2019-20 Class Project Inception

=====================================

## Summary of Our Approach to Software Development

[What processes are we following?  What are we choosing to do and at what level of detail or extent?]

## Initial Vision Discussion with Stakeholders

Primary Stakeholder -- Katimichael Phelpedecky, swimming legend and hopeful entrepreneur

Katimichael's experience being on the US Olympic team led to an appreciation of how advanced tools can help athletes perform at their best.  The problem is those tools are very expensive and require personnel with advanced training, i.e. elite analysts for elite athletes. They want to create a business to give regular swimming coaches, from high school, club, college, and masters, advanced analytical and predictive tools to help the athletes on their teams.  Katimichael has assembled a team of investors to fund this project and is hiring your team to create the product.

The product is centered around three core features:

1. Record, store and provide tracking, viewing and simple stats for race results for swimming athletes.  This would have a number of features found in [Athletic.net](https://www.athletic.net/), which is used for Track and Cross Country running.

2. Provide complex analysis of athlete performance over time and over different race types, to give coaches deep insight into their athlete's fitness and performance that they cannot get from their own analyses.  This includes machine learning to predict future performance based on records of past race performance, given different training scenarios. Validation of this feature will enable the next feature.

3. Create a tool that will optimize a coach's strategy for winning a specific meet.  This feature will automatically assign athletes to specific races based on their predicted race times in order to beat an opponent coaches strategy.  There will be two modes: one in which we have no knowledge of the opponent team's performance, and one where we do have their performance and can predict their times.

##Interview

**Dev**: When the results page is loaded, do you want the data to be displayed as numbers or in a graph style?

**Stakeholders:** Yes, I’d love to. This will make the data more clear, and easy to compare.

**Dev:** For tracking the results, would putting the results in a graph be better than just displaying the data in  columns?

**Stakeholders:** You can do a little bit of both, but having graphs would be a great addition to the stats pages.

**Dev:** How recent do you want the list of people you have come in contact in to be. Do you want it sorted just by how recent the interaction was, or do you want it to go back further?

**Stakeholders:** I want it to be able to sort by weekly meets (Saturday to Saturday). Looking at the list will only go as far back as the previous Saturday.

**Dev:** What should be displayed when the ‘Personal Records’ are shown?

**Stakeholders:** We want to see the best overall times for each race that the athlete participates in. We would also be able to sort by year (with a drop down menu of choices).

**Dev:** Do you guys have a preference for the bootstrap styling that we choose?

**Stakeholders:** We have no preference, just choose whatever looks the most modern.

**Dev:** For having confirmation when the data is done uploading, how would you like to be notified? Would you like it to move to another page, or stay on the same page?

**Stakeholders:**  We would like a quick pop up that tells us its done, and we want to stay on the same page so we have the option to quickly update another file. Also, we would like to check if there is duplicate data, and if there is, it won’t be added to the database.

**Dev:** Do you think it’s necessary to have a fan page for the fans to look at?

**Stakeholder:** Yes, it is very necessary. We want the Facebook of sports fan pages.

**Dev:** For the ‘Viewing results sorted by best athlete’, what kind of data do you want to be displayed?

**Stakeholder:** I want strong analytics with many different types of data, so we can see many different types of data about our athletes. 

## Vision Statement

For athletes and coaches who need an advanced tool to help with analytics, tracking performance, and predictive tools to maximize a teams potential our web application is a tool that will do this and more. It will provide information to all visitors of the site, allowing a user to check personal records, changes over time, and competitors race history. Race histories will be recorded and stored for future use, all information including location, team, and the event type will be included. Unlike similar tools, ours will be either free or far cheaper, therefore, more realistic for the average school to use.

## List of Needs and Features

1. They want a nice looking site, with a clean light modern style, images that evoke swimming and competition.  (More like [Strava](https://www.strava.com/features) and less like [Athletic.net](https://www.athletic.net/TrackAndField/Division/Event.aspx?DivID=100004&Event=14))  It should be easy to find the features available for free and then have an obvious link to register for an account or log in. It should be fast and easily navigable.

2. The general public will be able to view all results (just the race distance, type and time).  These are public events and the results should be freely available. They should be able to search by athlete name, team, coach or possibly event date and location.  Not sure if they want to be able to filter or drill down as Athletic.net does. They're not trying to organize by state, school, etc. Athletes are athletes and it doesn't matter where they're competing.  This is completely general, but only for swimming.

3. Logins will be required for viewing statistics and all other advanced features.  We eventually plan to offer paid plans for accessing these advanced features. They'll be free initially and we'll transition to paid plans once we get people hooked.

4. Admin logins are needed for entering new data.  Only employees and contractors will be allowed to enter, edit or delete data.

