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ASSIGNMENT OF SOFTWARE ENGINEERING(MCS-034)

(a) Which SDLC paradigm will be selected ? Justify your answer.

Ans-The Spiral model seems as an ideal choice here. No other model seems

a reasonable alternative to accept . This model combines the features of the prototyping & the waterfall model. As Web based Examination Form Submission and Processing System for a university is a large project, therefore spiral model is intended for large, complex, expensive & complicated projects.

The steps in the spiral model can be generalized as follows:

1. The new system requirements are defined in as much detail as possible. This usually involves interviewing a number of users representing all the external or internal users and other aspects of the existing system.
2. A preliminary design is created for the new system.
3. A first prototype of the new system is constructed from the preliminary design. This is usually a scale down system, and represents an approximation of the characteristics of the final product.
4. A second prototype is evolved by a four procedure:
 - (1) Evaluating the first prototype in terms of its strengths, weaknesses, and risks;
 - (2) Defining the requirements of the second prototype;
 - (3) Planning and designing the second prototype;
 - (4) Constructing and testing the second prototype.

ADVANTAGES:

1. Estimates (i.e. budget, schedule, etc.) become more realistic as work progresses, because important issues are discovered earlier.
2. It is more able to cope with the (nearly inevitable) changes that software development generally entails.

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3. Software engineers (who can get restless with protracted design processes) can get their hands in and start working on a project earlier.

DRAWBACKS

1. Highly customized limiting re-usability
2. Applied differently for each application
3. Risk of not meeting budget or schedule
4. Risk of not meeting budget or schedule

(b) List the functional and non-functional requirements.

Ans

In software engineering, a functional requirement defines a function of a software system or its component. A function is described as a set of inputs, the behavior, and outputs. Functional requirements may be

calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish..

User Interfaces:

1. Login screen
2. menu selection screen
3. online examination form submission
4. examination Instruction
5. Result
6. Merit List

Hardware Interfaces Server Configuration:

Minimum 2GB Hard Disk

P-III processor or equivalent

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Ram 512 MB

Windows with Apache preloaded. Client Configuration

A terminal with Internet Explorer and Printer.

Software Interfaces Operating system – WindowsXP,

OracleNetwork -- LAN

2. Non-functional requirements

Performance Requirements

System can with stand even though many number of users requested the desired

service. As we are keeping office level server of the automated payroll system. And access is given to the only registered users of office who requires the services

of viewing, Updating etc. It can with stand the load.

Security Requirements

Sensitive data is protected from unwanted access by users appropriate technology and implementing strict user access criteria.

Software Quality Attributes

Menu-driven programs with user friendly interface with simply hyper links. It is very easy to use. Backup mechanisms are considered for maintainability of software as well as database. As it is object oriented reusability exists.

Safety & Reliability Requirements

By incorporating a robust and proven SQL into the system, reliable performance and integrity of data is ensured. There must be a power backup for server system.

(c) Estimate cost

Ans

Software Cost Estimation is widely considered to be a weak link in software project management. It requires a significant amount of effort to perform it

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correctly. Errors in Software Cost Estimation can be attributed to a variety of factors. Various studies in the last decade indicated that 3 out of 4 Software projects are not finished on time or within budget or both

The group of people responsible for creating a software cost estimate can vary with each organization.

The programmers have more motivation to meet the

targets if they were involved in the estimation process. Factors contributing to inaccurate estimation

Scope Creeps, imprecise and drifting requirements · New software projects pose new challenges, which may be very different from the past projects. · Many teams fail to document metrics and lessons learned from past projects ·

Under-Estimating a project can be vary damaging

It leads to improper Project Planning - It can also result in under-staffing and may result in an over worked and burnt out team of Credibility and goodwill.

(d) Estimate effort

Ans

Estimating

The process of forecasting or approximating the time and cost of completing project deliverables.

The task of balancing the expectations of stakeholders and the need for control while the project is implemented

The two primary elements in test estimation are time and resources.

As the complexity increases the more time and effort will be required to understand the application create test plans create test cases execute test cases regress test cases and retest defects.

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Complexity is also a factor here. As an application becomes more complex there are often more dependencies between modules and functionalities. This often requires coordination between developers. Consequently this takes more time. This is important because your estimation must also include the amount of time testers are waiting for the next build between test runs.

The more complex an application the greater number of defects will reach the test team when the application is released to them.

In addition the more complex the application the more likely that severe and high priority defects will be found in later stages of the test process.

