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10CS/IS81

Eighth Semester B.E. Degree Examination, June/July 2019

Software Architecture

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. With the help of a neat block diagram of Architecture Business Cycle (ABC), explain in detail the different activities which are involved in creating a Software Architecture. (10 Marks)
- b. What makes a “good” architecture? (06 Marks)
- c. With the help of diagram, list common Software Architecture structures. (04 Marks)
- 2 a. Define Architectural style. Mention any four commonly used styles. (10 Marks)
- b. State the problem of KWIC (Keyword in Context Index System), propose implicit invocation and pipe and filter styles to implement a solution for the same. (10 Marks)
- 3 a. Explain the Quality attribute scenarios for availability and modifiability. (10 Marks)
- b. Explain modifiability and performance tactics of prevent ripple effects and resource management. (10 Marks)
- 4 a. Explain the structure components and consequences of black board system. (10 Marks)
- b. Explain the dynamic scenarios and implementation details of Layer Architecture design pattern. (10 Marks)

PART – B

- 5 a. What do you mean by broker Architecture? Explain the dynamic scenarios of Broken System. (10 Marks)
- b. Explain with a neat diagram implementation details of Model View Controller (MVC). (10 Marks)
- 6 a. What is PAC (Presentation, Abstraction and Control) pattern? Explain three level structure of PAC. (10 Marks)
- b. Explain the CRC and static structure of micro Kernel system. (10 Marks)
- 7 a. Enumerate the implementation steps of reflection pattern. (10 Marks)
- b. Explain Master-Slave design pattern. (10 Marks)
- 8 a. What is Attribute-Driven Design (ADD)? Explain the steps involved in ADD. (10 Marks)
- b. What is documenting view? Explain the steps involved in documenting interfaces. (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
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. What is simulation? Explain the steps involved in simulation study along with flowchart. (10 Marks)
- b. A grocery store has one checkout counter. Customers arrive at the checkout counter at random from 1 to 8 minutes apart and each inter-arrival time has the same probability of occurrence. The service times vary from 1 to 6 minutes, with probability given below.

Service (minutes)	1	2	3	4	5	6
Probability	0.10	0.20	0.30	0.25	0.10	0.05

Simulate the arrival of 6 customers and calculate

- Average waiting time of customer
- Probability that a customer has to wait
- Probability of a server being Idle
- Average service time.

Use the following sequence of random numbers.

Random digit for Arrival	913	727	015	948	309	922
Random digit for service time	84	10	74	53	17	79

Assume that the first customer arrives at time 0. Depict the simulation in a tabular form.

(10 Marks)

- 2 a. Explain event scheduling algorithm by generating system snapshots at clock = t and clock = t₁. (05 Marks)
- b. What is world view? Explain three phases of activity scanning approach. (05 Marks)
- c. Six dump trucks are used to have coal from the entrance of a mine to a rail road. Each truck is loaded by one of the two loaders. After loading, truck immediately moves to the scale, to be weighed as soon as possible. Both the loaders and scale have first-come first-served waiting line for trucks. Travel time from a loader to scale is considered negligible. After being weighed, a truck begins travel time (during which time truck unloads) and then afterwards return to loader queue. The activities of loading, weighing and travel time are given in the following table.

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

Depict the simulation table and estimate the loader and scale utilization. Assume 5 trucks at loaders and one is at the scale, at time '0' stopping time T_E = 52 min. (10 Marks)

- 3 a. Define the following terms:
 (i) Discrete random variable (06 Marks)
 (ii) Continuous random variable (04 Marks)
 (iii) Cumulative Distribution function (10 Marks)
- b. Explain Poisson Distribution
- c. Define continuous distribution and explain uniform distribution, exponential distribution and normal distribution.
- 4 a. List out the characteristics of queuing system and explain the following :
 (i) Queue behaviour and queue discipline (10 Marks)
 (ii) Service time and service mechanism (05 Marks)
- b. Explain the Queuing Notations (05 Marks)
- c. Write a note on Networks of queues

PART – B

- 5 a. Generate the Random numbers for these values with seed = 37, constant multiplier = 7, Increment 29 and modulus = 100. (08 Marks)
- b. Differentiate between Chi-square and Kolmogrov-Smirnov test. (04 Marks)
- c. Using X_0^2 test, test for hypothesis that the data given follows uniform distribution at $\alpha = 0.05$ the critical value is 16.9

