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10IS81

Eighth Semester B.E. Degree Examination, June/July 2014
Software Architecture

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO question from each part.***

PART – A

1 a. With the help of next block diagram of ABC (architecture business cycle). Explain in detail the different activities which are involved in creating a software architecture. **(10 Marks)**

b. Enumerate and explain in detail, the different groups of software architectures structure are categorized into, with the help of appropriate pictorial description. **(10 Marks)**

2 a. Explain in brief about KWIC (keyword in context) with shared data solution. **(10 Marks)**

b. Explain in brief about pipes and filters style, with diagram. **(10 Marks)**

3 a. Explain what is availability? Explain general scenario for availability? **(10 Marks)**

b. What do you mean by tactics? Explain availability tactics with neat diagram. **(10 Marks)**

4 a. What do you mean by architectural pattern? How it is categorized? Explain the structure part of the solution for ISO layered architecture. **(10 Marks)**

b. Define blackboard architectural pattern? Briefly explain steps used to implement the black board pattern. **(10 Marks)**

PART – B

5 a. What do you mean by broker architecture? What are the steps involved in implementing distributed broker architecture patterns? **(10 Marks)**

b. Explain with neat diagram, the dynamic scenarios of model view controller (MVC). **(10 Marks)**

6 a. What are the steps involved in implementing the microkernel system? **(12 Marks)**

b. What are the benefits and liabilities of "Reflection architecture". Patterns? **(08 Marks)**

7 a. Discuss the five steps implementation of Master – slave – pattern. **(10 Marks)**

b. Explain in brief about variants of whole – part – design pattern, in brief. **(10 Marks)**

8 a. Briefly explain the different steps performed while designing an architecture using the ADD method. **(10 Marks)**

b. Write short notes any two of following :
   i) Forming team structures
   ii) Documenting across views
   iii) Documenting interfaces. **(10 Marks)**

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10CS82

Eighth Semester B.E. Degree Examination, June/July 2014
System Modeling and Simulation

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define system. Explain the components of a system with an example. **(10 Marks)**

b. With a neat flow diagram, explain the steps in simulation study. **(10 Marks)**

2 a. Describe queuing system with respect to arrival and service mechanisms, system capacity, queue discipline, flow diagrams of arrival and departure events. **(10 Marks)**

b. A small shop has one check out counter. Customers arrive at this checkout counter at random from 1 to 10 minutes apart. Each possible value of inter-arrival time has the same probability of occurrence equal to 0.10. Service times vary from 1 to 6 minutes with probability shown below:

Service time	1	2	3	4	5	6
Probability	0.05	0.10	0.20	0.030	0.25	0.10

Develop simulation table for 10 customers. Find: i) Average waiting time; ii) Average service time; iii) Average time, customer spends in system.
Take the random digits for arrivals as 91, 72, 15, 94, 30, 92, 75, 23, 30 and for service times are 84, 10, 74, 53, 17, 79, 91, 67, 89, 38 sequentially. **(10 Marks)**

3 a. Explain the event scheduling/time advance algorithm with an example. **(08 Marks)**

b. A company uses 6 trucks to haul manganese are from Kolar to industry. There are two loaders, to load each truck. After loading, a truck moves to the weighing scale to be weighed. The queue discipline is FIFO. When it is weighed, a truck travels to the industry and returns to the loader queue. The distribution of loading time, weighing time and travel time are as follows:

Loading time	10	5	5	10	15	10	10
Weigh time	12	12	12	16	12	16	
Travel time	60	100	40	40	80		

Calculate the total busy time of both loaders, the scale, average loader and scale utilization. Assume 5 trucks are at the loader and one is at the scale, at time "0". Stopping event time TE = 64min. **(12 Marks)**

4 a. Explain the following continuous distributions:
i) Uniform distribution
ii) Exponential distributions. **(10 Marks)**

b. Explain the characteristics of queuing system. List the different queuing notations. **(10 Marks)**

PART – B

5 a. Explain linear congruential method. Write three ways of achieving maximal period. **(05 Marks)**

b. The sequence of random numbers 0.54, 0.73, 0.98, 0.11 and 0.68 has been generated. Use Kolmogorov-Smirnov test with $\alpha = 0.05$ to determine if the hypothesis that the numbers are uniformly distributed on the interval [0, 1] can be rejected. Take $D_\alpha = 0.565$. **(05 Marks)**

c. What is acceptance-rejection technique? Generate three Poisson variates with mean $\alpha = 0.2$. The random numbers are 0.4357, 0.4146, 0.8353, 0.9952, 0.8004, 0.7945, 0.1530. **(10 Marks)**

6 a. Explain different steps in the development of a useful model of input data. **(10 Marks)**

b. Explain Chi-square goodness of fit test. Apply it to Poisson assumption with alpha = 3.64, Data size = 100. Observed frequency O_i : 12 10 19 17 10 8 7 5.5 3 3 1. Take level of significance $\alpha = 0.05$. **(10 Marks)**

