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10CS/IS81

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Software Architecture

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define software architecture. With the help of a neat block diagram of ABC (Architecture Business Cycle) explain the factors that influences software architecture. (10 Marks)
- b. Explain in detail how software architecture manifests the earliest set of design decisions. (10 Marks)
- 2 a. Explain briefly the following with advantages and disadvantages:
 - (i) Data abstraction and object-oriented organization. (10 Marks)
 - (ii) Repositories. (10 Marks)
- b. State the problem of KWIC (Keyword in Context). Propose shared data and implicit invocation styles as solution to the same. (10 Marks)
- 3 a. What is availability quality attribute? Explain the availability general scenario. Also, bring out the concept of system failures. (10 Marks)
- b. What is a tactic? Explain modifiability tactics with a neat diagram. (10 Marks)
- 4 a. What do you mean by architectural pattern? How it is categorized? Also, explain the benefits of pipes and filters architectural pattern? (10 Marks)
- b. Explain in detail the implementation steps of layered architectural pattern. (10 Marks)

PART – B

- 5 a. Discuss briefly the structure of model view controller architectural pattern with neat CRC cards. (06 Marks)
- b. Illustrate the dynamic behavior of broker architectural pattern with a neat diagram that shows the interaction of brokers via bridge component. (07 Marks)
- c. Highlight on the consequences of presentation-abstraction control (PAC). (07 Marks)
- 6 a. What are the steps involved in implementing microkernel system? (12 Marks)
- b. Define reflection architectural pattern. Explain the dynamics of the same. (08 Marks)
- 7 a. Discuss the implementation steps of whole-part structure. (08 Marks)
- b. What are the benefits and liabilities of master-slave architectural pattern? (06 Marks)
- c. Define proxy architectural pattern. Explain its implementation steps. (06 Marks)
- 8 a. What are the ADD design steps? (05 Marks)
- b. What do you mean by documenting an interface? What is the suggested template for documenting interfaces? (10 Marks)
- c. List and summarize how the documentation is organized to serve a stakeholder. (05 Marks)

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.

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10CS82

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
System Modeling and Simulation

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 simulation? Explain with flowchart the steps involved in simulation study. (10 Marks)
- b. Discuss three circumstances under which simulation is the appropriate tool and two circumstances under which simulation is not the appropriate tool. (05 Marks)
- c. Discuss the types of models of a system. (05 Marks)
- 2 a. Explain the major concepts in discrete event simulation? Write flowcharts for arrival and departure events. (10 Marks)
- b. 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, a truck immediately moves to the scale to be weighed as soon as possible. Both the loaders and scale have first come first serve weighting line for trucks. Travel time from loaders to scale is considered negligible. After being weighed, a truck begins travel time (during which time truck unloads) and then afterwards returns to loader queue. The activities of loading weighing and travel time are given in the 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		

End of simulation is completion of two weighings from the scale. Depict simulation table and estimate the loader and scale utilizations. Assume that five of the trucks are at the loaders and one is at scale at the time 0. (10 Marks)

- 3 a. Explain any two discrete distributions and give equation for probability mass function. Also calculate mean and variance of same. (08 Marks)
- b. With example explain the properties of Poisson process. (06 Marks)
- c. What is Poisson process? list out the assumptions which are needed to fulfill the counting process. $\{N(t), t \geq 0\}$ is said to be poisson process with mean rate λ . (06 Marks)
- 4 a. Explain the characteristics of queuing system. List different queuing notations. (12 Marks)
- b. Explain the various steady state parameters of M/m/1 queue. (08 Marks)

PART – B

- 5 a. Explain linear congruential method. Write three ways of achieving maximal period. (05 Marks)
- b. The sequence of random number 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 $\lambda = 0.2$. 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. Records pertaining to the monthly number of Job related injuries at an underground coal mine were being studied by federal agency. The values of past 100 months are as follows :

Injuries/month	0	1	2	3	4	5	6
Frequency of occurrence	35	40	13	6	4	1	1

Apply the chi-square test to these data to test the hypothesis that the distribution is poisson with mean 1.0 and $\alpha = 0.05$ and $\chi_{0.05,3}^2 = 7.81$. (10 Marks)

