



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY
Academic Year 2009/2010 – 2nd Year Examination – Semester 4**

***IT4303: Rapid Application Development
PART 2 - Structured Question Paper***

**15th August, 2010
(ONE HOUR)**

To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **04 questions** and **09 pages**.
- **Answer all questions**
- **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 (x), (e.g. x) the numbers of the questions answered.

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

1)

- a) One of the main **problems addressed by RAD** is long delay before customer gets to see any result which happens in conventional development methods. List down two (2) other problems.

[04 Marks]

ANSWER IN THIS BOX

- (i) With conventional methods, development can take so long that the customer's business has fundamentally changed by the time the system is ready for use.
- (ii) With conventional methods, there is nothing until 100% of the process is finished, then 100% of the software is delivered.

- b) One **good reason** that we use RAD is to coverage early towards a design acceptable to the customer and feasible for the developers. List down two (2) more.

[04 Marks]

ANSWER IN THIS BOX

- (i) To limit a project's exposure to the forces of change
- (ii) To save development time, possibly at the expense of economy or product quality

- c) Some software developers' use **RAD for bad reasons** as well. List down two (2) such reasons.

[04 Marks]

ANSWER IN THIS BOX

- (i) To prevent cost overruns
- (ii) To prevent runaway schedules

- d) The RAD model does not suit all types of software development projects and there are certain projects well suited for RAD. Write down four (4) features of projects that make them **suitable for RAD**.

[04 Marks]

ANSWER IN THIS BOX

- (i) The application will be run standalone
- (ii) Performance is not critical
- (iii) Product distribution will be narrow
- (iv) System can be split into several independent modules

- e) The RAD model does not suit all types of software development projects and there are certain projects well suited for RAD. Write down four (4) features of projects that make them **unsuitable RAD tend to fail**.

[04 Marks]

ANSWER IN THIS BOX

- (i) Optimal performance is required
- (ii) Application must interoperate with existing programs
- (iii) The product is mission- or life-critical
- (iv) The system cannot be modularized

- f) Briefly explain the **advantages of RAD** in comparison with conventional development methods.

[05 Marks]

ANSWER IN THIS BOX

Software development process that allows usable systems to be built in as little as 60-90 days.

In order to ensure high responsiveness, projects are designed with fixed timescales, sacrificing functionality if necessary. This allows the development team to focus on the pieces of functionality that have the highest business value and deliver that functionality rapidly. Change is often the reason for delays in application development.

In long linear development processes, changes in functionality requirements or project scope, particularly after a lot of time has been invested in planning, design, development and testing, cause many months to be lost and significant expense to be incurred for redesigning and redevelopment.

RAD combats scope and requirements creep by limiting the project's exposure to change shortening the development cycle and limiting the cost of change by incorporating it up-front before large investments are made in development and testing.

2)

- a) RAD uses iterative evolutionary prototyping, such as a JAD (Joint Application Development) Meeting. Briefly describe what a **JAD Meeting** is?

[05 Marks]

ANSWER IN THIS BOX

High-level end users and designers meet in brain storming sessions to generate a rough list of initial requirements.

Developers and Customers talk and listen.

- b) Ineffective communication and lack of trust are two main reasons for teams to fail? List down three (3) other reasons for **RAD team to fail**.

[04 Marks]

ANSWER IN THIS BOX

(i) Lack of common vision

(ii) Lack of identity

(iii) Lack of recognition

(iv) Problem personnel (uncooperative)

- c) **Business Teams** are the most common team structure with, peer group headed by a technical lead and all team members have equal status and each has its own expertise and tech lead is an active tech contributor. Briefly describe three (3) other kinds of teams, that is suited for Rapid Development.

[06 Marks]

ANSWER IN THIS BOX

(i) Chief-Programmer team – uses the fact that some programmers are 10 as time productive as others. (One key person)

(ii) Skunkworks Team – Engineering type project team is free from bureaucratic restrictions and can innovate.

(iii) Feature Team – Has empowerment, accountability and balance

- d) Building an effective development team can take a long time. Hence, **Long-Term Teambuilding** can be more effective for RAD. List down three (3) reasons to maintain long-term teams.

[06 Marks]

ANSWER IN THIS BOX

- (i) Higher productivity: Keep the team if it works well, else regroup.
- (ii) Lower start up costs: Start up costs for team building is high, so reuse them
- (iii) Lower risks of personnel problems

- e) To be fair and practical towards all team members is one of the good characteristic of a Team Leader. List down four (4) other good characteristics of a **RAD Team Leader**.

