Create Project Questions 2a - 2d, from page 11 of
https://apcentral.collegeboard.org/pdf/ap-csp-student-task-directions.pdf

I know it says what the word count can't exceed but questions should be thoroughly described.

2a. Provide a written response or audio narration in your video that:
- Identifies the programming language;
- Identifies the purpose of your program; and
- Explains what the video illustrates.

My program is a Champions League simulator to witness if a certain team from the Champions league will win the whole tournament in the Python language. In the video I briefly scroll through the code of my program to show the basic algorithms for its functionality. I later ran the program and entered a team from the list shown into a raw.input() and viewed the results. The first try was with PSG and I lost the quarter final. I entered the function again to attempt a second time with Liverpool and I won the final against Barcelona.

2b. Describe the incremental and iterative development process of your program, focusing on two distinct points in that process. Describe the difficulties and / or opportunities you encountered and how they were resolved or incorporated. In your description clearly indicate whether the development described was collaboratively or independent. At least one of these points must refer to independent program development. (Must not exceed 200 words)

To make my program work and also follow the majority of the rules of Champions League I needed to focus on the group stage and the games that start at the round of 16 and on. I had a hard time taking teams out of the list to eliminate the ones that were already played or the team the user chooses, but I learned that I could use the remove function from research on python. I completely did this by myself using a little bit of research online.

2c. Capture and paste a program code segment that implements an algorithm (marked with an **oval** and in **section 3** below) and that is fundamental for your program to achieve its intended purpose. This code segment must be an algorithm you developed individually on your own, must include two or more algorithms, and must integrate mathematical and/or logical concepts. Describe how each algorithm within your selected algorithm functions independently, as well as in combination with others, to form a new algorithm that helps to achieve the intended purpose of the program. (Must not exceed 200 words)

```
for x in group:
 q = random.randint(1,100) #runs on probability
 aa = ["Home game", "Away game"]
 ab = random.choice(aa) #chooses home or away game
 #Great idea on the probability factor - Mason Moreno
 if (q > 50):
   print("You won your first " + ab + " against " + x)
   wins += [1] #add one win to the list
   if ab == "Home game":
     aa.remove("Home game")  #Pretty smart idea, so the teams are out of the list. This
     helps so that one team doesn't play itself, which is impossible. - Aiden Pasillas
   else:
     aa.remove("Away game") # eliminates first game to let the second game happen
 elif q < 50:
   print("You lost your first " + ab + " against " + x) #first option of first game of
   group stage
   if ab == "Home game":
     aa.remove("Home game")
   else:
     aa.remove("Away game")
```

The code within the oval includes an if statement inside an if statement which shows that I included an algorithm that involves another algorithm. It also contains mathematical concepts by adding the value of 1 to the list "wins." Logical concepts are incorporated in the code by having an if statement of a comparison of two integers, (q > 50). In the beginning of the for loop there is a random integer, a list defined as "aa", and a random choice of the "aa" list. These are related to the if statements because the integer chosen is the number compared to 50 like stated earlier and that leads to either a winning possibility or a losing possibility for the user. Once the computer analyzes the information at this point the choice of a home or away game will be printed, including the team that has been drawn for the group stage. Afterwards the "aa" random choice is removed to have the other option available for the second game.

2d. Capture and paste a program code segment that contains an abstraction you developed individually on your own (marked with a rectangle and in **section 3** below). This abstraction must integrate mathematical and logical concepts. Explain how your abstraction helped manage the complexity of your program. (Must not exceed 200 words)

```
a = raw_input("\nChoose which team you would like to choose to reign victory? ") #ask the
user for his team

teams.remove(a) #take out chosen team so you won't face yourself

wins = [] #keeps score of wins

group = [] #the group stage
s = random.choice(teams) #chooses 1 team to later face in the group
d = random.choice(teams) #chooses 1 team to later face in the group
w = random.choice(teams) #chooses 1 team to later face in the group
group += [s,d,w]

teams.remove(s)
teams.remove(d)
teams.remove(w) #20-22 takes the teams out of list for next stage if the user advances

print ("You will be facing " + s,d,w)

for x in group:
  q = random.randint(1,100) #runs on probability
  aa = ["Home game", "Away game"]
  ab = random.choice(aa) #chooses home or away game
  #Great idea on the probability factor - Mason Moreno
  if (q > 50):
    print("You won your first " + ab + " against " + x)
    wins += [1] #add one win to the list
    if ab == "Home game":
      aa.remove("Home game")  #Pretty smart idea, so the teams are out of the list. This
      helps so that one team doesn't play itself, which is impossible. - Aiden Pasillas
    else:
      aa.remove("Away game") # eliminates first game to let the second game happen
  elif q < 50:
    print("You lost your first " + ab + " against " + x) #first option of first game of
    group stage
    if ab == "Home game":
      aa.remove("Home game")
    else:
      aa.remove("Away game")

  q = random.randint(1,100) #probability factor again
  ab = random.choice(aa) # the only option left of location for the match
```

The raw_input() provides a question that the user will answer. After answering the question the following code below it will function and the information as the raw input will be used for the for loop. Like stated in part 2c logical concepts are being used by comparing to values. Mathematical concepts are also being used by adding the value 1 to the list "wins."