to generate results.
4. The system should provide a user-friendly interface for both athletes and coaches
   - Easy to navigate, visually appealing, pages load in less than 1 second on average.
   - Data shown in toggleable format, allowing switching between table and graph formats.
5. The platform should be extensible to at least 5 sports, with more possible to be added.
   - Currently planned are swimming, track & field, cross country, rowing, weightlifting. Possible future additions include football, volleyball, basketball, and other competitive team sports.