

Muhammad Umer Rafique  
MS(CS)

19L-1860

Requirement Engineering

Question (1)

Page #2	Umer Rafique 192-1866	Question (1)		
<u>Requirement Engineering Frameworks</u>				
Date:	Short Term	(i) Requirement Elicitation	Medium Term	Long Term
i)	Facilitated structured workshop	Interviews	Stake holder Analysis	
ii)	Brainstorming Session	Joint Application Design	Analysis of existing System	
iii)	Questionnaires	UseCase	Ethnography	
iv)	UseCase	Prototypes	Interviews	
			Process Model	
			Prototypes	

Requirement Analysis

## Short Term

- Identifying the current status
- Requirement Collection
- Developing usecases Scenarios
- Requirement Validation

## Medium Term

- Identifying the current status
- Requirement collection
- Documenting current Tasks
- Documenting problem
- Develop use cases
- Requirement Validation

## Long Term

- Identifying current status
- Requirement collection
- Documenting current Tasks
- Documenting problem and opportunities
- Describing Future tasks
- Developing usability specification
- Developing use case
- Requirement Validation

Page # 4

Umer Rafique  
192-1860

## Requirement Documentation

Date:

### Short Term

- User Stories
- Use Cases and Scenarios
- ~~Prototyping~~
- Interface Analysis
- Data Dictionary

### Medium Term

- Process Modelling
- Decision Modelling
- Data Modelling
- Function Decomposition
- State Modelling
- Prototyping

### Long Term

- Business Rules Analysis
- Process Modelling
- Scope Modelling
- Data Modelling
- Data Flow Diagram
- Organization Modelling
- Prototyping

Requirements Validation

Date: \_\_\_\_\_

## Short Term

- Pre Revision
- Revision of Requirements
- Inspection of Requirements
- Model Based

## Medium Term

- Revision of Requirements
- Inspection of Requirements
- Inspection Based Test cases
- Model Based
- Prototyping

## Long Term

- Revision of Requirements
- Inspection of Requirements
- Test case base Inspection
- Prototyping
- Model Based
- Test case generation

1) Requirement Elicitation ~~in short term project~~  
workshop:

It takes very less time and helps to collect large amount of data.

Brainstorming:

Good for short term projects.  
It only gives qualitative data not quantitative.  
That's the reason good for short term projects.

Questionnaires:

Good for large amount of quantitative data in short time, not good for long term projects.

Use cases:

Good for understanding of requirements in short and medium level projects.

Interviews:

It takes time to conduct interviews.  
but we can get qualitative data, not good for short term projects.

Prototypes:

It consumes time and resources. That's the reason we choose it in big projects.

### Ethnography:-

It takes extra time to observe culture of an organization. This technique cannot be used in short term project.

### Process Model:-

It takes cost and time both at the same time. Not good for short and medium term project.

## 2) Requirement Analysis

### Identifying current status:-

After elicitation it is the important step to identify where we stand so that we can proceed accordingly. It will be in all types of project.

### Requirement collection:-

Collecting requirements are done in every type of project.

### Documenting current Tasks:-

Not done in

short term project due to time shortage.

Final documentation compensate it in short term.

Documenting problem:-

In medium and long term projects we have enough time to document and analyse the problems.

Developing usecase:-

usecases plays important role in analysing so all types of projects done this step.

Requirement validation:-

Final step of analysing the requirements. It ~~justify~~ justify the requirements. It is important and compulsory step.

### 3) Requirement Documentation

user stories:-

It consumes less time and it is not a formal documented. not good for long term projects.

Prototyping:-

It consumes time and resources. not good for short term projects.

## Interface Analysis

Interface analysis takes less time and resources to make good for short term projects.

## Data Dictionary:-

used to standardize the definition of data. Not good option for big projects. helpful in small projects.

## Process Modelling:-

Declare application in all context for high quality demands. consume high resources. good for big projects as well as medium.

## Decision Modelling:-

It shows how data and knowledge are combined to make decision. high resources are required. not good for small projects.

## Business Rules Analysis:-

used to validate, refine and organize the rules that run business. only affordable in big projects.

Data Flow Diagram:-

It defines the flow of data in application. time and resources required. only long term projects can afford.

organization Modelling:-

It defines organizational unit is structured in visual representation. extra resources required for this. only in long term projects.

#### 4) Requirement Validation:-

Pre-Revision:-

It saves time to filter minor mistakes. can use in short term projects.

Revision of Requirements:-

Requirements are revised. compulsory for all types of projects.

Inspection of Requirements:-

It is important step to inspect and validate the requirements used in all types of projects.

Model Based:-

To maintain Traceability.  
also an important step used in every type of project.

Prototyping:-

It takes some time to make prototype. Short term project cannot afford that much time.

Test case generation:-

Final requirements are again tested for validation. takes some extra time. long projects can afford.

no prioritization or negotiation in any of the models  
-6

Umer Rafique

192-1860

Page #12

Date: \_\_\_\_\_

## Question 2

Paper:

An Approach for Reviewing Security-Related  
Aspects in Agile Requirements Specification  
of Web Application

We have seen there is a huge growth in website Development from last few years with the large number of benefits and trend everyone wants to move from desktop to web Application. Increasing demand creates new security challenges for the developers on every coming day. In the paper

"An Approach for Reviewing-Related Aspects in Agile Requirements specifications of web Application" Hugo Villamizar, Amadeu Anderlin Neto, Marcos Kalinowski, Alessandro Garcia and Dainial Mendz (2019)

highlight the security impact on web Applications. In this paper they suggest an approach that had a positive impact when reviewing security in agile specifications of web Application.

