Final Assessment Test – April 2019

VIT® Vellore Institute of Technology

Course: CSE3001 - Software Engineering

Class NBR(s): 2735 / 2736 / 2737 / 2738 / 2741 / 2742 / 2743 / 5574 / 6302

Slot: F1

Time: Three Hours

Max. Marks: 100

Answer ALL Questions

(10 X 10 = 100 Marks)

1. i) Identify which software process models are suitable for the following use cases. [5]
   a. The requirements are precisely documented. Product definition is stable. The technologies stack is predefined which makes it not dynamic. No ambiguous requirements. The project is short.
   b. The requirements to the final product are strictly predefined. Applied to the large-scale projects. The main task is predefined, but the details may advance with the time.
   c. Customer isn't sure about the requirements. Major edits are expected during the development cycle. The projects with mid or high-level risk, where it is important to prevent these risks. The new product that should be released in a few stages to have enough of client's feedback
   d. Resources with high business knowledge are available and there is a need to produce the system in a short span of time.
   e. The basic idea to provide the client with an "actual feel" of the system. Usually it is not complete and many of the details are not built.

   ii) Draw the work break down structure for conducting a national technical symposium at the University level. Identify the key activities, milestones and deliverables. [5]

2. A company decides to develop a web site, which lets people buy and sell their software applications. This company works as negotiator between buyers and sellers and takes commission for this service. The company aims to develop this as a user friendly website. Prepare Functional requirements and non-functional requirements for the above mentioned application with respect to primary and secondary stake holders of the system.

3. Giving reasons for your answer, suggest an appropriate system model for an automated ticket issuing system used by passengers at a railway station. Draw the system model with proper notations and descriptions.

4. Identify the suitable architectural styles for the following applications and describe each of the architectures highlighting their components, pros and cons.
   a. Information Systems
   b. Graphical Editors Software Design
   c. Unix shell scripts
   d. Traditional compilers
   e. File servers

5. i) Identify which of the below class structure is highly cohesive and which is less cohesive.

   a)

Staff
checkEmail( )
sendEmail( )
emailValidate( )
printLetter( )

b)

Staff
-salary -emailAddress
setSalary(newSalary) getSalary( ) setEmailAddr(newEmail) getEmailAddr( )

ii) T or F? Coupling and cohesion are closely linked in that as one increases, so does the other.

iii) Which of the property of software modularity is incorrect with respect to benefits software modularity?
a) Modules are robust
b) Module can use other modules
c) Modules Can be separately compiled and stored in a library
d) Modules are mostly dependent

iv) _____ is a measure of the degree of interdependence between modules.
a) Cohesion
b) Coupling
c) None of the mentioned
d) All of the mentioned

v) Which of the following is the best type of module coupling?
a) Control Coupling
b) Stamp Coupling
c) Data Coupling
d) Content Coupling

vi) Which of the following is the worst type of module coupling?
a) Control Coupling
b) Stamp Coupling
c) External Coupling
d) Content Coupling

vii) Which of the following is the best type of module cohesion?
a) Functional Cohesion
b) Temporal Cohesion
c) Functional Cohesion
d) Sequential Cohesion

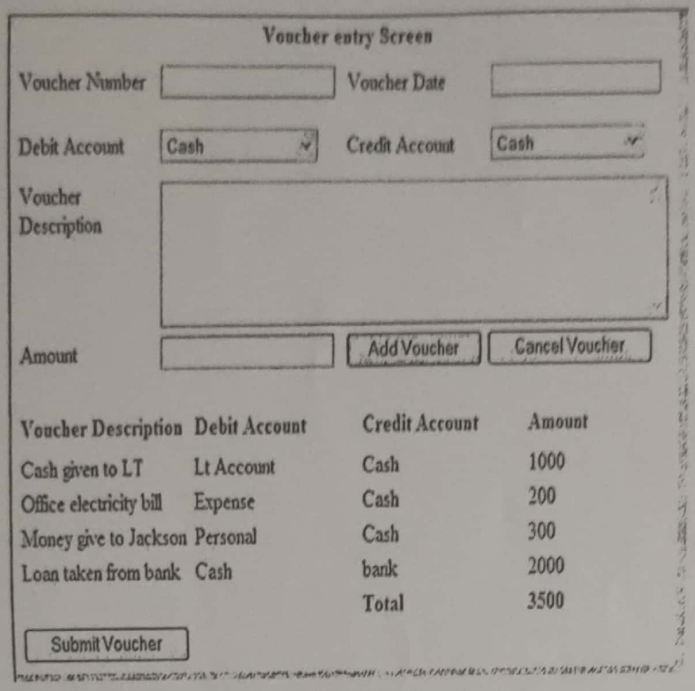
viii) In what type of coupling, the complete data structure is passed from one module to another?
a) Control Coupling
b) Stamp Coupling
c) External Coupling
d) Content Coupling

ix) If all tasks must be executed in the same time-span, what type of cohesion is being exhibited?
a) Functional Cohesion
b) Temporal Cohesion
c) Functional Cohesion
d) Sequential Cohesion

x) Structured Analysis is based on the principles of
a) Top-down decomposition approach
b) Divide and conquer principle
c) Graphical representation of results using DFDs
d) All of the mentioned

6. Draw a sequence diagram to show how the flow of the below screen will be starting from the user data entry to the data access layer.

Note: The objects to be considered for drawing the sequence diagram are Accountant, UI, Vouchers, AccountMaster, DataAccess



7. i) Discuss in brief about the process of inspection and reviews. [5]

ii) Determine the cyclomatic complexity for the following code snippet. [5]

```
IF A=10 THEN
 IF B>C THEN
  A=B
ELSE
  A=C
 ENDIF
ENDIF
PRINT A
PRINT B
PRINT C
```

8. i) Identify the type of maintenance for the following scenarios. [3]

a. The change in the government policy to use a single 'European currency'.

b. Modification in the payroll program to incorporate a new union settlement and adding a new report in the sales analysis system.

c. Code restructuring to reduce the complexity in source code and making it easier to understand.

ii) Discuss in brief on software reengineering and reverse engineering process. [7]

9. i) Illustrate about configuration management system using a flow chart. [5]

ii) List out the various KPA's (Key Process Areas) that are to be fulfilled for each level of CMM (Capability Maturity Model). [5]

10. Discuss in brief on any five case tools related to the requirements management, software testing and software configuration management.

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