SPRING END SEMESTER EXAMINATION-2013

6th Semester B.Tech & B.Tech Dual (M.Tech/MBA)

SOFTWARE ENGINEERING IT-601

[Regular-2010 & Back-2009, 2008 Admitted Batch]

Full Marks: 60 Time: 3 Hours

Answer any SIX questions including Question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. a) What is 99% complete syndrome? How does it affect the development process? [2 × 10

   b) What is the impact of developing prototypes on overall cost of development?

   c) List the activities and outcomes of different phases of SDLC.

   d) How is the *project organization* different from the *functional organization*?

   e) When an application was tested in developer's site with 100 machines in a network it was working fine with good performance. But when it was deployed on client's site, it didn't work. Which testing the testing team had missed? Justify your answer.

   f) List various reasons for software crisis.

   g) What is system testing? Discuss about alpha, beta and acceptance testing.

   h) Differentiate between the *Brute Force* method and the *Back Tracking* method used for debugging.

i) Distinguish between *code walkthrough* and *code inspection.*

j) "If the size of the software increases two times, the development time doesn't double". (True/False) Justify your answer.

2. a) Identify the underlying life cycle model for the following case and discuss this life cycle model. [4

A large application has to be developed and the developing organization does not have a well defined process model for testing activity.

b) Define testing. Discuss about the importance of stub and driver module in case of unit testing with suitable example. [4

3. a) Define cohesion and coupling. What is its impact on good design? Discuss about various types of coupling possible with suitable example. [4

b) Consider the following code snippet: [4

```
Function( int first[],int second[])
{  //m, q, p are globally declared.
      int c, d, k;
      for ( c = 0 ; c < m ; c++ ){
        for ( d = 0 ; d < q ; d++ ){
  for ( k = 0 ; k < p ; k++ )
 {sum = sum + first[c][k]*second[k][d];}
multiply[c][d] = sum;
sum = 0;}}
```

Draw a CFG. Find out the number of linearly independent paths as well as the test data required to have 100% path coverage.

4. a) What is requirement engineering? List the various requirement elicitation techniques. What is meant by incomplete and [4

inconsistent requirements? Explain with suitable example. How are these issues resolved?

b) Identify various functionalities of an online admission system like online filling of the application form, examination center allotment, admit card generation, cancellation of application form, request for change of examination center etc. Identify the users of the system. For each user specify the functions. Identify classes to be created for the system like applicant class, center class etc as well as specify its data members and member functions. Prepare Use Case Diagram and Class Diagram. Represent all relationships and mappings. [4

5. Consider the following problem definition. Draw the DFD up to 2nd level and prepare a data dictionary. [8

Personal Library System: It is required to develop software to manage the collection of books by individuals. A person can have a few hundreds of books. The details of all the books such as name of the book, year of publication, date of purchase, price, and publisher must be entered. A book is to be given a unique serial number by the computer which is written by pen on the book. Before a friend can be lent a book, he must be registered. The registration data would include name of the friend, address, land line number, and mobile number. Before a friend is issued a book, the various books outstanding against him along with the date of borrowing are displayed. The date of issue and the title of the book are stored. When a friend returns a book, the date of return is stored and the book is removed from his borrowing list. Up on query, the software should display the name, address, and telephone numbers of each friend against whom books are outstanding along with the titles of the outstanding books and the date issued.

The owner of the library software, when he borrows books from his friends, enters the details regarding the title of books

borrowed, and the date borrowed. It should be able display all the books borrowed from various friends. It should allow query about the availability a particular book, the total number of books in the personal library, and the total capital invested in the library.

6. a) What are quality attributes? How does ISO 9001 differ from SEI CMM? List the key process areas for CMM-4 and CMM. [4

   b) Identify the functional and non-functional (with justification) requirements for the following application: [4

   Online Examination System: The users of the system are teachers and students.

   The students have to register to appear for the online test. The teachers are registered by the administrator. Each user is provided with a login id and password. The teachers can set an examination, upload questions, update questions, select questions from the question pool for a particular question, view results. The students can appear the online test in schedule time and view result.

7. a) What is the difference between black-box and white-box testing? Discuss about various approaches for test case design in black-box approach. [4

   b) What are the different product categories according to Boehm? Explain in detail the COCOMO. [4

8. Write short notes (any two) [4 × 2

   a) Software Configuration Management
   b) Integration Testing
   c) Reverse Engineering
   d) Software Reliability

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