These are the final rules and weightage that we shall be following:-

Total 23 %

14 % for Output (it should run)
2% for Test NG Tests(everyone is supposed to write 4 tests, team would decide 20 tests and distribute them among themselves)
7% for Code design General OOP concepts Pattern usage (Singleton, Observer, Strategy, any other that are taught and applicable)
3% penalty if no alternate day check ins

Rules

For the project we are doing a modified version of foosball. The objective is to be the first to score 5 goals.

Game Start

The game starts based on a coin toss. The goal keeper of the team winning the toss will take the
first kick.

Game Restarts

After each goal, the team which conceded will get to start.

Ball has two variables
xAxisSpeed – current speed along x axis (min > |0|)
yaxisSpeed - current speed along y axis (min = |0|)
LastContactTeam - holds the name of team which made last contact.

Individual Players
Assume that players have infinite stamina. Hence, the speed of their kicks always falls in a constant range.

There is no distinction between speed of a pass and speed of a shoot.
Each player is denoted by a square with a certain fixed edge size.
Each player has a minKickSpeed and a maxKickSpeed.
Each player also has a constant horizontal movement speed (horizontalSpeed). This is a constant and is based upon the strategy. Read point 6 of Team Formations for explanations.

Team Formations

1) GK
2) 3-6 Defenders
3) 2-6 Midfielders
4) 1-4 Attackers

The number of players must sum up to 11.
Formation will be chosen at the beginning of the game only.
The formation of the computer's team should be random.
The player may choose his/her formation at the start of the game.

1) The players will be arranged in 4 lines – GK, Defenders, Midfielders, Attackers
2) Each of the players will spaced at equal intervals on a single line. Different lines can have different spacing among players.
3) The player can only move horizontally on their line. They cannot move forward or backward.
4) The Goal Keeper can only move from one goal post to the other + some error margin
5) The corner most player on the other lines should be able to reach the edge of the table while moving in one direction.
6) The movement speed of all players on a line will be same, it will depend on the team strategy i.e. number of players on the line and a random variable. This will ensure that teams having same strategy, don't have players moving at the same speed.
7) All lines of players must move together based on user pressing 'up' or 'down'. The move must be immediate and may override any movement that is currently happening. The fast movers may complete their designated distance before the other line of players.
8) For the computer, you need to simulate the up and down keys based on the direction of the ball while defending.

Strategy

1) GK can only pass to the Defenders only. He should be able to pass to any defender with equal probability.
2) The Defenders and Midfielders can either pass to a player in the next line or shoot at goal.
3) The Attackers can only shoot.

While Attacking

4) Since, a team always moves together, when a pass is made the team should stop moving till the ball is received by the person to which the pass was made. (No movement during a pass)
5) The player would then take kick the ball based on what he/she has to do with a random speed falling in the players range.
    a. If the ball has been passed, the direction shall be towards the player to which the pass is made.

    b. If a shoot is taken then the direction would be a random pick between the two goal posts + some error on both sides.
6) The speed of the ball along both the axes would be equal to the velocity components along the respective directions.

While Defending

7) The player would simply mirror the magnitude of the velocity of the ball and just reverse the direction along one of the axes. In case the next player with which the ball makes contact belongs to same team then attacking rules apply else defending rules apply.
8) In case, the ball strikes the wall, the direction would be reversed along o ne axes and the magnitude would remain the same (reflection)
9) Contact to wall should be ignored when seeing the last player who kicked the ball.

Game Difficulty

The Errors are a result of the difficulty level of the game.
Novice level – The margin of error for passes and shoots for computer is greater than that of user. However, the magnitude of error should be greater than that of the other level.

Intermediate level – The margin of error for passes and shoots for computer is equal to that of user. However, the magnitude of error should be less than that in novice, but greater than that of Pro.

Pro – The margin of error for passes and shoots for computer is less than that of user. This difficulty will have the least magnitude of error.

You may set any value as you please, as long as it satisfies the above conditions for any given
level. However, choose some reasonable value (Remember the errors in physical measurement
from you school days).