- 7 a. Differentiate between terminating and steady state simulation with respect to output analysis with an example. (10 Marks)
 b. Briefly explain measure of performance of simulation system. (10 Marks)
- 8 a. Explain the components of verification and validation process. Explain with neat diagram, model building, verification and validation process. (12 Marks)
 b. With neat diagram, explain the iterative process of calibrating a model. (08 Marks)

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10CS/IS834

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Network Management System

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. What is distributed computing environment? Explain the distributed computing environment with LAN, WAN and client – server model. (10 Marks)
- b. What are the challenges of IT managers? (05 Marks)
- c. Draw a neat diagram of application – specific protocols in OSI and internet models. (05 Marks)
- 2 a. What is network management model? Write short notes about each model. (10 Marks)
- b. Explain the structure of an ASN:1 macro along an example object identity macro? (06 Marks)
- c. Draw the management information tree. (04 Marks)
- 3 a. What is organization model? Explain the different types of organization model with diagram. (08 Marks)
- b. Explain SNMP[Simple Network Management Protocol] network management architecture with a neat diagram. (07 Marks)
- c. How manager and agent communicate with each other in SNMP Network Management Architecture. (05 Marks)
- 4 a. What is managed objects? Explain the structure and macros for managed objects. (10 Marks)
- b. Define interface group – with neat diagram explain the sublayers of interface group. (10 Marks)

PART – B

- 5 a. What is remote monitoring? Explain the relationship between control and data tables with diagram. (08 Marks)
- b. Explain in detail about the RMON1 Ethernet group and function. (10 Marks)
- c. Write the difference between RMON1 and RMON2. (02 Marks)
- 6 a. What is ATM network? Explain the technology used in ATM network. (10 Marks)
- b. Explain the M₁, M₂ interface of the ATM network. (10 Marks)
- 7 a. Explain the data over cable reference architecture with diagram. (10 Marks)
- b. What is ADSL? What are the elements involved in ADSL? Explain the different types of ADSL management. (10 Marks)
- 8 a. What is rule based reasoning? Explain in detail. (10 Marks)
- b. Explain policy management architecture and service level management. (10 Marks)

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10CS842

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. What is Software testing? Explain the process involved in SDLC. (07 Marks)
 - b. Differentiate between black box testing and white box testing. (05 Marks)
 - c. With a neat diagram, explain the SATM (Simple Automated Teller Machine) system. (08 Marks)

- 2
 - a. Explain decision tables. Construct decision table of the triangle problem, it accepts three integers a, b, and c as 3 sides inputs : Equilateral , Scalene , Isosceles or not a triangle and satisfy the following conditions : $a < b + c$, $b < a + c$ and $c < a + b$. (08 Marks)
 - b. Explain Random testing with an example. (04 Marks)
 - c. Briefly explain i) Weak Normal Equivalence class testing ii) Strong Normal Equivalence class testing iii) Weak Robust Equivalence class testing iv) Strong Robust Equivalence class testing. (08 Marks)

- 3
 - a. Explain Metric based testing. (08 Marks)
 - b. Explain Slice – based testing guidelines and observations in detail. (08 Marks)
 - c. Write a short note on define/use testing. (04 Marks)

- 4
 - a. Describe Top – down and Bottom – up Integration strategies. (06 Marks)
 - b. Explain call graph based integration with the help of :
 - i) Pairwise Integration ii) Neighbourhood Integration. (06 Marks)
 - c. Explain the decomposition based integration with an example. (04 Marks)
 - d. Define Regression and Progression testing. (04 Marks)

PART – B

- 5
 - a. Define the below terms : i) Threads ii) MM – path iii) Data iv) Action v) Ports (10 Marks)
 - b. Explain different types of interactions with example. (10 Marks)

- 6
 - a. Explain in detail, Validation and Verification and their differences. (10 Marks)
 - b. Explain the dependability properties. (06 Marks)
 - c. List the goals of Quality process. (04 Marks)

- 7
 - a. Explain fault-based testing terminologies. (06 Marks)
 - b. Describe the test oracles with a neat diagram. (08 Marks)
 - c. What is Scaffolding? What purposes it serves? Explain with an example. (06 Marks)

- 8
 - a. Explain Risk Management in the quality plan. (10 Marks)
 - b. Give the standard structure of an analysis and test plan. (10 Marks)
