Teste 1

Métodos de Desenvolvimento de Software
2013/14
Primeiro Teste – 2 de Novembro de 2013
Departamento de Informática
Universidade Nova de Lisboa
(duração 2h00)

– Sem consulta –

Leia com atenção a informação constante desta página, enquanto espera a indicação do docente para começar a resolução do teste.

Este enunciado é composto por:
Uma página de Rosto (esta)
10 páginas de enunciado.

O teste é composto por VI grupos. Existem três tipos de perguntas:

I. Resposta múltipla para seleção de apenas uma alínea – Uma resposta errada desconta metade do valor dessa pergunta na cotação total do teste (VALOR DA PERGUNTA) / 2
II. Múltiplas afirmações para indicar todas as que se aplicam – cada escolha errada desconta um valor da cotação total do teste calculado da seguinte forma:
2 X (VALOR DA PERGUNTA) / (NÚMERO DE RESPOSTAS)
III. Repostas de caixa aberta.

Todas as perguntas devem ser respondidas o próprio enunciado assinalando com um X a opção/opções pretendidas. (caso haja engano fazer uma bola por cima do X errado e voltar a colocar o X na opção pretendida, em caso de dúvida perguntar ao docente).

Todas as páginas deverão ter o nome e número de aluno para ser consideradas para avaliação.

A resolução pode ser feita a lápis ou caneta.

No fim de 2h00 de teste o docente **recolherá o enunciado/folha de respostas**.

Boa Sorte!

Parte I – Software Engineering

1. The publisher of a social services guide has contacted for the development of an electronic version of its guide. The product is loosely defined to date, due to the limited knowledge of the technology available to the user community and to the limited technical expertise of the publisher's staff. The development team for this project will consist of two employees who are new to the company and a programmer with minimal experience. Which of the following approaches would best serve the needs of this project?

a. Waterfall model
b. Object oriented development
c. Iterative development
d. Rapid Application Development (RAD)

2. Discuss the advantages and disadvantages of RAD (Rapid Application Development) and the Cascade Model. In which circumstances i tis more adequate than the other?

