

## Expert System for choose extracurricular Activities

### Sistema experto para elegir actividades extracurriculares

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#### Abstract

The present work design and implement an expert system identify extracurricular activities for students the best for each one of Extracurricular Activities Department: Rondalla, introduction to music theory, dance, band of war, orchestra, soccer, basketball, volleyball, athletics and mixed martial arts. Using Java language programming using method waterfall model consist of stages through development project. The Expert System give guidance to new students agree with their skills, for take a correct decision agree with their profile and get an excellent performs in each activity. With a test answered by the students, the expert system identify in each question with score given before to extracurricular activity choosed, the skills of each student and select the activities where the students give a good perform.

**Expert system, Extracurricular Activities, Students, Test**

#### Resumen

El presente trabajo diseña e implementa un sistema experto para identificar la actividad extraescolar, por parte de los estudiantes, más adecuada para cada uno, de las que maneja el departamento de Actividades Extraescolares, las cuales son: Rondalla, introducción a la teoría musical, danza, banda de guerra, orquesta, futbol, basquetbol, voleibol, atletismo y artes marciales mixtas. Utilizando el lenguaje de programación java, empleando la metodología modelo en cascada, el cual conlleva por etapas las actividades definidas durante el desarrollo del proyecto. El sistema experto orienta a los alumnos de nuevo ingreso, tomando en cuenta sus habilidades, a tomar una decisión apropiada a su perfil para un desempeño optimo en dicha actividad. A través de un test que realiza el alumno, el sistema experto va identificando en cada pregunta, por medio de un puntaje que es asignado a la actividad extraescolar candidata, las habilidades de cada alumno, desechando así dichas actividades en las que el alumno no tendría ese desempeño que se espera obtener en cada alumno.

**Sistema Experto, Actividades Extraescolares, Estudiantes, Test**

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## Introduction

The extracurricular activities department of Iguala Technology Institute has Rondalla, introduction to music theory, dance, band of war, orchestra, soccer, basketball, volleyball, athletics and mixed martial arts, the students should one of them and finish it for get extra credits. Create an expert system for help students choose the correct activity agree with their skills and Get good perform in it.

## Justification

For innovate the extracurricular activities inscription period this process is automated develop Menting the use of an expert system using Java language programming this improve the process Making better control and administration in this department.

## Problem

The majority of the students don't enroll in their extracurricular activities in time, and don't agree with their skills, this is because they don't discover any specific talent for this reason don't take a decision in time. For another hand there are students enroll in time in the semester but, they don't take the best choice agree with their skills, because they take advice of friends, boyfriend, girlfriend or they Don't like any activity, this cause absence or low perform.

## Hypothesis

Through implement of expert system will be automatic the process for choose extracurricular Activities.

## Objective

### General Objective

Implement an automated Expert System for choose extracurricular Activities.

### Specific Objectives

- Design a test with right result for each person.
- Right for all ages suitables for this activity.
- Trust results based in sciences like clinic and education psychology.
- Make easy a process for persons should take a decision, this decrease the stress,

because some time are not sure about what them want.

## Theoretical Frame

The Expert System branch of the Artificial Intelligence are informatics system simulate the learning, memorizing, reasoning, communication and action process consequence of an expert human in every branch of the science.

This characteristic allow keep data and knowledge get logic conclusions, take decisions, learn of The experience and facts communicate with expert human, explain because the decisions taked by consequence of all this.

The technology of an expert system has a database of knowledge with accumulate experience of expert human and a whole rule for apply this database in especially Situation when is indicated to the program. Every day the system is better with new adds to database or the rules.

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The extracurricular activities foster and promote the participation of the students in activities like sports, culture, civic education and recreation these help in the complete development of the students.

The extracurricular activities contribute to strengthen of values and attitude guidance to responsibility, duty, discipline, solidarity, identity, and team work indispensable qualities of all complete professional.

Java is a programming language of general purpose guidance to objects was special designed for have few dependency of introducing.

The system is development in this language because its characteristics allow installing it in any device.