7 a. Explain the types of simulation with respect to output analysis. Give examples. **(07 Marks)**

b. Briefly explain the confidence-interval estimation method. **(07 Marks)**

c. Explain output analysis for termination simulation. **(06 Marks)**

8 a. Explain with neat diagram, model building verification and validation. **(10 Marks)**

b. Explain three step approach for validation process as formulated by Nayler and Finger. **(10 Marks)**

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10CS/IS831

Eighth Semester B.E. Degree Examination, June/July 2014
Wireless Networks and Mobile Computing

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO question from each part.***

PART – A

1 a. What are the different tiers in three tier architecture? Describe the functions of these tier in mobile computing architecture. **(12 Marks)**

b. What is a context aware system? What all the types of information needed for developing context aware system? **(08 Marks)**

2 a. What is the role of AuC? What are the different algorithms used for security in GSM network? **(10 Marks)**

b. With neat figure, explain the difference between SMMT and SMMO. **(10 Marks)**

3 a. Describe applications suitable for GPRS. **(10 Marks)**

b. Explain PDP context activation with respect to GPRS networks. **(10 Marks)**

4 a. With neat figure, explain main elements of IS – 95 architecture model. **(10 Marks)**

b. What is the main objective of UMTS in third generation network? **(06 Marks)**

c. Write briefly 3G specific applications. **(04 Marks)**

PART – B

5 a. Explain the relationship between mobile IP and cellular IP. **(06 Marks)**

b. Write the differences between mobile IPV4 and mobile IPV6. **(06 Marks)**

c. What are the design constraints in applications for handheld devices? **(08 Marks)**

6 a. What are the features of palmos? Write the function of dynamic heap and multiple storage heaps in palmos. **(10 Marks)**

b. Explain symbian OS architecture. **(04 Marks)**

c. What are the different types of synchronization? Explain. **(06 Marks)**

7 a. Explain XHTML MP. How does it different from HTML? Describe the features of new XHTML version. **(08 Marks)**

b. Explain the physical and networking layer of WAP. **(08 Marks)**

c. Give the uses of WML script. **(04 Marks)**

8 a. Explain MID let life cycle? How is provisioning done in MIDP application. **(08 Marks)**

b. What is record management system in J2ME? How do you handle records in J2ME? **(06 Marks)**

c. Write short note on communication in MIDP. **(06 Marks)**

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10CS/IS834

Eighth Semester B.E. Degree Examination, June/July 2014
Network Management Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is network management? Why do we need NMS? **(05 Marks)**
b. Explain internet fabric model with a neat diagram. **(05 Marks)**
c. Explain three major groups of network management with necessary diagram. **(10 Marks)**

2 a. Discuss the information model in detail. **(12 Marks)**
b. Explain TLV encoding structure. **(04 Marks)**
c. Define the colors of a rainbow as ENUMERATED type integer. **(04 Marks)**

3 a. With a neat sketch, explain the organizational model. **(10 Marks)**
b. Explain SNMP network management architecture with a neat diagram. **(10 Marks)**

4 a. List and explain the SNMP-Base ASN.1 data type structure. **(08 Marks)**
b. Explain various SNMP operations. **(12 Marks)**

PART – B

5 a. What is remote monitoring? Explain RMON 1 groups and functions. **(10 Marks)**
b. With neat diagram, explain ATM remote monitoring. **(10 Marks)**

6 a. Write a note on virtual LAN. **(06 Marks)**
b. Briefly explain the virtual path and circuit. **(06 Marks)**
c. Explain the layered architecture of LAN emulation. **(08 Marks)**

7 a. Discuss broadband access technology **(06 Marks)**
b. With a neat diagram explain data over cable system reference architecture. **(08 Marks)**
c. Discuss protocol layer architecture in an HFC system. **(06 Marks)**

8 Write short notes on :
a. ADSL channeling and encoding schemes.
b. Fault Management
c. State transition graph model
d. Public key cryptographic communication. **(20 Marks)**

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10CS/IS835

Eighth Semester B.E. Degree Examination, June/July 2014

Information and Network Security

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Describe an EISP and its components. **(10 Marks)**
b. With a neat diagram, explain briefly the major steps in contingency planning. **(10 Marks)**

2 a. Discuss the different generations of firewalls. **(06 Marks)**
b. Explain the important points for selecting the right firewall. **(04 Marks)**
c. Explain the implementation of Virtual Private Networks (VPN) in different method. **(10 Marks)**

3 a. Explain the advantages and disadvantages of NIDPS. **(10 Marks)**
b. Describe the different IDPS detection methods. **(10 Marks)**

4 a. Explain Vernam Ciphere with an example. **(10 Marks)**
b. Discuss the tools that are used in cryprography. **(10 Marks)**

