UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2011/2012- 2nd Year Examination Semester 4

IT4304: Rapid Software Development

Part 2 –Structured Question Paper

22nd July, 2012

(ONE HOUR)

To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (one) hours**.
- The medium of instruction and questions is English.
- This paper has **4 questions** and **08 pages**.
- **Answer all questions.** All questions carry equal marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the examination hall by a candidate.
- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.

Questions Answered

Indicate by a cross (×), (e.g. [X]) the numbers of the questions answered.

	Question numbers				
To be completed by the candidate by marking a cross (×).	**1**	**2**	**3**	**4**	
To be completed by the examiners:					

Index No …….

1. a) What is meant by the term “Iterative until done” in the context of RAD? (5marks)

• Developers build/refine prototype based on current requirements
• Designers review the prototype
• Customers try out the prototype and refine their requirements

b) List and briefly explain 5 cases where RAD **cannot** be used? (5marks)

Any 5 of the following
• Application must interoperate with existing programs.
• Optimal performance is required.
• Product development cannot take advantage of high-end IS tools (e.g. 4GLs).
• Product distribution will be wide (mass market)
• RAD becomes dirty quickly.
• RAD methods are used to build reliability and/or performance of critical applications.
• Technical risks are high due to the use of “bleeding edge” technology.
• The product is life or time critical.
• The system cannot be modularized.

c) What is meant by COTS in RAD (expands the abbreviation and briefly explains)? (5marks)

- COTS = Commercial Off-the-Shelf
- COTS based approach reuses components that are complete application systems.
- A prototype can be created by linking a database, a word processor, a spreadsheet and written code to find relationships between the requirements.

Advantage of this approach:
A lots of application functionality can be implemented quickly at a very low cost.

d) What is meant by the term "Prototype" in the context of software engineering? (5marks)

Prototype is an initial version of a software system that is used to demonstrate concepts, try out design options and find out more about the problem and its possible solutions.

e) List 3 software tools used in software prototyping. (5marks)

- Drawing software
- Demo makers (e.g. Demo-It)
- Perl + Motif + Tcl/Tk (UNIX)

2.

a) Explain the difference between Functional and Non-Functional requirements in the context of software engineering. Provide two examples for each? (6marks)

• In general, requirements are partitioned into functional requirements and non-functional requirements.
• Functional requirements are associated with specific functions, tasks or behaviors which the system must support, while non-functional requirements are constraints on various attributes of these functions or tasks.
Eg: Functional: (1) When the user is logged in, the user actions and user settings change options should be available in the first screen.
(2) The username and password should be authorized against the valid usernames and passwords in the database
• Non-Functional: Reliability, Maintainability, Availability, Robustness, Throughput, Latency The system should function 24 x 7. 1000 transactions need to be processed in a second.

b) List 4 implementations (flavors) of agile software development. (5marks)

<u>Any 4of the following</u>
• Adaptive Software Development
• Feature Driven Development.
• Dynamic Systems Development Method (DSDM)
• Crystal Clear
• Extreme Programming (XP)

c) List four key factors (points) in the Agile Manifesto (Agile Policy). (4marks)

• Individuals and interactions over processes and tools
• Working software over comprehensive documentation
• Customer collaboration over contract negotiation
• Responding to change over following a plan

d) Briefly explain the following key characteristics of Agile Software Development?

i. Iterative (2 marks)

ii. Modularity (2 marks)

iii. Time Bound (2 marks)

iv. Parsimony (2 marks)

v. Adaptive (2 marks)

Iterative: Agile software processes focus on short cycles. Within each cycle, a certain set of activities is completed. The short cycle is repeated many times to refine the deliverables.
Modularity: Modularity allows a process to be broken down into activities.
Time Bound: Each iteration is set to time limits (between one and six weeks).
Parsimony: Requiring a minimal number of activities necessary to mitigate risks and achieve their goals. This allows software developers to deliver systems against an aggressive schedule, while maintaining some semblance of a normal life.
Adaptive: If the goal cannot be achieved using the planned activities during the iteration, new activities can be added.

3. a) How does a milestone differ from a deliverable in the context of RAD? (5 marks)

- The difference between a deliverable and a milestone, which a milestone is a point in time in your schedule, but a deliverable is actual work delivered (finished) at this point of time.

- A deliverable is delivered to the client where a milestone is for internal progress measurement.

b) Briefly explain what is the key difference between Rational Unified Process (RUP) and Agile Unified Process (AUP)? (5marks)

- Both are iterative and incremental software development methodologies, but, AUP is a simplified version of RUP
- AUP is built by taking the best practices of RUP and agile methodology.

c) List and briefly explain the phases of Agile Unified Process? (8marks)

Inception: Identify the initial scope of the project and a potential architecture for the system, and obtain initial project funding and stakeholder acceptance.

Elaboration: Prove the architecture of the system.

Construction: Build the system on a regular, incremental basis by meeting the higher priority needs of the project stakeholders.

Transition: Validate and deploy the system into the production environment.

d) Is "Risk Driven Development" a good approach? Explain the reasons for your answer. (7marks)

Yes, it's a good approach.
Risk-Driven Development is about:

1) Identifying those high risk specifications that need to be met by the project.

2) Working on those items early to assure that they can be accomplished by the project.

Also high risk features/deliverables are addressed early, if client needs an adjustment, and then there is sufficient time.

4.

a) List 3 functions provided by CMS? (6marks)

- Creating, managing, publishing and archiving information
- Managing access privileges based on roles
- Providing infrastructure for multiple people to collaboratively build content

b) List 3 types of content management systems? (6 marks)

Any 5 of the following.

- Web content management system
- Transactional content management system
- Integrated document management system
- Enterprise content management system
- Publication content management system
- Learning content management system

c) List and briefly explain 4 ways of promoting a web site? (8marks)

- **Search engine optimization (SEO)**

There are plenty of people who sell ways to improve your search engine rankings, create meaningful URLs for key pages and include installing a CMS promoting your site content sensible keywords. Register your site with search engines using their facilities.

- **Linking to (and from) other sites.**

Link trading (networks of sites that exchange links with each other to increase search engine rankings) is like SEO.

- **Other media.**

When you send emails, include your URL that people can easily come to your site. Include your URL in any advertising you may be doing.

- **Measure and refine.**

Monitor who is coming to your site and where they are coming from. Note which content gets the most viewers. (Your site reports should help here. Make sure your CMS supports the reports you need.) Use this information to refine your content and promotion strategy.

d) List 4 names of widely used content management systems. (5marks)

Any 4 of the following.
Joomla
Wordpress
Drupal
Typo3
ExpressionEngine