UML modeling of Web Applications: Project

part of the Master in Web Technology V

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01. Preface

This assignment requires the study and analysis of the system described later in Section 02. The goal is to identify the system requirements, to model it in terms of UML diagrams (as explained in Section 03) and to produce an Effort Estimate document (as described in Section 04).
The documents to be submitted (the deliverables) are those explained in Section 03.3 and 04.5. Please create a .zip file with both documents and and name it as <GroupName>.Project1.Oct2006. In order to obtain your <GroupName> please create your group and inform your instructor.

02. Homework description

Requisiti Generali:
Si tratta di una applicazione web data-intensive, ovvero con contenuti memorizzati in maniera persistente (base di dati relazionale, base di dati ad oggetti). Le funzionalità minime da prevedere sono

- Gestione utenza secondo uno schema unix-like, ovvero utenti/gruppi/servizi;
- Gestione contenuti rich-text (pagine html)
- Gestione news e rss
- Gestione menu e navigazione
- Gestione del sito in almeno due lingue

Inoltre, per la gestione utenza e per il salvataggio delle preferenze dell'utente utilizzare sessioni e/o cookie.

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Funzionalità opzionali
Interconnesione ad uno delle seguenti piattaforme/sistemi
- Google maps
- Flickr
- Facebook
- OpenID
- Eccetera

Dimensioni del problema
L'applicazione deve far uso di almeno 15 tabelle sql (nel caso di utilizzo di beContent le tabelle devono essere almeno 22).

03. Homework Requirements and Evaluation

03.1 General information:

- This homework will cover the 70% of your final grade (30% will come from the oral examination).
- Groups composed of three students.
- I expect to receive a document (see template online) and the WebRatio file (for WebML) (the MagicDraw file for UWE and WAE design are also required in case you use them too).

03.2 Project evaluation:

Evaluation is not based on "quantity" but on "quality" where quality means:

- Significance of utilized diagrams
- Traceability
- Good design of important design decisions
- No more than 50 pages.

03.3 Deliverable D1

A PDF document conforming to the provided template available online

04. Effort Estimation

04.1 A priori estimate

When you start working on this assignment, write down an estimate of how long it will take you to answer each of the questions. Break down this estimate according to both the parts of the assignment and the categories of tasks. The table for breaking down the estimate might look like the following.

Estimate Table

Task	Plan	Design	Code	Test	Tool Management	Code Management	Reading	Writing	...	Row Sum
2.1										
2.2										
...										
3.4										
Column Sum										

The sum of the rows must equal the sum of the columns, which is the same as the overall estimate that was generated. Create your estimate table in an Excel spreadsheet.

04.2 Logging

As you are working on the assignment, record what you are doing and how long you spent. For this question, quantity of data, i.e. number of entries, is important. As a rule of thumb, you should add a log entry every time you switch tasks or at least one entry per hour. For example, if you do something for two hours straight, that can be one log entry. However, if you do two or three things in half an hour, you must have a log entry for each of them. You do not need to include time for logging, but should include the time spent answering the other parts of this question.

Here are some example log entries. Your logging is not limited to the sample entries. Add ones appropriate for your own tasks.

Time Log Table

Items	Date	Question No.	Description	Time
1.	07/08/06	All	Read assignment and create estimate	45 min
2.	07/11/06	2.2	Read "UML Distilled"	19 min
3.	07/11/06	2.2	Write use case	22 min
4.	07/14/06	2.2	Create use case diagram in Rational Rose	30 min
5.	07/15/06	2.3	Research on UML class diagrams on the web	23 min
6.	07/16/06	2.3	Read "UML Distilled"	16 min
7.	07/16/06	2.3	Create class diagram in Rational Rose	1 hr 25 min
8.	07/22/06	2.4	Web searching, collecting information	2 hr 10 min
9.	07/24/06	All	Go to library and check out some UML books	1 hr 5 min
10.	07/26/06	2.4	Create sequence chart in Rational Rose	54 min
11.	07/28/06	2.3	Refine class diagram	34 min

12.	08/01/06	2.2	Refine use case diagram	12 min
13.	08/04/06	2.1	Writing up	3 hr 3 min
14.	08/05/06	All	Create PDF and Submit assignment	43 min

Create an Excel file to implement your Time Log Table. Produce different revisions of your Excel file Log. On each day that you add entries to your log, create a new copy of your log file and name it in the form of Log-dd-mm-year.xls and also add a small paragraph to a ChangeLog.txt which indicates what has been changed on that particular day. For example, if you make no log entries on a given day, you don't need to create a new copy of your log. If you make more than one entry in your log on a given day, you only need to create a copy of your log once. The revision history must be also included in your report.

04.3 Categorization
For each of the entries in the time log, allocate the time spent to a cell in the table. Tally up the time spent in each of the categories and on the entire assignment. Some suggested categories are:

- Planning
- Design
- Tool Management
- Code Management
- Reading the Textbook
- Writing
- Research

You may add your own categories if you find that many of your activities don't fit well into those provided. Moreover, if you find that the categories you selected for your Estimate Table needs to be revised, or other categories need to be added, please proceed in this direction. Here's how the example time log entries would be broken down.

Items	Question No.	Description	Time	Category
1.	All	Read assignment and create estimate	45 min	Project Management
2.	2.2	Read "UML Distilled"	19 min	Reading
3.	2.2	Write use case	22 min	Writing
4.	2.2	Create use case diagram in Rational Rose	30 min	Writing
5.	2.3	Research on UML class diagrams on the web	23 min	Research
6.	2.3	Read "UML Distilled"	16 min	Reading/ Research
7.	2.3	Create class diagram in Rational Rose	1 hr 25 min	Writing

8.	2.4	Web searching, collecting information	2 hr 10 min	Research
9.	All	Go to library and check out some UML books	1 hr 5 min	Research
10.	2.4	Create sequence chart in Rational Rose	54 min	Writing
11.	2.3	Refine class diagram	34 min	Writing/Process Improvement
12.	2.2	Refine use case diagram	12 min	Process Improve-ment
13.	2.1	Writing up	3 hr 3 min	Writing
14.	All	Create PDF and Submit assignment	43 min	Project Manage-ment

04.4 Summary Statistics and Error Calculation.
For each cell, row, and column in the estimate and the overall estimate, calculate summary statistics and the percentage error. Summary statistics are total and percentage. The percentage error is given in minutes and is calculated as: (estimated time – actual time) / estimated time. Provide Excel charts showing those percentages.

04.5 Deliverable D2
A PDF document containing:

- Initial estimates
- A log of your time spent on the assignment
- Summary statistics and error calculations, with Excel charts copied in the document

Dr. Henry Muccini
L'Aquila, December 2008.