

**ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD**  
*(Department of Computer Science)*

**WARNING**

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

Course: Software Engineering (3465/3502)  
Level: BS (CS)

Semester: Autumn, 2013  
Total Marks: 100  
Pass Marks: 40

**ASSIGNMENT No. 1**

*Note: All questions carry equal marks.*

- Q. 1 a) What is meant by software? Explain the differentiating characteristics of software?  
b) Define and explain software engineering? How software engineering is different from conventional engineering?
- Q. 2 a) What is meant by software process? What are the activities we perform in software process?  
b) Discuss the roles and responsibilities of different people involve in the software team?
- Q. 3 a) Define and explain the working steps of sequential model along with advantages and disadvantages?  
b) You have been asked to develop a small application that analyzes each course offered by a university and reports the average grade obtained in the course (for a given term). Write a statement of scope that bounds this problem.
- Q. 4 a) What is a system? Explain the different types of system and list down the basic elements of a system?  
b) Software project management is an important activity, explain? Also write down the responsibilities of project manager?
- Q. 5 a) Discuss the common software management problems?  
b) You have been appointed a project manager within an information systems organization. Your job is to build an application that is quite similar to other your team has built, although this one is larger and more complex.

Requirements have been thoroughly documented by the customer. What team structure would you choose and why? What software process model(s) would you choose and why?

## ASSIGNMENT No. 2

**Total Marks: 100**

**Pass Marks: 40**

*Note: All questions carry equal marks.*

- Q.1 a) What is meant by requirement elicitation? Discuss the importance of requirement elicitation in the analysis phase?
- b) A software organization has DRE data for 15 projects over the past two years. The values collected are 0.81, 0.71, 0.87, 0.54, 0.63, 0.71, 0.90, 0.82, 0.61, 0.84, 0.73, 0.88, 0.74, 0.86, 0.83. Create mR and individual control charts to determine whether these data can be used to assess trends.
- Q.2 a) Define and explain data modeling, function modeling and behaviour modeling in detail?
- b) Explain the different notations used in DFD? Develop an DFD for library management system?
- Q.3 a) Explain the concept of designing? Also explain the importance of data structure in data design.
- b) Design a project database system that would enable a software engineer to store, cross reference, trace, update, change, and so forth all important software configuration items. How would the database handle different versions of the same program? Would source code be handled differently than documentation? How will two developers be precluded from making different changes to the same SCI at the same time?
- Q.4 a) Discuss the rules for mapping user requirements into software architecture?
- b) Define and differentiate between cardinality and modality with the help of example?
- Q.5 a) Differentiate between validation and verification? Also discuss the strategic issues in software testing?
- b) Give at least three examples in which black-box testing might give the impression that “everything’s OK,” while white-box tests might uncover an error. Give at least three examples in which white-box testing might give the impression that “every-thing’s OK,” while black-box tests might uncover an error.

## **3465 Software Engineering-II**

**Credit Hours: 3 (3, 0)**

### ***Recommended Book:***

*Software Engineering, 5<sup>th</sup> Edition by Roger Pressman*

### **Course Outlines:**

#### **Unit-1: Introduction**

Overview of Process, Project Management, System Engineering, Overview of Analysis, Overview of Design

#### **Unit-2: Architectural Design**

Software Architecture, Data Design, Architectural Styles, Analyzing Alternative Architectural designs, Mapping Requirements into a Software Architecture, Refining the Architectural Design

#### **Unit-3: User Interface Design**

User Interface Design, Rules for designing user interface, Interface Design Activities, Task Analysis and Modeling, Implementation tools, Design Evaluation

#### **Unit-4: Component-Level Design**

Structured Programming (Graphical Design Notation, Tabular Design Notation, Program Design Language), Comparison of Design Notation, Case Study

#### **Unit-5: Testing Strategies**

Introduction to strategic approach, strategic issues, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging Approaches

#### **Unit-6: Software Quality Assurance**

Software Quality Concepts, Software Quality Assurance, Software reviews, Formal technical Reviews, The ISO 9000 Quality Standards, SQA plan

#### **Unit-7: Component-Based Software Engineering**

Engineering of Component-Based Systems, The CBSE process, Domain Engineering, Component-Based development, Classifying and retrieving components, Economics of CBSE

**Unit-8: Client-Server Software Engineering**

Structure of Client-Server System, Software Engineering for Client-Server System, Analysis Modeling Issue, Design for C/S systems, Testing Issues

**Unit-9: Case Study**

Software Engineering Case Study (Small Project)

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