Parte II – Use Case Diagrams

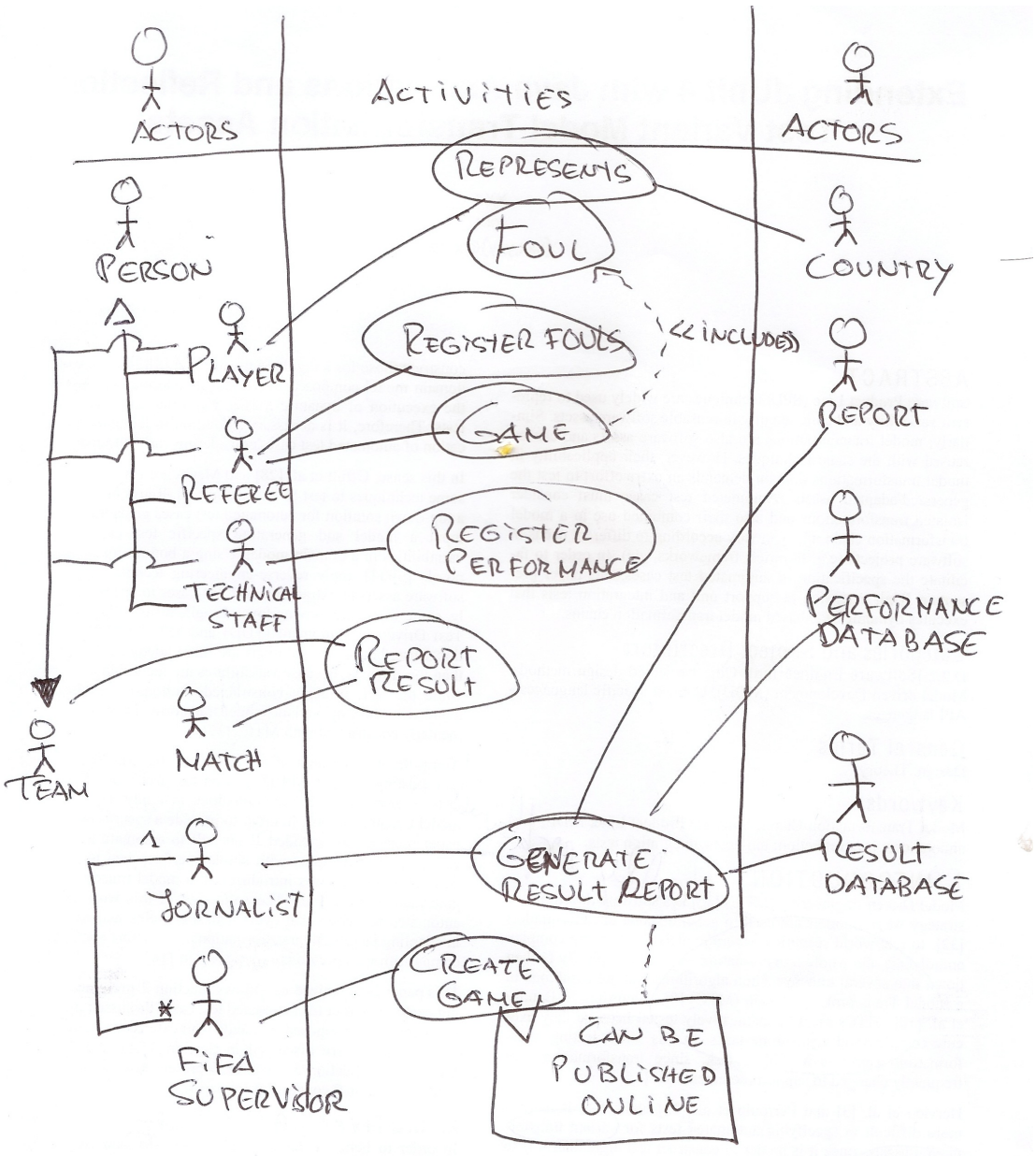
1. Consider a system to manage the Football World Cup in Brasil 2014. The competition envolves several games with teams of diferente countries. In each football match, the players and the technical staff represent their county.

There should be in the beggining of each match a FIFA representative person who is responsible for creating the file of the game in the system. This person should also introduce the results of the game at its end.

At the end of each game, one technical person of each team should register the performance details about the players. The referree should also register the fouls of the players.

The systems should mantain an internal database of the performance and results, so that the jornalist can generate the listo of results whenever i tis necessary.

Based on what described before, identify all the reasons why the diagrama is incorrect. Mark in the picture the incorrections with a code label (e.g. A,B,C,...) and justify in detail each one of them in the next page.



Parte III – Use Case Scenarios

2. Consider a beverage machine. If the actor is 'customer', and the scope is 'machine', what is the scenario (Option A, Option B, Option C or Option D) more likely to be found in the main scenario of the use case 'get drink'? Put a circle in the selected one.

Name: Get Drink
Description: A customer gets a drink from the vending machine.
Main Actors: Customer
Secondary Actors: None
Pre-condition: None
Main Scenario:

Option A
1. The use case starts when the drink is chosen
2. If drink available then show price
3. Put in coins
4. If paid enough then deliver drink
5. The Use Case Ends

Option B
1. The use case starts when the customer chooses the drink
2. The machine shows price
3. The customer puts in coins
4. The machine delivers drink
5. The Use Case Ends

Option C
1. The use case starts when the drink is chosen
2. Shows price
3. Puts in coins
4. Delivers drink
5. The Use Case Ends

Option D
1. The use case starts when the machine sends the price to the LCD display
3. The customer put coins in slot
4. The coin mechanism verifies amount and tells machine controller
5. The machine controller activates boiler
6. The Use Case Ends

