# *Lab 1 – Systems Development Methodologies (Structured & RAD)*

Date Assigned: Wednesday, January 25, 2017

Date due: **Wednesday, January 25, 2017, 4:50 pm**

**Learning Objectives**

Upon successful completion of this lab exercise, the student will be able to:

* Understand the basic value of Systems Development Methodologies
* Understand the differences between various structured Systems Development methodologies such as Structured & RAD Systems Development Methodologies
* Understand the basic concepts of Unified Process & Rational Unified Process

**Marks**

|  |  |  |  |
| --- | --- | --- | --- |
| Section | Question | Mark | Effort (minutes) |
| 1. General Systems | 1 | 2 | 0 |
|  | 2 | 2 | 0 |
|  | 3 | 5 | 0 |
|  | 4 | 4 | 0 |
|  | 5 | 6 | 0 |
| 1. Structured Design Methodologies | 1 | 2 | 0 |
|  | 2 | 4 | 0 |
|  | 3 | 4 | 0 |
|  | 4 | 6 | 0 |
| 1. RAD | 1 | 4 | 0 |
|  | 2 | 6 | 0 |
|  | 3 | 4 | 0 |
|  | 4 | 4 | 0 |
| 1. Waterfall vs RAD | 1 | 6 | 0 |
|  | 2 | 2 | 0 |
|  | 3 | 2 | 0 |
|  | 4 | 2 | 0 |
| 1. RUP | 1 | 4 | 0 |
|  | 2 | 4 | 0 |
|  | 3 | 4 | 0 |
|  | 4 | 4 | 0 |
|  | 5 | 4 | 0 |
|  | 6 | 4 | 0 |
| English and handed in properly |  | 5 | 0 |
| Totals |  | 94 | 0 |

Lab Set Up

1. Rename this document called *YourUsername*\_E21\_L01\_Systems Development Methodologies.docx.
2. Research from class notes and online to answer the questions from this lab in this document.
3. Include your effort tracking for each section (or just fill in the total. I just need a rough understanding of the effort required for this lab.

To do:

## **Part A: General Systems**

Define the following terms

1. Define: SDLC

Software Development lifecycle

The cycle that software goes through before being deployed.

1. Define: Analysis

Determininig requirements for a system prior to designing and implementing it. Whether its determining budget constraints, time or user requirements.

1. Do the majority of IT projects succeed on time and on budget? Why or why not? (provide at least two reasons)

No, because people plan things poorly and requirements are always changing.

1. There are different categories of systems development methods. Name two.

Structured development (Parallel/waterfall) and RAD (prototyping/throwaway/phased)

1. Research and find one example (not already provided in the course material) of a computer system that drastically failed to be delivered on time and on budget. Provide a URL to the story and briefly explain two reasons why it failed. What could have been done to mitigate the failure?

<http://www.computerworld.com/article/2493041/it-careers/air-force-scraps-massive-erp-project-after-racking-up--1b-in-costs.html>

The USAF was attempting to build the Expeditionary Combat Support System, which was essentially consolidating over 200 legacy systems into one system. After 7 years the project cost 1.03 billion dollars and would’ve cost at least another 1.1 billion to finish the project, with only a quarter of the original scope of the project being completed. The project failed because it was way over budget and never delivered.

The project was horribly analyzed and should’ve never gotten approved. The scope of the system was too large and needed to be much smaller.

## **Part B: General Structured Design Methodologies**

Answer the following questions about Structured Design Methodologies

1. Which is the original structured design methodology still used today?

Waterfall

1. What are the various phases of the Waterfall Development design methodology?

Planning > Analysis > Design > Implementation > System

1. How does Parallel Development methodology attempt to address the problem of long delays between the analysis phase and the delivery of the system?

Breaks off large system into smaller sub-systems and into smaller teams to build each system

1. List three advantages and three disadvantages of using Structured Design Methodologies.

It’s good for building large scale and complicated systems because the documentation might be more necessary

It’s good for systems with lots of functional requirements since you have time to ensure that the system is robust and scalable

It’s bad for systems that you don’t have much time for development or are under heavy time constraints.

It’s bad for systems that have unclear requirements since you’re left wirting all sorts of documentation that will be inacurrate once you start building.  
It’s bad when you’re unfamiliar with the technology you’re using since it will be hard to figure out how you’re going to implement the solution

## **Part C: Rapid Application Development (RAD)**

Answer the following questions about **Rapid Application Development (RAD)**

1. Describe Rapid Application Development (RAD) briefly.

Rapid application development is when you build a systems quickly with little documentation and deploy a completed system

1. What are the three RAD categories?

Phase, Prototyping and Throwaway prototyping

1. Describe Phased Development briefly.

Phased Development you build a system and then make modifications to it through multiple different iterations of the system. So each phase is the same idea of system, but modified and improved or completely changed through each iteration.

1. What is the difference between Prototyping and Throwaway Prototyping?

In prototyping you build a prototype and build off of it, but with throwaway, you build a prototype, then scrap it knowing your mistakes so you can build it better the next time.

## **Part D: Waterfall vs. RAD: How to pick the right Systems Development**

1. Describe any three important factors that favor selection of RAD over Structured Design Methodologies.

When your requirements are unclear, when you don’t have a large time frame, or when you’re trying to develop a complex system.

1. How does the level of customer participation affect the choice of Systems Development methodology?

~~If the customer participates a lot in the project, then you’re better off going for something where you’re getting their input throughout the course of the whole project. Using RAD would be better since you can keep the customer involved in the development of the system instead of getting the requirements and then going off on your own.~~

It depends on where the customer participates in the project. If they want to collaborate upfront for the first few months, then get handed a system later, then structured development would be better. If the customer wants to stay involved throughout the whole project, then RAD would probably better. If they don’t participate much and you have less to go off, then Agile or RAD would work best.

1. How does the scope of the project affect the choice of Systems Development methodology?

If you have a large and complex project, more planning might be required, so you won’t want to pick something where you’re going in blind, like Agile or XP. You’d want something that takes a little bit longer for a large scale project so that you have time to do extensive testing and making sure everything is as it should be.

1. Give an example of a project that may require a prototype during development. Which Systems Development methodology would then be used?

Building a system for a small company where you’re presenting them a website would probably be better with a prototype. With a prototype, you can present them with what you have so far, then get their input on where to make changes. For websites especially, where aesthetics are important, you’re going to want to build prototypes of the UI.

## **Part E: The Unified Process & Rational Unified Process (RUP)**

1. Describe the Unified Process.

The unified process is a use case driven approach to software development. It’s a standardization on how and where to use certain things.

1. Describe briefly the various phases of the Unified Process.

Inception: Define the scope of the project and develop business case

Elaboration: Plan project, Specify features, and baseline architecture

Constructions: Build the project

Transition: Transition the product to its users

1. What are the two categories of workflows supported by the Unified Process?

Engineering workflows and supporting workflows.

1. Which disciplines are minimized during the Transition Phase and why?

Everything except for implementation, testing and deployment are left out of this phase almost entirely. All the other phases are things that should be done before the system start getting physically implemented, so they should be done by the phase in which the project actually gets released to clients.

1. Which phases is the Implementation Discipline primarily associated with?

Primarily the construction phase. The construction phase is where things actually get built, so the implementation is the majority of the construction phase.

1. According to the RUP, what are the main purposes for the Analysis and Design disciplines?

The main purposes of the two disciplines is to get everything ready for the actual construction phase.

To Submit

Save this file with the answers as a Word document and upload it to Moodle.