Departamento de Informática - FCT/UNL

Métodos de Desenvolvimento de Software
Época normal
17 de Junho de 2009

Nº Aluno: _____ Nome:_____

NOTA: É PROIBIDO DESAGRAFAR AS FOLHAS DO EXAME!!!!

Descrição do problema

A car crash is defined in Wikipedia as following:

> *A car accident or car crash is an incident in which an automobile collides with anything that causes damage to the automobile, including other automobiles, telephone poles, buildings or trees, or in which the driver loses control of the vehicle and damages it in some other way, such as driving into a ditch or rolling over. Sometimes a car accident may also refer to an automobile striking a human or animal.*

Our Car Crash Crisis Management System addresses car crashes involving single or multiple vehicles, humans, or other objects. This case study is however limited to management of human victims only and does not provide rescue missions specifically for animals. The Car Crash Crisis Management System includes the following:

- facilitating the rescue mission carried out by the police by providing them with detailed information on the location of the crash;
- managing the dispatch of ambulances or other alternate emergency vehicles to transport victims from the crisis scene to hospitals;
- facilitating the first-aid missions by providing relevant medical history of identified victims to the first-aid workers by querying data bases of local hospitals;
- facilitating the medical treatment process of victims by providing important information about the crash to the concerned workers, i.e. paramedics, doctors, upon arrival at the hospital;
- managing the use of tow trucks to remove obstacles and damaged vehicles from the crisis scene.

A crisis management scenario is usually triggered by a crisis report from a witness at the scene. A coordinator, who is in charge of organizing all required resources and tasks, initiates the crisis management process. The coordinator has access to the camera surveillance system. The surveillance system is an external system used to monitor traffic in highways or other busy routes. The cameras are installed only in specific locations. If a crisis occurs in locations under surveillance, the crisis management system can request video feed that allows the coordinator to verify the witness information.

A super observer is assigned to the scene to observe the emergency situation and identify the tasks necessary to cope with the situation. The tasks are part of the missions defined by the observer. The coordinator is then required to process the missions by allocating suitable resources to each task. Also, the performance of each team member must be recorded for each mission h/she participates in. All the access to the system is realised using login and password.

1. (2 valores) Specify the **use cases diagram** for the problem at hand.

2. (6 valores) Specify the class diagram of the problem only for the classes of the entity type (or domain), including only the attributes and relationships (the operations are not necessary). Also a set rule for expressing OCL:

   • a member of staff first aid (eg, medical, paramedical) can not be allocated to two tasks simultaneously.

3. (4 valores) Draw a diagram of activities for a use case "Create Crisis" the responsibility of the coordinator who should verify the information provided by witnesses, take into account the allocation of a super-observer available to go to the place that you should send the necessary information to the system on the crisis. 4. (5 valores) Draw a complete sequence diagram (with interface objects, control and entity deems it necessary) for the use case "Process mission." Depending on the information received from the super-observer (eg type of accident, type of injury, severity of the accident, number of victims), the coordinator should allocate the necessary resources (eg ambulances, paramedics, medical) and notify the allocation of doctors and paramedics a particular crisis. You should also tell the team about the situation of victims.

5. (3 valores) Draw diagram of components concerned to the problem of 4 indicating classes are implemented for each component and which operations provided by each interface. Use a layered architecture to structure components.

Departamento de Informática - FCT/UNL

Métodos de Desenvolvimento de Software
Época de Recurso Extraordinária
22 de Julho de 2009

Nº Aluno: _____ Nome:_____

NOTA: É PROIBIDO DESAGRAFAR AS FOLHAS DO EXAME!!!!

Duração do Exame: 2 horas.

Descrição do problema

Good Price supermarkets want to implement a system of online shopping. in that system, a user, you must register in advance, select the products you want to buy and after the shopping list is complete and paid for, it is received at home.

Depending on the product that is described by name, brand, expiration date (if applicable) weight, date of manufacture, description, ingredients (if any), etc..

The products may be on sale where your discount is indicated. The promotion can occur during a certain period of time.

Payment for purchases is through loyalty cards, which also serve to earn bonuses based on the value of purchases.

A supplier can supply various products diferenets. This does not mean that a product is provided by more than one supplier. Prices for the same product depends on u formnecedor concerned.

The products are in stock in a warehouse, where you can find the amount of each product. However, the prices of the same product can vary depending on the date they were acquired. Of course, for the user interface are only available in products feathers older.

A customer can have multiple outstanding shopping lists, even within the same day. these will be sent to the Department of Collection and Delivery Department. The Department of Collection undertakes to allocate a specific employee to collect each list item purchases.

The Department of Shipping must check the availability of its messenger (or "Couriers") and allocate one to the delivery of a specific list. The system also life of the relay facilitates producing a map with the best path from the depot to the home the client., based on landmarks in the city that can be streets, squares, avenues, broad, etc. ..

Resolve the ambiguities in the best way possible.

1. (2 valores) Specify the use cases diagram for the problem at hand.