Alternative Scenarios: none
Post-conditions: none

Parte IV – Activity Diagrams

1. Draw the activity diagrams corresponding to the following Use case description:

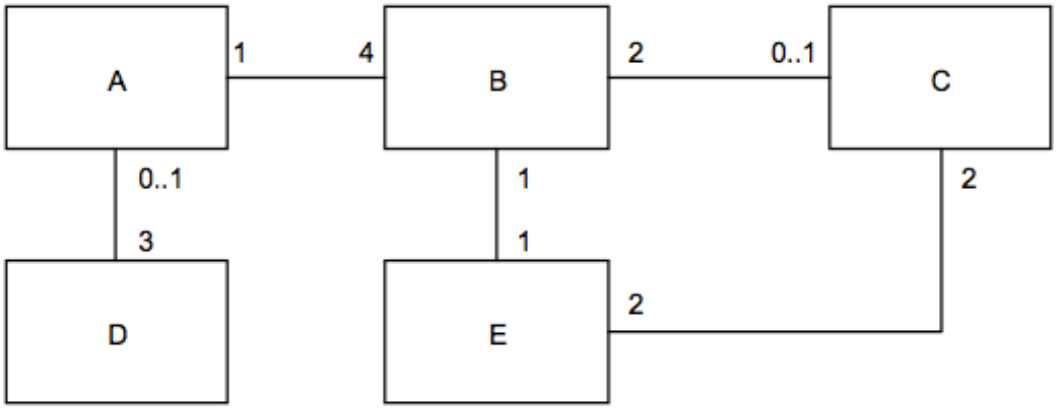
To vote

Once arrived at the polling station, elector gives the own electoral card to station president who checks if the polling station number is right .
Then he checks the identity document and if ok he gives the ballot paper to the elector.
Then the president waits for a cabin to get free and he gives the pencil to the elector and a secretary who signs the registry and put a print on the elector certificate.
Once elector has voted, he/she inserts the ballot paper in the urn, giving back the pencil and taking back the own ID document.

Parte V – Class Diagrams and Object Diagrams

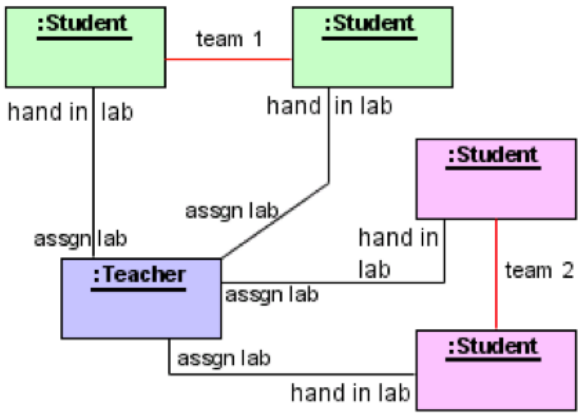
1. Classify the following relations as generalization (G), Association (A), Aggregation (AG), or Composition (C):
a) In a map, one country has a capital city.
b) The dinning philosopher uses one fork
c) An electronic file is a normal file and a folder
d) Electronic files contain registers
e) A class has several attributes
f) A relation can be an Association or a Generalization
g) A polygon is composed by an ordered set of points, where each point can be part of more than a polygon.
h) A software project is programed in a programming language.

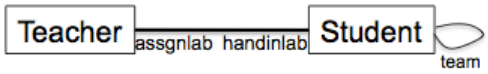
2. Estimate the derived multiplicity for each of the following navigations: (e.g.: i) b.e.c means exactly 2; b.c.e is 0 or 2.



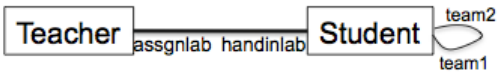
i) a.b.c
ii) d.a.b.c
iii) e.c.b.a.d
iv) a.b.e.c.b

3. Which is the class diagrama that corresponds to the following class diagram (choose only one):

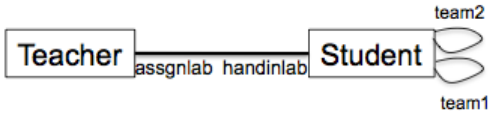



Teacher
assgnlab handinlab
Student
team

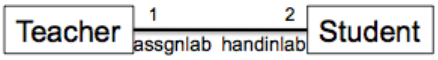
a)


Teacher
assgnlab handinlab
Student
team2
team1

c)