[04 Marks]

ANSWER IN THIS BOX

- (i) Avoid compromising the team's objective with political issues.
- (ii) Exhibit personal commitment to the team's goal.
- (iii) Be willing to confront and resolve issues associated with inadequate performance by team members.
- (iv) Be open to new ideas and information from team members.

3)

- a) Good “system builds” always pass the smoke test at the end of the day. Write down two (2) other features of a **good build**?

[04 Marks]

ANSWER IN THIS BOX

- (i) Compile all files, libraries and other components successfully.
- (ii) Link all files, libraries and other components successfully.
- (iii) Not contain any showstopper bugs (major defects) that prevent the program from being launched or that make it hard to operate.

- b) The smoke test always minimizes integration risk as well as reduces the risk of low quality. What are the other **advantages of smoke tests**? List four (4) of them.

[04 Marks]

ANSWER IN THIS BOX

- (i) Supports easier defect diagnosis
- (ii) Supports process monitoring
- (iii) Improves morale
- (iv) Improves customer relations

- c) SCRUM is an agile method that distributes the responsibilities among the team members and decentralizes the way of working together. Sprint and backlog are two of **SCRUM basics**. List down three (3) other characteristics.

[06 Marks]

ANSWER IN THIS BOX

- (i) The burndown chart
- (ii) The timeboxing
- (iii) The daily meetings

- d) SCRUM is one of the best agile development methods. But still it can fail due to a certain reasons. List down three (3) such reasons why **SCRUM can fail**?

[06 Marks]

ANSWER IN THIS BOX

- (i) Difficulty to face the brutal facts and will go back to the old norms
- (ii) Loss of Ceremony Rhythm
- (iii) Scrum Ceremonies are taking too long
- (iv) Bad ScrumMaster
- (v) Bad Product Owner
- (vi) Not enough attention for architecture, user experience and alternative solutions

- e) What is the most appropriate, agile development methodology for RAD? State five (5) such principles out of twelve **Agile Principles**.

[05 Marks]

ANSWER IN THIS BOX

- (i) Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- (ii) Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- (iii) Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- (iv) Business people and developers must work together daily throughout the project.
- (v) Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.
- (vi) The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- (vii) Working software is the primary measure of progress.
- (viii) Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- (ix) Continuous attention to technical excellence and good design enhances agility.
- (x) Simplicity--the art of maximizing the amount of work not done--is essential.
- (xi) The best architectures, requirements and designs emerge from self-organizing teams.
- (xii) At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

- 4) a) Assume that you have initiate new java project using NetBeans, named “MyLibrary”. Default NetBeans java project creates four (4) different folders including “Source Packages”. What are the other three (3) **folders**?

[06 Marks]

ANSWER IN THIS BOX

- (i) Test Packages
- (ii) Libraries
- (iii) Test Libraries

- b) Write down the auto generated **Java code** for “Main.java” file which was generated in **part (a)**.

[07 Marks]

ANSWER IN THIS BOX

```

package mylibrary;
/**
 * @author AuthorName
 */
public class Main {
/**
 * @param args the command line arguments
 */
public static void main(String[] args) {
// TODO code application logic here
}
}

```

- c) What is the most convenient way to **create JFrame** named “LibraryHome” under “mylibrary” package? Break down the task in to four (4) steps and list them.

[04 Marks]

ANSWER IN THIS BOX

- (i) Collapse “MyLibrary” project.
- (ii) Right click “mylibrary” package which comes under “Source Package”.
- (iii) Select “JFrame Form” which comes under “New”.
- (iv) Rename class name as “LibraryHome” and click finish.

- d) How should this new java class “LibraryHome” **extends**? Write down the appropriate code segment.

[04 Marks]

ANSWER IN THIS BOX

```
public class LibraryHome extends javax.swing.JFrame
```

- e) Assume that the “Public Library” would like to purchase your library system. What is the most convenient way to **rename all instances** of text **MyLibrary** in “MyLibrary” package as “Public Library”?

[04 Marks]

ANSWER IN THIS BOX

- (i) Write click on “MyLibrary” package under Source Packages.
- (ii) Select “Refactor” and then “Rename”.
- (iii) Change text “MyLibrary” to “PublicLibrary”.
- (iv) Click “Refcator” Button.