2. (6 valores) Specify the class diagram of the problem only for the classes of type entity (or domain), including only the attributes and relationships (the operations are not necessary). Note that the classes are defined to be respecting the constraints of normalization to the 3rd normal form.
OCL also set a rule to express:
• Products supplied by the same supplier, when they are not on sale may be more than five days.

3. (5 valores) Draw a diagram of activity to make the detailed collection and delivery of purchases of several customers a day. Do not forget the best maps path to be produced for the relay. Note that this requires authentication. Do not forget to by the principals associated with activities. You may also want to define the swimlanes (lanes) necessary.

4. (5 valores) Draw a sequence diagram complete and detailed (with objects interface, control and entity deems it necessary) to make a purchase from the choice of products to customer payment card. Note that this you also need authentication.

5. (2 valores) Draw diagram of components to question 4 of the problem indicating that class are implemented by each component and which operations provided by each interface. Use a layered architecture for structure components.

Departamento de Informática - FCT/UNL

Métodos de Desenvolvimento de Software
Época normal
26 de Junho de 2010

Nº Aluno: _____ Nome:_____

NOTA: É PROIBIDO DESAGRAFAR AS FOLHAS DO EXAME!!!!

Descrição do problema

Consider a system for managing the FIFA World Cup in South Africa A competition involves several games to get the country teams finalists. each game takes place on a certain date (and time), and a certain place, where involving the various players representing their country of origin. a country is described by name, its flag, anthem, etc..

A country can participate by not only the players and coaching staff, but also designate several referees for matches. An arbitrator can arbitrate various games, and each game features three umpires. However, a referee can not referee a game in there is a country of their nationality. Players and referees are described by name, age, height, weight, etc..

The championship is organized in phases. The first phase is the group where 32 Teams are divided into eight groups. The following is the eighth-finals, the quartosde-final, the semi-finals, the decision of the 3rd place and final. For each game it is necessary save the result and placing the first 3 places.

You should record the performance of each player in each game. Should also be record the fouls committed by a player during a race and the referee who applied lack.

1. (3 valores) Draw a diagram of use cases.

2. (5 valores) Specify the class diagram only for the type of entity classes, including attributes and relationships (the operations are not necessary). define also OCL to express a rule:

• The fact that a referee can not referee a game in which there is any country with their nationality.

3. (5 valores) Draw a diagram of activities detailed for the use case "Building scheduling of the table games of the round of "consisting of sets of 16 teams selected after the 1st phase is completed, based on the two best each group. There will be two sets per day for 4 days. The games on the same day should be at different locations.

4. (5 valores) Draw a complete sequence diagram (with interface objects, control and entity deems it necessary) to use a case responsible for issuing a report on the faults of all players, stating for each missing the game that occurred and the referee who applied.

5. (2 valores) Derive the table schema for the class diagram of Question 2.

Departamento de Informática - FCT/UNL

Métodos de Desenvolvimento de Software

Época normal

24 de Junho de 2008

Nº Aluno: _____ Nome: _____

NOTA: É PROIBIDO DESAGRAFAR AS FOLHAS DO EXAME!!!!

Descrição do problema

Consider a system to manage sports competitions in the individual Beijing Olympics. Each mode involves several tests to obtain the finalists. Each event occurs at a certain date (and time), and a given site, where several athletes participating, each representing their country of origin. A country can participate with several athletes in each event and designate several referees for the various modalities. An arbitrator can arbitrate various modes, and several tests of this type, for which there may be several arbitrators. However, an arbitrator can not arbitrate a proof that there is some athlete with his or her nationality.

An athlete can compete in various forms, there are several athletes in competition for each sport. Must register if the athlete has gained some medal in the final test, in which mode and what type (gold, silver or bronze). One should also note the fouls committed by an athlete during a race and referee who applied the fault.

It should also record the final record of each modality in the Olympics, indicating the athlete, and that proves that happened.

1. Specify the class diagram only for the type of entity classes, including attributes and relationships (the operations are not necessary). Also set two rules OCL to express:

• That the athlete must be connected to a single country;

• The fact that an arbitrator can not arbitrate a proof that there is an athlete to their nationality.

(7 valores)

2. Draw a complete sequence diagram (with interface objects, control and entity's necessary) for the use case "Assign a referee to a test."

Consider the proof that athletes are already registered. Note that the referee to be assigned especialita should be in the form of the ordeal. The actor is responsible System Administrator. Consider the evidence provided is valid. (6 valores)

3. Draw a diagram of activities for a use case responsible for issuing a report on the faults of all athletes, stating for each proof is lacking that occurred and that the referee applied. The actor is responsible for the System Administrator. (4 valores)

4. Derive the table schema for the data model below. Get the lower possible number of tables. (3 marks)

5. (2 points) Derive the table schema for the class diagram of Question 2.