PART – B

5 a. Explain briefly OSI security architecture. **(12 Marks)**
b. Discuss the difference between Kerberos version 4 and Kerberos version 5. **(08 Marks)**

6 a. With a neat diagram, explain the overview of Kerberos. **(10 Marks)**
b. Explain the procedure along with diagram to implement confidentiality in PGP. **(10 Marks)**

7 a. Explain the architecture of the IPSec, also discuss the role of security associations. **(10 Marks)**
b. Describe how Authentication Header is implemented in Transport and Tunnel modes with a neat diagram. **(10 Marks)**

8 a. Explain session state parameters and connection state parameters in detail. **(10 Marks)**
b. Discuss the components of a SET with diagram. **(10 Marks)**

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10CS841/10IS841

Eighth Semester B.E. Degree Examination, June / July 2014
Adhoc Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Briefly explain the following networks with proper diagrams:
   i) Wireless mesh networks.
   ii) Hybrid wireless networks. **(10 Marks)**
   b. Discuss the major issues to be considered for a successful adhoc wireless internet. **(10 Marks)**

2 a. Discuss the following main issues of designing a MAC protocol:
   i) Quality of services (QOS)
   ii) Hidden and Exposed node problem. **(10 Marks)**
   b. Explain in detail the receiver initiated MAC protocol MARCH. **(10 Marks)**

3 a. Give brief explaination of Distributed Wireless Ordering Protocol (DWOP). **(10 Marks)**
   b. Describe the working mechanism of the DBTMA protocol. **(10 Marks)**

4 a. What are the characterisitcs of an ideal routing protocol for ADHOC networks? **(06 Marks)**
   b. Give the classification of routing protocols for ADHOC networks, based on the routing information update mechanism. **(06 Marks)**
   c. Explain in detail CGSR protocol. **(08 Marks)**

PART – B

5 a. Explain Zone Routing Protocol (ZRP). **(10 Marks)**
   b. Discuss the power-aware routing metrics for adhoc networks. **(10 Marks)**

6 a. Explain the issues and design goals of transport layer protocol for adhoc networks. **(10 Marks)**
   b. Illustrate the working of split TCP with a neat diagram. **(10 Marks)**

7 a. Briefly discuss the network security requirements for adhoc networks. **(05 Marks)**
   b. List the network layer attacks. **(05 Marks)**
   c. Explain the Security-aware Adhoc Routing (SAR) protocol. **(10 Marks)**

8 a. Give the layer wise classification of existing QOS solution. **(05 Marks)**
   b. Write a short note on:
   i) Hard state versus soft state resource reservation.
   ii) Cluster TDMA. **(15 Marks)**

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10CS842

Eighth Semester B.E. Degree Examination, June / July 2014
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain errors, faults and failures in the process of programming and testing with a flow diagram. **(08 Marks)**

b. Briefly explain about functional testing and structural testing. **(08 Marks)**

c. Draw the dataflow diagram for a structured triangle program implementation. **(04 Marks)**

2 a. With example, explain about boundary value analysis and mention its limitation. **(04 Marks)**

b. With neat figure, explain about i) Robustness testing ii) Worst case testing. **(06 Marks)**

c. Explain about,
   i) Strong normal equivalence class testing.
   ii) Strong Robust equivalence class testing. **(04 Marks)**

d. Write equivalence class test cases for the triangle problem. **(06 Marks)**

3 a. Write a structured triangle program draw the program graph and find the DD paths, DD path graph for the triangle program. **(08 Marks)**

b. For the program graph G(P) and a set of program variable V define the following :
   i) Defining node of variable.
   ii) Usage node of variable.
   iii) Definition use path with respect to variable.
   iv) Definition clear path with respect to variable. **(04 Marks)**

c. Explain about,
   i) du-path test coverage metrices with data flow diagram.
   ii) Style and technique to find slice of program. **(08 Marks)**

4 a. Explain about specification - based life cycle model. **(06 Marks)**

b. Briefly explain about SATM system, draw the context diagram, ER model and decomposition tree for SATM system. **(08 Marks)**

c. Explain about path-based integration. **(06 Marks)**

PART – B

5 a. Briefly explain about functional strategies for thread testing. **(10 Marks)**

b. Explain about client / server testing. **(10 Marks)**

6 a. With a neat diagram, explain the relation of verification and validation activities with respect to artifact produced in software development project. **(08 Marks)**

b. Explain the six principles that characterize various approaches and technique for analysis and testing. **(12 Marks)**

7 a. Define Scaffolding Distinguish between Generic versus specific Scaffolding briefly. **(08 Marks)**

b. Explain about:
   i) Test oracles ii) Capture and Relay iii) Test cases **(12 Marks)**

8 Write a short note on the following:

a. Quality and processes.

b. Risk planning.

c. Test and analysis strategies & plan.

d. Quality goal. **(20 Marks)**

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.