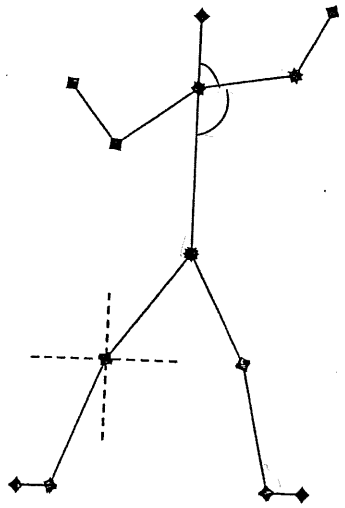
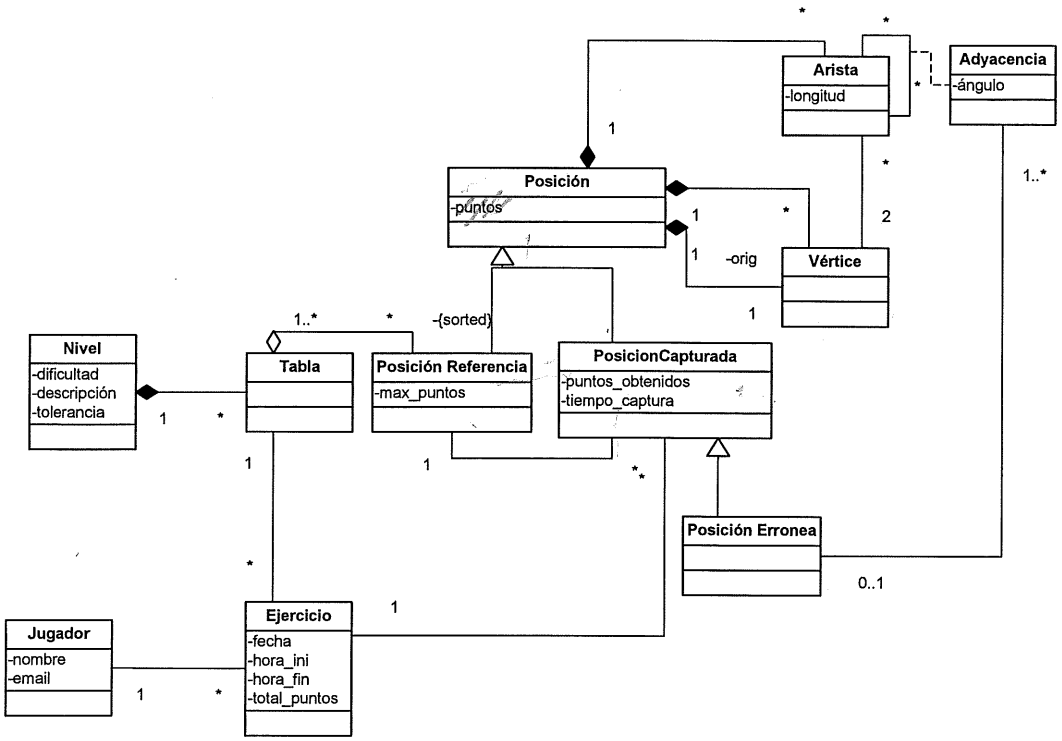
1. (3.5 points) The game development company UVISOFT is creating the conceptual model of a new game for the EQUISBOX-QUINECT platform. The game, known as MYSHAPE-FITNESS, must allow performing different exercise routines using the image recognition capabilities of the platform. Routines are grouped by levels of difficulty (each level is defined by a number and a text that describes it). A routine is a sorted sequence of body positions. A body position may be part of different routines of the same difficulty level. A routine may only belong to one level of difficulty. A body position is defined by a set of vertices (to represent the joints of the body) and a set of edges each one defined for 2 vertices (to represent the bones). To represent correctly a body position on the screen it has been decided the following representation schema: a vertex of the body position must be designated as the coordinates origin (see dotted lines in figure 1), each edge has a length and every pair of adjacent edges (those that share a vertex) must be placed forming a certain angle. To play, the player selects a difficulty level and a exercise routine and the system shows the first position of the routine and invites the player to imitate the proposed position with his(her) own body. As soon as the player stops moving, the system captures and recognizes his(her) body position and it represents the position using the format described above. To know whether the captured position is correct or not the system compares it with the proposed reference position. If all the angles of the captured edges are within an error margin (expressed as a percentage of error) the position is considered as correct. The error margin is a value between 0 and 100 that varies with the level of difficulty. All the routines of the same level have the same error margin value. If the captured position is correct the player obtains points. Each reference position of a routine has a maximum number of points that can be obtained. The points obtained by the player when having a correct position are calculated by multiplying the maximum points of the reference position and the average error of the captured position. The average error is calculated by the system comparing the angles of the reference position with the angles of the captured position. If the captured position is not correct the player obtains 0 points. When the reference position is performed correctly by the player the system displays the next position in the routine until the routine is finished.



Because a player may perform the same routine several times we need to store the results each time the routine is exercised. For every complete execution of a routine we will store the following information: date, start time, end time of the exercise, the total obtained points (sum of the points obtained for all the correct captured positions) and the captured positions (both correct and incorrect ones) with the time in seconds that the player needed to perform the position. Moreover, if the position is incorrect we need to store the angles that were incorrect (above the error margin) so that they can be displayed on the screen differently for the player to know what he(she) is doing wrong. Because the system may be used by several players we need to keep this information personalized for every player of whom we know his(her) name and email address.

Question: Build the class diagram for the system described above


Arista
-longitud
Adyacencia
-ángulo
Posición
-puntos
Vértice
-orig
Nivel
-dificultad
-descripción
-tolerancia
Tabla
Posición Referencia
-max_puntos
PosicionCapturada
-puntos_obtenidos
-tiempo_captura
Posición Erronea
Jugador
-nombre
-email
Ejercicio
-fecha
-hora_ini
-hora_fin
-total_puntos
-{sorted}
1..*
0..1