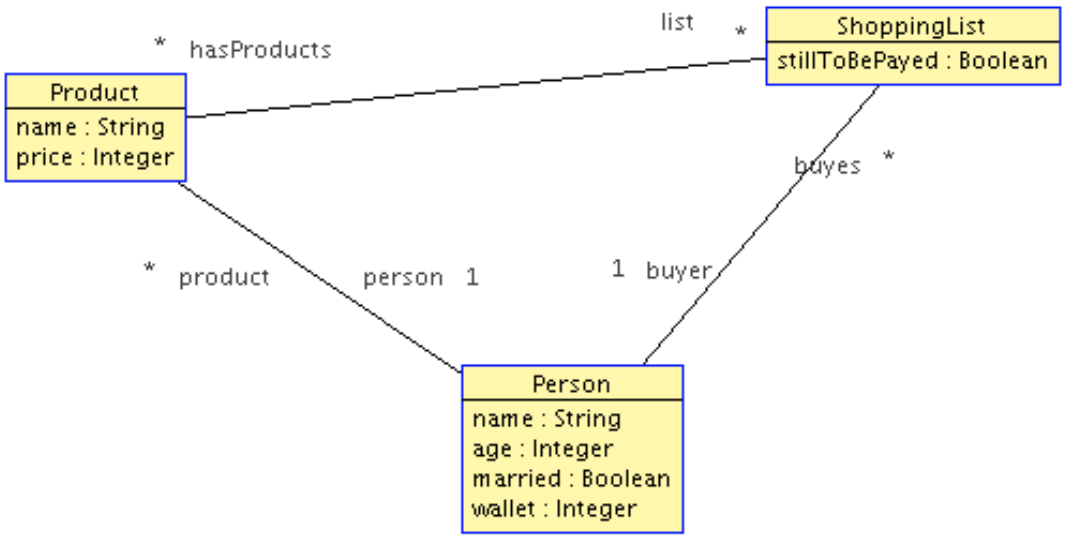

Teacher
assgnlab handinlab
Student
team2
team1

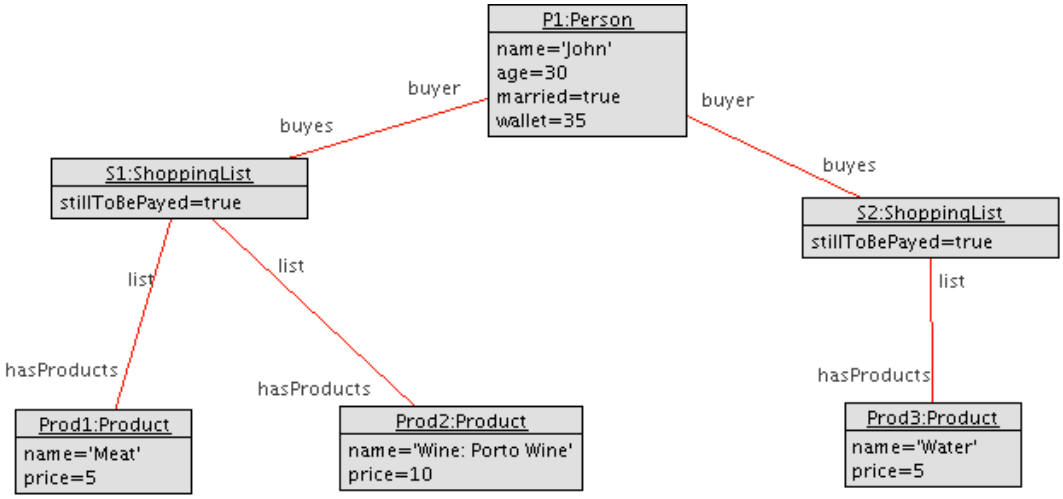
b)


Teacher
1
2
assgnlab handinlab
Student

d)

Parte VI – OCL
Consider the following class diagrams and object diagrams:





Express the OCL expressions to the following rules in the system:

a) The name of a person is unique.

b) No one in the system has a value of the total cost of the items of the shopping baskets (not payed yet) greater than the amount of money available in their wallet.

c) No product which name starts by “Wine” is sold to a person that is below 18 years old.

d) No single person has more than two shopping baskets with items not payed yet. (a person has only two hands ☺)

FIM!