O_i	8	8	10	9	12	8	10	14	10	11
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(08 Marks)

- 6 a. Explain in detail the inverse transform technique for exponential distribution. (10 Marks)
- b. List the steps involved in the development of a useful model of input data. (04 Marks)
- c. Explain how the method of histogram can be used to identify the shape of distribution. (06 Marks)
- 7 a. Briefly explain the measures of performance of a simulation system. (10 Marks)
- b. Explain the distinction between terminating (or) transient simulation and steady state simulation. Give examples. (10 Marks)
- 8 a. Explain with a neat diagram, model building verification and validation process. (10 Marks)
- b. Describe the 3 steps approach to validation by Naylor and Finger. (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Network Management Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain data and telecommunication networks with necessary diagram. (10 Marks)
- b. What is network management? Explain three major groups of network management with neat diagram. (10 Marks)
- 2 a. Explain information model with a neat diagram. (06 Marks)
- b. Explain managed objects with reference to :
 - i) Internet perspective (10 Marks)
 - ii) OSI perspective. (04 Marks)
- c. Explain TLV encoding structure.
- 3 a. Explain two-tier, three-tier and proxy server organization model of SNMP with a neat diagram. (10 Marks)
- b. With a neat diagram, explain network management architecture of SNMP. (10 Marks)
- 4 a. Explain SNMP-Base ASN.1 datatype structure with neat diagram. (10 Marks)
- b. Explain SNMP access policies in SNMP management. (10 Marks)

PART – B

- 5 a. What is remote monitoring? Explain RMON1 groups and functions with a neat diagram. (10 Marks)
- b. What are the different possible locations to place an ATM RMON probe? Explain with diagram. (06 Marks)
- c. Explain any four advantages of remote monitoring. (04 Marks)
- 6 a. Explain virtual path–virtual circuit with example. (08 Marks)
- b. With a neat sketch, explain ATM network reference model. (06 Marks)
- c. With a neat diagram, explain the role of SNMP and ILMI in ATM management. (06 Marks)
- 7 a. With a neat diagram, explain data over cable system reference architecture. (10 Marks)
- b. Explain ADSL–channeling schemes and ADSL–encoding schemes. (10 Marks)
- 8 a. List different event correlation techniques and explain code book correlation model. (10 Marks)
- b. Explain :
 - i) Secrete key cryptography (10 Marks)
 - ii) Public key cryptography.

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Eighth Semester B.E. Degree Examination, June/July 2019
Information and Network Security

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain the elements and components of enterprise information security policy. (10 Marks)
b. What is contingency planning? Explain in detail incident response planning. (10 Marks)
- 2 a. What is firewall? Explain the packet filtering firewall. (08 Marks)
b. With a neat diagram, explain the screened subnet firewall with DMZ. (06 Marks)
c. What is VPN? Explain the tunnel mode of implementing a VPN. (06 Marks)
- 3 a. What is IDS? Explain network based intrusion detection system. Also mention its advantages and disadvantages. (08 Marks)
b. Explain the signature based IDP's method used to monitor and evaluate the network traffic. (06 Marks)
c. Explain Honey pots. (06 Marks)
- 4 a. What is cryptography? Explain the vernal cipher method used to encrypt the plaintext. Apply the same method to encrypt the plaintext COMPUTER SECURITY using one time pad INFORMATION WORLD. (08 Marks)
b. Differentiate between symmetric and asymmetric encryption. (04 Marks)
c. Explain the different categories of attacks on the cryptosystem. (08 Marks)

PART – B

- 5 a. Define a attack? Explain the different types of active and passive attacks. (07 Marks)
b. Explain the Kerberos version 4 message exchanges. (08 Marks)
c. With a neat diagram, explain the various fields of X-509 certificate format. (05 Marks)
- 6 a. With a neat diagram, explain the authentication and confidentiality services provided by PGP. (10 Marks)
b. Explain the different MIME content types. (10 Marks)
- 7 a. What is security association? Explain the different parameters associated with SA. (08 Marks)
b. Explain the anti-replay mechanism. (05 Marks)
c. Explain the format of an ESP packet in IP security. (07 Marks)
- 8 a. With a neat diagram, explain the operation of SSL record protocol. (08 Marks)
b. Explain the different participants in SET system. (06 Marks)
c. Explain the construction of dual signature in SET protocol. (06 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Adhoc Networks

