Project Definition (100 - 200 words) – Group responsibility

* Why (it is needed)
  + It will enhance the enjoyment of football and fantasy football with friends and family.
  + To enable people to better predict the outcome of fantasy football.
  + People need an entry level tool to get into fantasy football.
  + Experts need more granularity in their predictions.
  + Fantasy football (NFL) is the most popular with 20% of US adults
* What (is the goal of the project)
  + Streamline the statistical analysis behind Fantasy Football.
  + To make more informed decisions
  + Team injury analysis
  + Allow people to better predict the outcome of football games.
* How (how will it be achieved)
  + Utilize machine learning to predict outcomes.
  + Utilizing a weather API to give up to date forecasts
  + Using past player injury statistics to predict future injuries
  + Allow people to perform “What if” scenarios
  + Utilize information from RAPID API to enhance the prediction process.

Focus

Off stats: Cmp %, Yards p/carry, Yards p/rec,

Def stats: Points p/game, yards p/game, yards p/play, secondary strength, run strength

Conditions: Humidity, Wind, temp, playing surface, Home\_or\_Away

Injuries: team = injury rate. Individual = past injuries.

Weather: Turn weather into categories. Save temperature as an integer or double.

Wind speed.

Make a secondary database to act as backup. API pulls to database per day?.

#Stats gathered from https://www.espn.com/nfl/news/story?id=2128923

class player:

PASSING STATISTICS

CMP# or CP - Completions

ATT #or AT - Attempts

PCT #or CMP% - Percentage of completed passes (Completions divided by pass attempts)

YDS #- Passing yards

YPA #- Yards per attempt

LNG #- Longest pass play

TD #- Touchdown passes

#TD% # - Touchdown percentage (Touchdown passes divided by pass attempts)

INT# - Interceptions thrown

#INT% - Interception percentage

SK# - Sacks

SYD# - Sacked yards lost

RAT# - Passer (QB) Rating\*

#RUSHING STATISTICS

ATT# - Rushing attempts

YDS# - Total rushing yards

YPG# - Rushing yards per game

AVG# - Average yards per carry (Total yards divided by attempts)

LNG# - Longest run

TD# - Rushing touchdowns

FUM# - Total fumbles

LST# - Fumbles lost

#RECIEVING STATISTICS

REC# - Total receptions

YDS# - Total receiving yards

YPG# - Receiving yards per game

AVG# - Average yards per game (Total yards divided by receptions)

LNG# - Longest reception

TD# - Receiving touchdowns

FUM# - Total fumbles

LST# - Fumbles lost

#YARDS FROM SCRIMMAGE STATISTICS

YDS# - Total yards from scrimmage (Rushing yards + receiving yards)

YDS/PG# - Total yards from scrimmage per game

RUSH# - Total rushing yards

RU/PG# - Rushing yards per game

REC# - Total receiving yards

#REC/PG - Receiving yards per game

#RETURN STATISTICS

ATT# - Total attempts (kickoffs/punts)

YDS# - Total yards returned

TD# - Kick/punt returned for touchdowns

AVG# - Average kickoff/punt yards per game (Total yards divided by attempts)

LNG# - Longest return

FC# - Fair catches

#KICKING STATISTICS

XPM# - Extra points made

XPA# - Extra points attempted

#XP% - Percentage of extra points made (XPM divided by XPA)

FGM #- Field goals made

FGA#- Field goals attempted

#FG% - Percentage of field goals made (FGM divided by FGA)

PTS#- Total points

#PUNTING STATISTICS

PUNTS# - Total punts

YDS# - Gross punting yards

AVG# - Gross punting average

LNG# - Longest punt

IN20 #- Punts inside the 20 yards line, a touchback is NOT an inside-20

#IN20% - Inside 20 punts divided by net punts

TB# - Touchbacks

#TB% - Touchback percentage

BP #- Blocked punts

RET# - Punts returned

YDS# - Yards returned on punts

AVG# - Average yards on punt returns

NET# - Average return yards on punts

#DEFENSIVE MISC. STATISTICS

TOT# - Total tackles

SOLO# - Unassisted tackles

AST# - Assisted tackles

SACK# - Total sacks

STF# - Stuffs: see TLOSS

TLOSS# - Tackles for Loss (Does not include Sacks)

FF# - Forced fumbles

BK# - Blocked kicks both punts and field goal attempts

INT# - Passes Intercepted

YDS# - Intercepted returned yards

LNG# - Longest interception return

TD #- Interceptions returned for touchdowns

PD# - Pass Defended (A pass caused incomplete, by contact with the football)

Proposal:

We're "Hello World or Bust" and we are developing a web application to enhance the enjoyment of NFL and fantasy football with friends, family, and foes. Our app will enable people to better predict the outcome of fantasy football before the real NFL games are played. Some people are intimidated by fantasy football and this tool will give the entry level player a way to feel more comfortable discussing their teams at the water cooler or family function. The fantasy sports sector has been growing with no signs of slowing down as fantasy sports have the potential to increase engagement in sporting events, sports news, and online content. Fantasy football (NFL) is the most popular with 20% of US adults over the age of 21 having played in the last 12 months. This number is up from just 10% in 2010. An industry that cannot be ignored.

Our goal of this app is to streamline the statistical analysis behind fantasy football. To give our users the knowledge to make more informed decisions on who to start or sit in their lineup each week. Our application will use machine learning to predict a players stat line and we hope to have a neural network that is correct 70% of the time or better which is top of the line in this industry.

As everyone knows the NFL is a fast moving dangerous sport and injuries are bound to happen. So our application will focus on predicting injury rate. The idea behind this metric will be to keep track of injury data in regard to players individually and in a separate metric we will look at the overall injury patterns of entire teams. For players we will look at how often a player is injured, how severe the injury, and how many games they miss because of it which we can then use to factor in with our predictions about their performance. With the team wide injury analysis, we can look at how often people are injured while playing for the team, how severe the injury, and how much time they miss. The look at teamwide trends is not something widely tracked and may yield interesting insight into whether some teams are just better at protecting from injuries than others.

We also will be implementing an API request for Database operation. The goal here will be to do an initial pull to fill our databases with all the historic data we deem necessary. After this we can update our database with scheduled pulls from the API, at an interval we find most efficient, without having to worry about usage constraints imposed by the free API's we have chosen. The databases that we populate will operate in similar fashion to a repository, we will have the master databases which will not be operated upon except for pulls to add more current data. The data being analyzed will come from branched off databases to not compromise our master database and require unnecessary API pulls to restore it. To separate our application from competitors we are also going to be using a weather API for up to date weather data and forecasts to give our customers the upper hand in their leagues.

Our web application will be free to use, selling advertising space to interested advertisers. Our customers will have the ability to sign up for a monthly membership that hides these advertisements and gives them other benefits like alerts for drastic weather conditions change.