## Research Method

Method used in development of the expert system is the waterfall model.

## Research Sort

Use applied research because resolve a direct necessity of extracurricular activities department, using innovation tools as the expert system for make automatic a process what the students should do.

## Theoretical Method

Use the analysis–synthesis method because is mainly made it for methods and stages used for development of the software, we can isolate the identification process of the extracurricular activities and put it in a friendly interfaz with the student because use abstract programming guidance to objects.

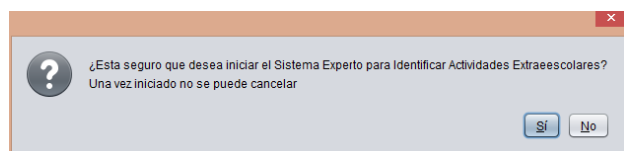
## Software Development

The first screen of The Expert System show a simple form with a welcome image and text and the name of the system. The window has two buttons: start and exit.



**Figure 1** Main menu screen

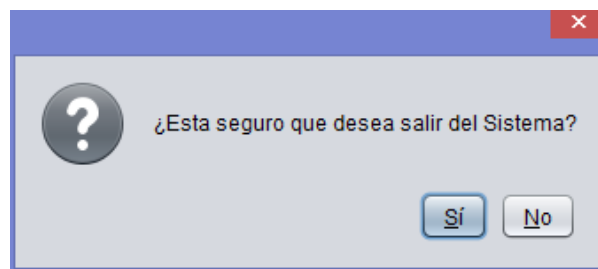
Do clic in start, show a confirmation message for start the system, as show in the next image.



**Figure 2** Confirmation window to start the system

Do clic in exit, show a confirmation message for exit to the system, as a show in the next image:

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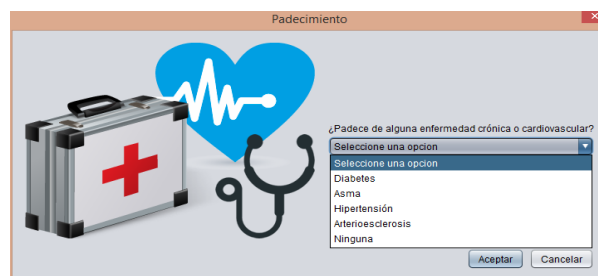
**Figure 3** Confirmation window to exit of the system

Right away show a message where ask to answer honestly and get the expected results.



**Figure 4** Previous screen to start the test

Illness Window, Ask if the student has of the next illness.



**Figure 5** Illness ( Previous to the questions)

Drink Window, Ask if the student drink alcoholic drinks.



**Figura 6** Alcolism previous to test



Figure 7 Intervention Window, Ask if the student in the last six months had any surgery or fracture

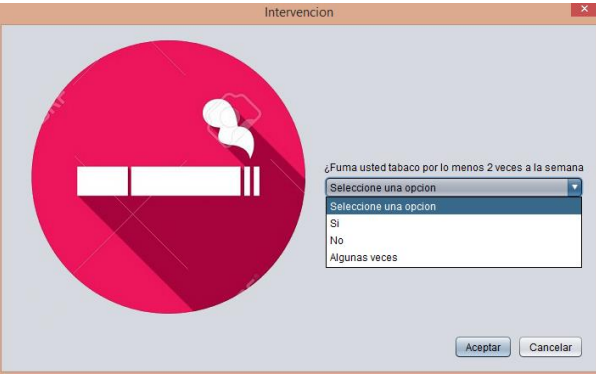


Figure 8 Tobacco Window, Ask if the student smokes and how often.any surgery or fracture.

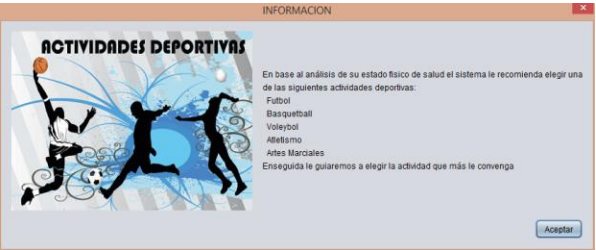


Figure 9 In case previous analysis about previous information is right for take any extracurricular activity show the next image. surgery or fracture

About priority use hands or feet.



