

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Semester 1 Examinations 2013/2014

Module Title: Engineering Web Applications

Module Code: SOFT8002

School: Computing and Mathematics

Programme Title: Bachelor of Science (Honours) in Web Development – Year 3

Programme Code: KWEBD_8_Y3

External Examiner(s): Mr. Pádraig McCarthy

Internal Examiner(s): Mr. John O’Brien

Instructions: Answer 4 questions.

Duration: 2 Hours

Sitting: Semester 1 2013-2014

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

- Q1. (a)** Web engineering, WebE, may be defined as
“*an agile, yet disciplined framework for building industry-quality WebApps.*”
Do you agree with the above-stated WebE definition? Justify your answer.
[5 Marks]
- (b)** Elaborate, briefly, on each of the following WebE framework activities:
- i. Communication.
 - ii. Planning.
 - iii. Modelling.
 - iv. Construction.
 - v. Deployment.
- [5 Marks]**
- (c)** Any engineering framework needs to be adapted to the problem, the project, the development team, and the organisational culture. Adapting a framework does impact the framework-characteristics, including:
- i. The overall flow of activities, actions, and tasks, and the interdependencies among them.
 - ii. The degree to which work products are identified and required.
- List **five** other framework-characteristics that are impacted when adapting the WebE framework.
[5 Marks]
- (d)** The Agile Alliance suggested a set of **twelve** agility principles, including:
- i. Continuous attention to technical excellence and good design enhances agility.
 - ii. Simplicity – the art of maximising the amount of work not done – is essential.
- List **four** other Agile Alliance suggested principles.
[4 Marks]
- (e)** Elaborate, briefly, on each of the following WebE best practices:
- i. Take the time to understand the business needs and product objectives, even if the details of the WebApp are vague.
 - ii. Don’t reinvent when you can reuse.
 - iii. Don’t rely on early users to debug the WebApp – design comprehensive tests and execute them before releasing the system.
- [6 Marks]**

- Q2. (a)** Negotiation is a critical skill for success in WebApp development. The best negotiators strive for a “win-win” result. Useful guidelines to help with negotiating exist, including:
- Recognise that it is not a competition.
 - Be ready to commit.
- List **five** other useful negotiation-guidelines.

[5 Marks]

- (b)** Describe, briefly, how you would manage identified-risks on a WebE project.

[5 Marks]

- (c)** From time-to-time, on a WebE project, the entire team will need to review a work product. List **five** guidelines that you would use if you were assigned the task of organising and facilitating such a team-review meeting.

[5 Marks]

- (d)** Consider the following project specification with estimated activity-durations and precedence requirements:

<i>Activity</i>	<i>Duration(days)</i>	<i>Precedents</i>
A	8	None
B	3	A
C	5	None
D	7	B
E	4	C
F	9	B, D
G	6	C, E, F
H	3	C, D
I	5	G, H

- Develop a network representation, using *activity-on-a-node* notation, to reflect the above-listed project details. **[3 Marks]**
- Analyse your network by carrying out a *forward pass*, to calculate the earliest dates at which activities may commence and the project may be completed; record these on your network diagram. **[3 Marks]**
- Analyse your network by carrying out a *backward pass*, to calculate the latest start and finish dates for your project’s activities; record these on your network diagram. List you project’s critical path tasks. **[4 marks]**

- Q3. (a)** Analysis models look at content, interaction, function and behaviour, and the Web configuration. Explain, briefly, how you would determine the amount of analysis required on a WebE project. **[5 Marks]**
- (b)** Consider the following assertion:
“Those who use a WebApp will judge its success. Therefore, it is important that the WebE team understands who the WebApp users will be, what background and skills the users have, how each user category perceives the WebApp, and what features and performance will be required to provide a successful user experience.”
 Do you agree with the above-assertion? Justify your answer. **[6 Marks]**
- (c)** Explain, briefly, why it is, generally, a good idea to revisit use cases that were used for initial planning and estimation. **[6 Marks]**
- (d)** A Webapp-content model is a representation that provides a clear indication of the content that is required to support a usage scenario. The content model includes all analysis classes. Describe, in detail, content model analysis-classes. Use the following headings to structure your presentation:
- i. Manifestation. **[2 Marks]**
 - ii. Attributes. **[2 Marks]**
 - iii. Operations. **[2 Marks]**
 - iv. Collaborations. **[2 Marks]**
- Q4. (a)** List **five** issues that should be considered when assessing the content presented within a WebApp. **[5 Marks]**
- (b)** Discuss, briefly, each of the following design goals, suggested by **Jean Kaiser, 2002**, that are applicable to most WebApps, regardless of application domain, size, or complexity:
- i. Navigability. **[3 Marks]**
 - ii. Visual appeal. **[3 Marks]**
 - iii. Compatability. **[2 Marks]**
- (c)** Discuss, in detail, the following design actions, typically, encountered as a design model is created:
- i. Aesthetic design. **[6 Marks]**
 - ii. Content design. **[6 Marks]**

- Q5. (a)** Quality is incorporated into a WebApp as a consequence of good design. It is evaluated by applying a series of technical-reviews and testing. Security, interoperability, and structure are aspects of quality, typically, examined through reviews and tests. Identify, and elaborate briefly on, **four** other WebApp quality dimensions.
[8 Marks]
- (b)** When a user interacts with a WebApp, the interaction occurs through one/more interface mechanisms, including:
- i. Links.
 - ii. Forms.
 - iii. Client-side-scripting.
 - iv. Cookies.
- Discuss, briefly, the testing approach used to address the above-listed interface mechanisms.
[8 Marks]
- (c)** List **four** questions that should be asked and answered during Web content testing.
[4 Marks]
- (d)** What is the recommended sequence of steps for Web usability testing?
[5 Marks]

End of Exam!