Departamento de Informática - FCT/UNL

Métodos de Desenvolvimento de Software

Prof. João Araújo

Época de Recurso e Melhoria

15 de Julho de 2008

Nº Aluno: _____ Nome: _____

NOTES:

1. PROHIBITION OF EXAMINATION DESAGRAFAR LEAVES!!

2. BY NAME AND NUMBER ON ALL SHEETS (7 TO ALL)

3. ANSWER EACH QUESTION IN THEIR SHEET (FRONT OR VERSE

Descrição do problema

It is supposed to develop a system of information management for the Rock in Rio 2010. This festival involves various concerts taking place during five days in several stages. Information about the names of the organizers, the dates and venue of the festival should be provided.

A concert takes place at a given stage, a specific date and time. A day of festival may have several concerts, and there may be several concerts together. the concerts bands are given by (eg Metallica, Moonspell), DJs (eg 2 Many DJs, David Morales) or singers (e.g. Amy Winehouse, Lenny Kravitz). A singer, a DJ or a band are described by name, and a biography. In the case of bands must be informed of the number members and the names of them. In the case of DJ's need to specify the list of clubs night where he has performed. In the case of singers should be informed when they cast their first solo album. Bands, singers and DJ's can operate in several days, but never than once in a day.

Bands or singers may be related to various music genres. Each gender is described by name (eg rock, heavy metal, hip-hop), and its main features, such as their geographical origin and the period in which it appears.

At the end of the festival should reward the best bands or singers that are evaluated by a jury of 10 experts, each of which assigns a rating for each band or singer (1 (low) to 5 (maximum)). The average is calculated and the result is a ranking ordained for the other bands and singers to.

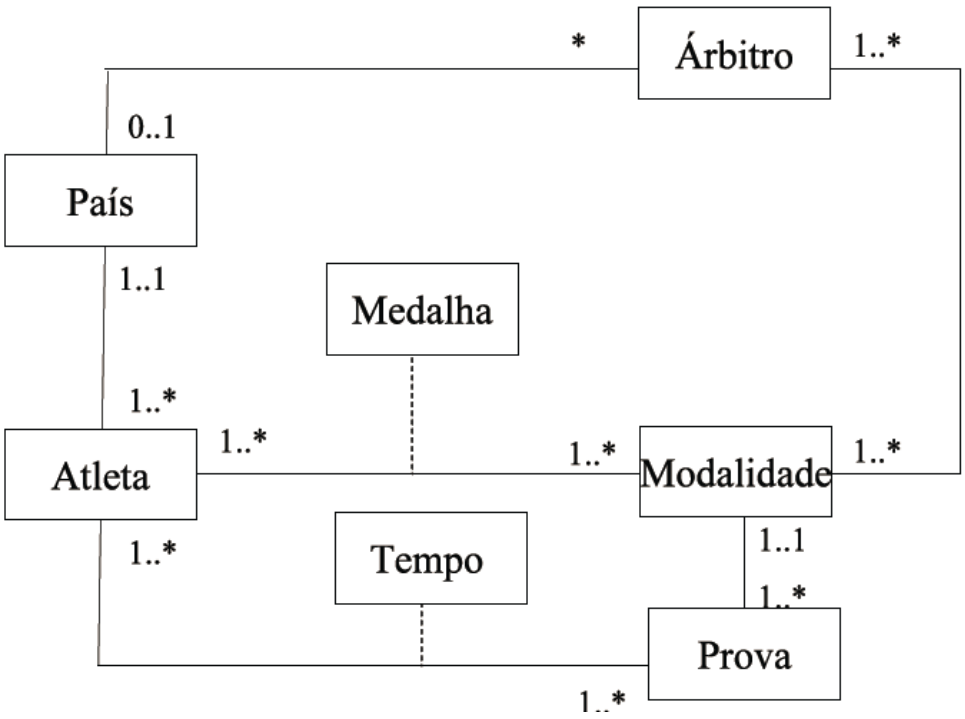
All information is provided to artists by their agents who must be registered in the system. The information for each concert is provided by a reponsável the program.

1. (6.5 points) Specify the class diagram only for the type of entity classes, including attributes and relationships (the operations are not necessary). define also OCL to express a rule:
• a band can act only at most once per day

2. (6 points) Draw a sequence diagram complete (interface objects, control and authority necessary to find) for the use case "Display Program Festival on a given day, "which is displayed throughout the programming and the Festival, and to this day (provided by user), you should show the information about concerts which are held together with one or band bio singer in question.

3. (4.5 points) Draw a diagram of activities detailed for the use case "Display the ranking of the ranking of singers and bands ", which also must list the jury involved. The actor is responsible for the President of the jury.

4. (3 points) Derive the table schema for the data model for competition international athletics. Get the lowest possible number of tables.



The attributes of each class are given below (the @ indicates that the attribute is key):
• Country = @ cod-country-name + country + banner + song
• Athlete = @ cod-athlete athlete + name + age + height + weight
• Medal Athlete cod = @ @ + cod +-mode-type medal
• Proof = @ cod-proof + days + hours + location
• Referee cod = @ name + referee + referee category
• Mode = @ cod-mode + name + description-mode-mode
• Time-athlete cod = @ + @ + cod-proof time-worn
Note: Only stores information about the countries in competition (which is why a referee can not associated with any country).