(e) Develop SRS using IEEE format

Ans

1. Introduction

This Software Requirement Specification is written accordance with the IEEE Std 830-1998 model.

1.1. Purpose

This SRS Document contains the complete software requirements for the Web based Examination form submission and processing system(wefsp) and describes the design decisions, architectural design and the detailed design needed to implement the system. It provides the visibility in the design and provides information needed for software support.

1.2. Scope

Web based Examination form submission and processing system(wefsp) used to replace old paper work system. WEFSPS is to build upon the existing web-based exam marking system in order to implement the project marking process and allocating supervisor/ideas to students. It provides a mechanism to submit the online exam submission form which makes the system flexible.

1.3. Definitions, acronyms, and abbreviations

WEFSPS Web based Examination form submission and processing system

SRS Software Requirements Specification

SUMS Student and Units Management System

J2EE Java 2 Platform Enterprise Edition

JSP Java Server Page

OS Operating System

1.4. Overview

This document has been prepared in accordance with the IEEE Std 8301998, IEEE Recommended Practice for Software

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Requirements Specifications [IEEE 8301998 (1998)]. It provides the information of Product perspective, Product functions, User characteristics, Constraints, Assumptions and dependencies and specific requirement.

2. Overall description

This section of the SRS describes all general factors of the product and its requirements.

2.1. Product perspective

2.1.1. System interfaces

The SUMS is the new updated version of - the web-based project unit management system. It is intended to implement all features for the administration of student exam. The SUMS is using J2EE platform and Struts Model Students can connect both systems to retrieve information on their academic progress.

2.1.2. User interfaces

All pages of the system are following a consistent theme and clear structure. The occurrence of errors should be minimized through the use of checkboxes, radio buttons and scroll down in order to reduce the amount of text input from user.

Each level of user will have its own interface and privilege to manage and modify the project information such as supervisor able to monitor/manage his student progress and make comment on it,

2.1.3. Hardware interfaces

a. Server Side

The web application will be hosted on one of the department's Linux servers and connecting to one of the school Oracle

Database server. The web server is listening on the web standard port, port 80.

b. Client Side

The system is a web based application; clients are requiring using a modern web browser such as Mozilla Firefox 1.5, Internet Explorer 6 and Enable Cookies. The computer must have an Internet connection in order to be able to access the system.

2.1.4. Software interfaces

a. Server Side

An Apache Web server will accept all requests from the client and forward SUMS specific requests to Tomcat 5.5 Servlet Container with J2EE 5.0 and Strut 1.2.8 hosting SUMS. A development database will be hosted locally (using MySQL); the production database is hosted centrally (using Oracle).

b. Client Side

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An OS is capable of running a modern web browser which supports HTML version 3.2 or higher.

2.1.5. Communications interfaces

The HTTP protocol will be used to facilitate communications between the client and server.

2.2. System functions

This section outlines all the main feature of WEFSPS. 2.2.1. Student role

The Student can register a SUMS accounts and start the submit exam form online. On the register form, student should enter all their detail Email and contact number. The

system will generate activation code and send email to student and confirm the registration. After, the system allow student to change information and provide the function forget password for student to retrieve back the password.

2.2.2. Administration role

The system administrator must be able to:

1. deactivate and reactivate student account
2. force the sending of a new password to a student via email
3. change any of a student's details

2.3 Assumptions and dependencies

Although basic password authentication and role based security mechanisms will be used to protect from unauthorised access; functionality such as email notifications are assumed to be sufficiently protected under the existing security policies applied by the University network team. Redundant Database is setup as the role of backup Database Server when primary database is failure.

The correct functioning dependant on the correctness of the data stored and managed. the event of the server failing due to an error with one of these applications might result in WEFSPS becoming temporarily unavailable.

3. Specific requirements 3.1.

Functional requirements

3.1.1. User class - Student

1. Student exam form. Student can be register on the system and fill in all detail and forward to choose project/supervisor.

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2. Change Detail. Student can change detail if information is incorrect such as telephone number.
3. Change Password. Student can change his login password at any time for security reason.
4. Forget password. Student can request his password if he/she forgotten the password.

3.2 Design constraints

The system need to design base on the existed code and database using J2SE 5.0, J2EE 1.4 and Struts 1.2.x.

3.3 Software system attributes

3.3.1 Security

The system needs to log client's information of registration such as IP address and time for security purpose. Password should encrypted and store in the database.

3.3.2 Maintainability

The system developing using Struts, all action is detailed in struts-config.xml and web.xml that easy to modify and make update.