Figure 10 Question No 1.

About physical strength.



Figure 11 Question No 2.

What part of the body is stronger.

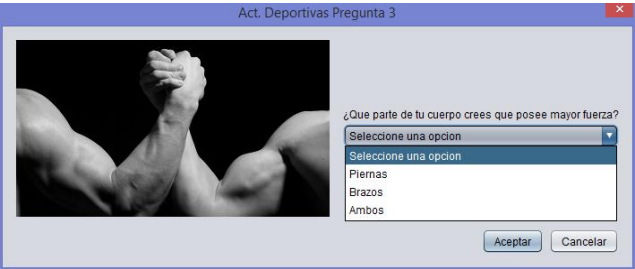


Figure 12 Question No 3

About reflexes of the student.



Figure 13 Question No 4.

About behavior of the student.

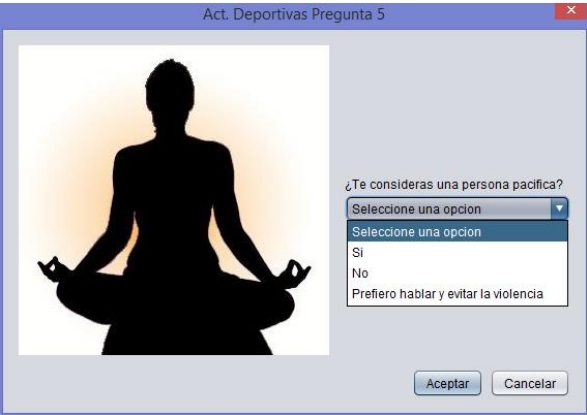


Figure 14 Question No 5.

About reflexes of the student.





Figure 15 Question No 6

About martial arts



Figure 16 Question No 7

About soccer.

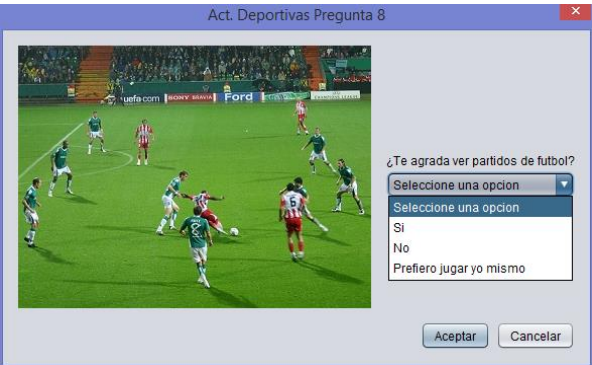


Figure 17 Question No 8

About team or individual work.



Figure 18 Question No 9

About self defense.

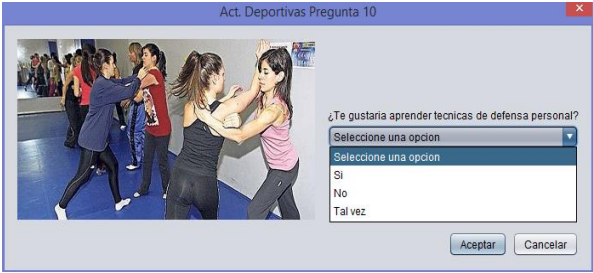


Figure 19 Question No 10

Results

With the implementation of the expert system, the department of extracurricular activities will optimize resources, decreasing material waste (paper). As for the students will have a help tool to choose their activity, with the certainty that a good decision will be made.

Conclusions

The registration process of extracurricular activities will be updated with the implementation of this tool.

The students can choose on time, without worrying about choosing an activity that they do not know. Also with this choice is avoided to follow the friends achieving a better distribution

Referencias

Nilsson, N. (1986). Principes of Artificial Intelligence.

Rich, E., Knight, K. (1991) Artificial Intelligence. McGrall-Hill.

Winston, P. (1992) Artificial Intelligence. Addison-Wesley.