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Bringout the differences between cellular networks and adhoc wireless networks. (06 Marks)
b. Explain the following with respect to issues in adhoc wireless networks: i) routing ii) security. (08 Marks)
c. Explain the major issues for a successful adhoc wireless internet with a neat diagram. (06 Marks)
- 2 a. Explain DSR protocol with respect to MAC along with its frame structure. Also mention its advantages and disadvantages. (06 Marks)
b. List the important goals to be met while designing a MAC protocol for adhoc wireless networks. (06 Marks)
c. Explain the five phase reservation protocol with its phases and frame structure. (08 Marks)
- 3 a. Describe piggy backing and scheduling table update mechanism in distributed priority scheduling with respect to MAC protocols. (10 Marks)
b. Bring out the channel classification and selection operation in the MMAC protocol. (10 Marks)
- 4 a. List out the characteristics of an ideal routing protocol for an adhoc wireless networks. (06 Marks)
b. Mention the classification of routing protocols in adhoc networks. (06 Marks)
c. Explain the route establishment in AODV routing protocol with its advantages and disadvantages. (08 Marks)

PART – B

- 5 Write a short note for the following with respect to routing protocols:
a. Zone routing protocol (06 Marks)
b. Fisheye state routing protocol (06 Marks)
c. Optimized link state routing. (08 Marks)
- 6 a. Discuss the issues in designing a transport layer protocol for adhoc wireless networks along with classification of transport layer solutions. (10 Marks)
b. Describe the major reasons behind throughput degradation that TCP faces when used in adhoc wireless networks. (10 Marks)
- 7 Write short note for the following with respect to security in adhoc wireless networks.
a. Security-aware AODV protocol. (10 Marks)
b. Key management in adhoc wireless networks. (10 Marks)
- 8 a. Describe the issues and challenges in providing QOS in adhoc wireless networks. (10 Marks)
b. Explain ticket based QOS routing protocol with an example. Mention its advantages and disadvantages. (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Software Testing

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define the following interms of software testing:
(i) Error (ii) Fault (iii) Failure (iv) Incident (v) Test case **(05 Marks)**
b. Explain functional and structural testing. **(05 Marks)**
c. Write a program for commission problem, problem statement is defined as follows:
Rifle sales person in former Arizona territory sold rifle locks, Stocks and Barrels. Locks cost \$45, Stock cost \$30, and Barrels cost \$25. Sales person had to sell at least one complete rifle per month and production limits where such that the sales person could sell in month was 70 locks, 80 stocks and 90 Barrels. At the end of the month sales person sent a very short telegram showing locks sold to indicate completion of sale. The commission is as follows : 10% upto \$1000, 15% on the next \$800 and 20% on any sales of excess of \$1800. **(10 Marks)**
- 2 a. Explain weak normal, strong normal, weak robust and strong robust equivalence class techniques by considering Nextdata function as an example with test cases for each of the above. **(10 Marks)**
b. Explain Robustness, worst case testing in the context of boundary value analysis. **(10 Marks)**
- 3 a. Write structured triangle program, draw the program graph of triangle program. **(10 Marks)**
b. Define DD-paths and find all the paths for given graph using McCabe's basis path method. [Refer Fig.Q3(b)] **(10 Marks)**

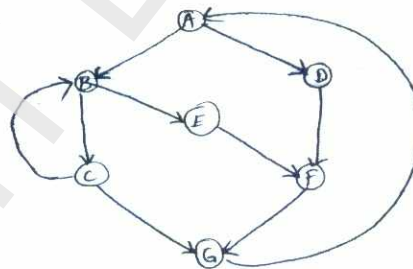


Fig.Q3(b)

- 4 a. With an example explain topdown integration and bottom up integration testing. **(10 Marks)**
b. Briefly explain about SATM system. Also draw context and ER diagram. **(10 Marks)**

PART – B

- 5 a. Explain about Client server testing. **(10 Marks)**
b. Briefly explain about functional strategies for thread testing. **(10 Marks)**
- 6 a. With neat diagram, explain validation and verification activities. **(08 Marks)**
b. Explain the basic principles process frame work. **(12 Marks)**

- 7 a. Define scaffolding, explain in detail distinguish between generic and specific scaffolding. (10 Marks)
- b. Write short note on:
(i) Test oracles
(ii) Capture and Replay (10 Marks)
- 8 Write short notes on:
a. Monitoring the process
b. Organizing the documents
c. Risk planning
d. Test and analysis reports (20 Marks)

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