5. "Standard" logins are fine.  Use email (must be unique) for username and then require an 8+ character password.  Will eventually need to confirm email to try to prevent some forms of misuse. Admins and contractors must have an offline confirmation by our employees and then the "super" admin adds them manually.

6. The core entity is the athlete.  They are essentially free agents in the system.  They can be a member of one or more teams at one time, then change at any time.  Later when we want to have teams and do predictive analysis we'll let the coaches assemble their own teams and add/remove athletes from their rosters.

7. The first stats we want are: 1) display PR's prominently in each race event, 2) show a historical picture/plot of performance, per race type and distance, 3) some measure of how they rank compared to other athletes, both current and historical, 4) something that shows how often they compete in each race event, i.e. which events are they competing in most frequently, and alternately, which events are they "avoiding"

8. Coaches would like to be able to create fan pages for each athlete to post on. Members would be able to read and write messages (make posts on approval), visitors would only be able to read.

9. Athletes would like to be able to create their own profile for recruiting purposes. They would like to be able to add some stats, videos, pictures, and other info about themselves in a nice viewable format.

## Initial Modeling

* See Milestone 2 diagram photos.

### Use Case Diagrams

* See Milestone 2 diagram photos.

## Identify Non-Functional Requirements

1. User accounts and data must be stored indefinitely.  They don't want to delete; rather, mark items as "deleted" but don't actually delete them.  They also used the word "inactive" as a synonym for deleted.

2. Passwords should not expire

3. Site should never return debug error pages.  Web server should have a custom 404 page that is cute or funny and has a link to the main index page.

4. All server errors must be logged so we can investigate what is going on in a page accessible only to Admins.

5. English will be the default language.

6. As a user, when I visit the stats page, I would like it to load in less than 5 seconds so I don’t have to wait.

7. As a user, when I visit the page i want to be dazzled by the design, so that it doesn’t annoy me

8. As a coach, I want the stat results for each athlete to render a graph within 10 seconds

9. As an administrator, I want the search bar to populate quickly so I can easily choose from the results

## Identify Functional Requirements (User Stories)

1. [U] As a visitor to the site I would like to see a fantastic and modern homepage that introduces me to the site and the features currently available.

   1. [T] Create starter ASP dot NET MVC 5 Web Application with Individual User Accounts and no unit test project

   2. [T] Choose CSS library (Bootstrap 3, 4, or ?) and use it for all pages

   3. [T] Create nice homepage: write initial content, customize navbar, hide links to login/register

   4. [T] Create SQL Server database on Azure and configure web app to use it. Hide credentials.

2. [U] As a visitor to the site I would like to be able to register an account so I will be able to access athlete statistics

   1. [T] Copy SQL schema from an existing ASP.NET Identity database and integrate it into our UP script

   2. [T] Configure web app to use our db with Identity tables in it

   3. [T] Create a user table and customize user pages to display additional data

   4. [T] Re-enable login/register links

   5. [T] Manually test register and login; user should easily be able to see that they are logged in

3. [E] As an administrator I want to be able to upload a spreadsheet of results so that new data can be added to our system

1. [U] As an administor I want to be prevented from uploading an incorrectly formatted spreadsheet so that there are no database problems
   1. Prevent duplicate data from being inserted into the database by querying the current tables for results individually, and only inserting new data
   2. [T] Pick an SQL schema for coaches to template from, and integrate the schema into our UP script
2. [U] As an administrator I want the upload process to be hands free so that I can’t mess it up

             2. [T] Create an algorithm to parse out the spreadsheet

             3. [T] Enter the parsed data into the database automatically

      3.   [U] As an administrator I want to be informed when the data is finished uploading so that I can have visual confirmation that it is done.

4. [U] As a visitor I want to be able to search for an athlete and then view their athlete page so I can find out more information about them

5. [U] As a visitor I want to be able to view race results for an athlete so I can see how they have performed

6. [U] As a visitor I want to be able to view PR's (personal records) for an athlete so I can see their best performances

    2. [U] 8. [U] As a robot I would like to be prevented from creating an account on your website so I don't ask millions of my friends to join your website and try to add comments about male enhancement drugs.

Brad User Stories

1. [U]. As a coach, I want to be able to sort athletes by race time, so that I may view the best athletes in each race.
2. [U] As an athlete, I want to be able to create my own profile, so that I am able to add video highlights and other personal information.

Lijian User Stories

1. [U] As an event director, I want  to be able to see a list of people I've been in frequent contact with recently, so that I can communicate better.
2. [U] As a fan, I want to be able to create or join a group to gather more fans who like the same athlete, so that I can talk with others about our idols.