Defects in requirements specifications can have severe consequences during the software development lifecycle. It can cause overall project failure due to incorrect or missing quality characteristics such as security.

Some security concerns are becoming more challenging in Agile due to light weight documentation. The main idea of this paper is to design an evaluate for reviewing security related aspects in agile requirements specifications of web Applications. In this approach user stories and security specifications are considered as input and relate those user stories to security properties. Based on the related security properties this approach then identifies high-level security requirements from the open web Application Security Project to be verified and generates a reading technique to support reviewers in detecting defects in the security.

This approach is designed for newly developers and security analysts. It provide them with reading technique to help in the identification of the defects related to security aspects in agile requirement specification.

This approach covers four major security aspects. Confidentiality, Integrity, Availability and Identification Authorization. On the other hand the security defects that this approach covers are omission, Ambiguity, Inconsistency and incorrect fact.

Mostly the developers and the software analyst rely on ad-hoc methods or checklists to analyze documents. In an ad-hoc review the reader is not given directions on how to read. The result is that reviewers tend to build up skills in documents understanding slowly based on individual experience. That's the reason that focus on a reading technique to increase the effectiveness of individual reviewers by providing a systematic guide that can be used to examine a this case security related and consequently to ident

not a critique

-5

In agile method this approach is used before a use story that is defined as ready for coding.

This approach is validated by designing and conducting trials of a controlled experiment which validate the feasibility of using the approach for detecting defects related to security in web applications.

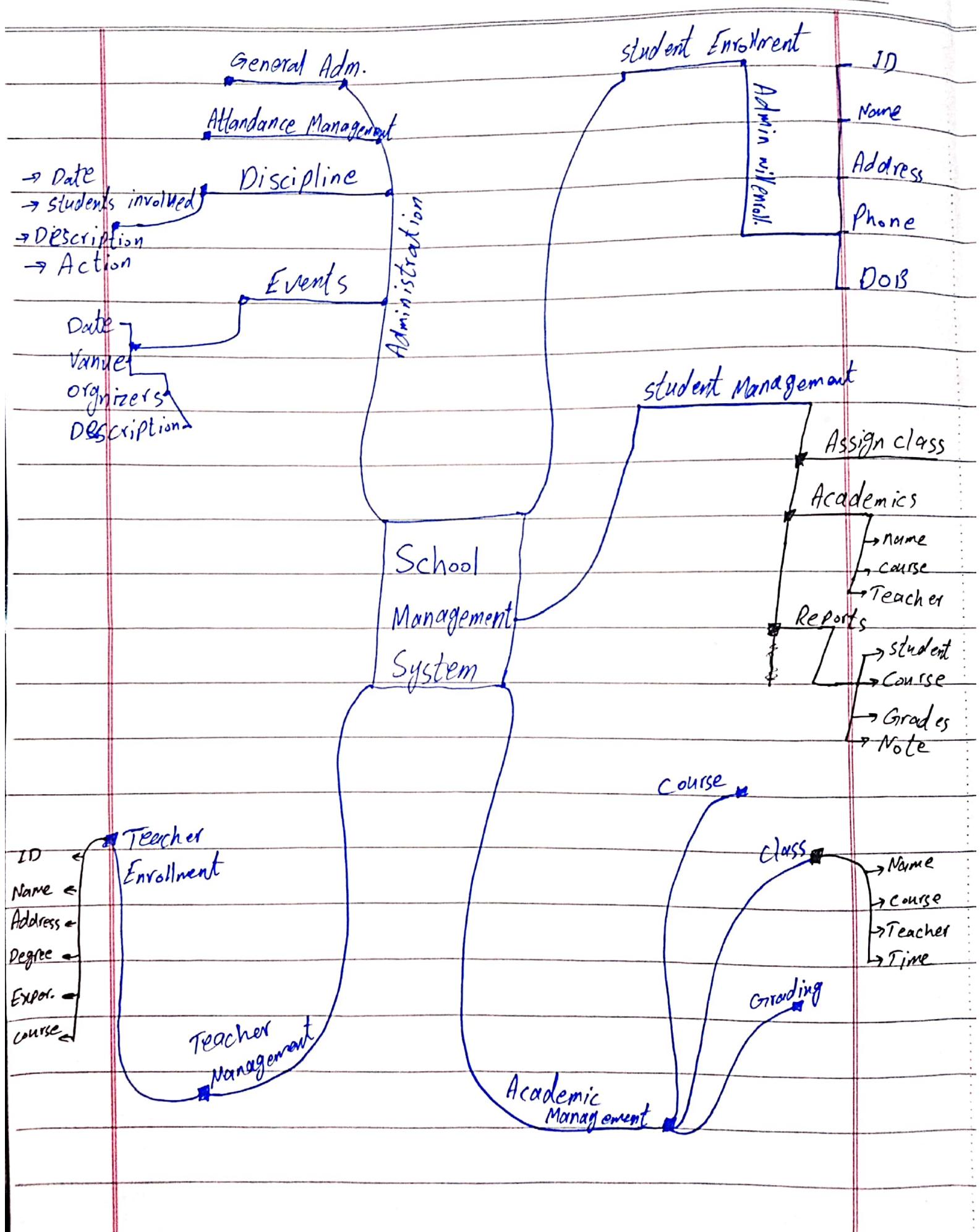
On the other hand this approach uses security standards that are different from the provided by OWASP. This could complement the security vision of this approach with other standards.

Umer Rafique  
192-1860

Page #17  
Date:

### Question 3

Problem: School Management System



Umer Rafique  
19L-1860

Page # 19  
Date:

