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# Simple Football Game "Merancang Simulasi Permainan Bola Sederhana"

import math
import random
#Lambda value in Poisson distribution for higher rated team
lambOne = 1.148698355
#Lambda value for lower rated team
lambTwo = 0.8705505633

#Poisson distribution calculating goals scored by the home team
def homeMatch(homeRating,awayRating):
    global lambOne
    global x
    global y
    if x == y:
        raise ValueError
    else:
        lamb = lambOne**(int(homeRating)-int(awayRating))
        homeScore = 0
        z = random.random()
        while z > 0:
            z = z - ((lamb**homeScore * math.exp(lamb * -1))/(math.factorial(homeScore)))
            homeScore += 1
        return (homeScore-1)

#Poisson distribution calculating goals scored by away team
def awayMatch(homeRating,awayRating):
    global lambTwo
    global x
    global y
    #This check is to stop a team playing itself
    if x == y:
        raise ValueError
    else:
        lamb = lambTwo**(int(homeRating)-int(awayRating))
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        while z > 0:
            z = z - ((lamb**awayScore * math.exp(lamb * -1))/(math.factorial(awayScore)))
            awayScore += 1
        return (awayScore-1)

#Selecting number of teams in league
leagueSize = int(input("Enter Number of Teams in league: "))

#Initialising empty lists
teamNames = []
teamSkill = []
teamPoints = []
teamFor = []
teamAgainst = []
teamWins = []
teamDraws = []
teamLosses = []

#Populating lists with number of zeroes equal to the number of teams (one zero for each)
for x in range(leagueSize):
    teamPoints += [0]
    teamFor += [0]
    teamAgainst += [0]
    teamWins += [0]
    teamDraws += [0]
    teamLosses += [0]

#Entering names and skill ratings for each team
for i in range(leagueSize):
    teamNames += [input("Enter team "+str(i+1)+" name: ")]
for j in range(leagueSize):
    teamSkill += [input("Enter "+teamNames[j]+" skill: ")]

#Initialising variables
homeScore = 0
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awayScore = 0

#The season begins - each team plays all of its home games in one go
for x in range(leagueSize):
    #input("Press enter to continue ")
    print("=========================================")
    print(teamNames[x]+"'s home games: ")
    print("=========================================\n")
    for y in range(leagueSize):
        error = 0
        try:
            homeScore = homeMatch(teamSkill[x],teamSkill[y])
        #Skipping a game to stop a team playing itself
        except ValueError:
            pass
            error += 1
        try:
            awayScore = awayMatch(teamSkill[x],teamSkill[y])
        except ValueError:
            pass
        if error == 0:
            #Updating lists
            print(teamNames[x],homeScore,"-",awayScore,teamNames[y],"\n")
            teamFor[x] += homeScore
            teamFor[y] += awayScore
            teamAgainst[x] += awayScore
            teamAgainst[y] += homeScore
            if homeScore > awayScore:
                teamWins[x] += 1
                teamLosses[y] += 1
                teamPoints[x] += 3
            elif homeScore == awayScore:
                teamDraws[x] += 1
                teamDraws[y] += 1
                teamPoints[x] += 1
                teamPoints[y] += 1
            else:
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                teamWins[y] += 1
                teamLosses[x] += 1
                teamPoints[y] += 3
        else:
            pass

#Printing table (unsorted)
print("Final table: ")
for x in range(leagueSize):
    #Lots of formatting
    print(teamNames[x]+(15-len(teamNames[x]))*" "+" Skill: "+str(teamSkill[x])+(5-len(str(teamSkill[x])))*" "+" Points: "+str(t
teamPoints.sort()
print(teamPoints)
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Enter Number of Teams in league: 2
Enter team 1 name: Rans Football
Enter team 2 name: Halilintar Football
Enter Rans Football skill: nta
Enter Halilintar Football skill: nta
==========================================
Rans Football's home games:
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==========================================
Halilintar Football's home games:
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Final table:
Rans Football   Skill: nta   Points: 0     For: 0     Against: 0     Goal difference: 0     Wins: 0     Draws: 0     Losses:
Halilintar Football Skill: nta   Points: 0     For: 0     Against: 0     Goal difference: 0     Wins: 0     Draws: 0     Loss
[0, 0]
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