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15CS71

Seventh Semester B.E. Degree Examination, July/August 2021
Web Technology and Its Applications

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions.

1 a. Explain the difference between Static and Dynamic websites with a neat diagram for each. **(04 Marks)**

b. Describe the main steps in the Domain Name address resolution process. **(04 Marks)**

c. Explain the following HTML tags with examples along with their attributes:
(i) <DIV> (ii) <UL> (iii)
 (iv) <IMG> **(08 Marks)**

2 a. With an example explain the different selectors in CSS. **(08 Marks)**

b. Illustrate the CSS box model with examples for Background, Border, Margins and Padding. Be sure to label each of the components of the box. **(08 Marks)**

3 a. Explain the following form controls elements with examples.
(i) Text input controls (ii) Choice controls (iii) Button controls (iv) Date and Time controls **(08 Marks)**

b. Write an XHTML script to create a form with the following widgets:
(i) Three text boxes to collect the user name and address.
(ii) Four check coxes for different Lamp shades.
(iii) Three radio buttons for Visa, Mastercard, Discover
(iv) A submit and a reset button **(08 Marks)**

4 a. Explain the following positioning elements in CSS with examples:
(i) Relative positioning (ii) Absolute positioning (iii) Z-index (iv) Fixed positioning. **(08 Marks)**

b. Create an XHTML document that has atleast half a page of text and has a small image embedded on the left margin, and the main text flowing around the image. The image should have a caption displayed at its bottom. **(08 Marks)**

5 a. Explain the different ways in which JavaScript can be linked to an HTML page. **(04 Marks)**

b. What is a JavaScript event? Mention the various JavaScript events specified by W3C. **(04 Marks)**

c. Write a program using XHTML and JavaScript to create a document that has a small image which must appear when the mouse button is clicked at the position of the mouse cursor, regardless of the position of the cursor at that time. **(08 Marks)**

6 a. With necessary diagram explain the Document Object Model in JavaScript. **(08 Marks)**

b. With neat diagrams explain the client and server script execution. **(08 Marks)**

7 a. What are Superglobal variables in PHP? Explain the $_GET and $_POST superglobal variables with examples. **(08 Marks)**

b. Write an XHTML code to create a form that collects favorite popular songs, including the name of the song, the composer and the performing artist or group. This document must call one PHP script when the form is submitted and another to request a current list of survey results. **(08 Marks)**

8 a. Explain with examples, the process of opening, reading and writing text files in PHP. **(08 Marks)**

b. Explain the concept of Inheritance in PHP. Draw an UML class diagram showing inheritance. **(08 Marks)**

9 a. What are HTTP cookies? How do you handle them in PHP? **(08 Marks)**

b. What is Caching? Explain the two strategies used for caching web applications. **(08 Marks)**

10 a. Explain the various jQuery selectors. **(08 Marks)**

b. How do you process an XML file in JavaScript and PHP? **(08 Marks)**

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15CS72

Seventh Semester B.E. Degree Examination, July/August 2021
Advanced Computer Architectures

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. Explain the vector super computer with neat diagram. **(06 Marks)**

b. Trace out the following program to detect parallelism using Bernstein's condition

P1 : C = D × E
P2 : M = G + C
P3 : A = B + C
P4 : C = L + M
P5 : F = G ÷ F

Assume that each steps requires steps to execute and 2 address are available. Compare between sequential and parallel execution of the above program. **(06 Marks)**

c. Explain the factor which affects the performance of network. **(04 Marks)**

2 a. Explain how grain packing can be done to compute the sum of 4 elements in the resulting product matrix C = A × B what matrices A and B are order 2 × 2. **(10 Marks)**

b. Consider the execution of an direct code with 2×10^6 instructions on a 40MHz processor. The the program consists of 4 major types of instructions. The instruction mix and the number and cycle (CPI) needed for each instruction type are given below based on the result of program trace experiment.

Instruction type	CPI	Instruction mix
Arithmetic and logic	1	60%
Load/store with cache hit	2	18%
Branch	4	12%
Memory reference with cache miss	8	10%

i) Find total number of cycle required to execute the program
ii) Calculate the average CPI after the program is executed in uniprocessors
iii) Calculate MIPS Rate. **(06 Marks)**

3 a. Explain super scalar RISC processor architecture consisting of an integer unit and floating point unit with diagram. **(08 Marks)**

b. With diagram, explain memory hierarchy technology. **(08 Marks)**

4 a. Discuss and compare the characteristics of CISC and RISC Architectures. **(08 Marks)**

b. Explain with neat diagram and a Very Long Instruction Word (VLIW) processor and its pipeline operations. **(08 Marks)**

5 a. Explain set associative cache organization and discuss on its design trade off. **(08 Marks)**

b. With respect to shared memory organization, explain the memory interleaving techniques. **(08 Marks)**

6 a. Design a binary integer multiply pipe line with five stages. The first stage is for partial product generation. The last stage is a 36-bit carry look ahead Adder. The middle three stages are made 16 Carry Save Address (CSAs) of appropriate lengths
   i) Prepare a schematic design of the five stage multiply pipeline. All line width and interchange connections must be shown
   ii) Determine the maximal clock rate of the pipeline if the stage delays are $t_1 = t_2 = t_3 = t_4 = 90$ns $t_5 = 45$ns and the latch delay is 20ns.
   iii) What is the maximal through put of this pipeline in terms of the number of 36-bit results generated per second? **(08 Marks)**

b. Explain Asynchronous mode and clocking in linear pipeline processor. **(08 Marks)**

7 a. What is cache coherence problem? Explain Goodman's write once cache coherence protocol. **(08 Marks)**

b. With appropriate figure, derive a formula to find communication latency in store and forward and wormhole routing method. **(04 Marks)**

c. Explain virtual channel versus physical channel associated with message passing mechanism. **(04 Marks)**

8 a. Explain the sharing list creation and update method used in the IEEE scalable coherence interface standard. **(08 Marks)**

b. Explain the effects of using relaxed consistency memory model in scalable multiprocessor with multithreading. **(08 Marks)**

9 a. Explain the dynamic instruction scheduling using Tomasulo's algorithm. **(08 Marks)**

b. Explain with neat diagram and the major phases of parallelizing compiler. **(08 Marks)**

10 a. Explain any three methods for implementing efficient synchronization schema. **(08 Marks)**

b. Write note on :
   i) Reorder buffer
   ii) Register renaming. **(08 Marks)**

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15CS744

Seventh Semester B.E. Degree Examination, July/August 2021
Unit System Programming

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. What is the need for standardization of UNIX and C programming language? Bring out major differences between ANSI C and C++. **(08 Marks)**

b. What do you understand by the term feature test macros? Explain POSIX feature test macros. **(08 Marks)**

2 a. Differentiate between ANSI C and K & R C with examples. **(08 Marks)**

b. Explain the common characteristics of API and describe the error status codes. **(08 Marks)**

3 a. Explain the different file types available in UNIX or POSIX systems. **(08 Marks)**

b. List common set of attributes of a file with their meaning, which of these attributes can't be changed and why? List the commands needed to change the following attributes:
(i) File size
(ii) Hard link count
(iii) User ID
(iv) Last access time and modification time. **(08 Marks)**

4 a. Explain file and record locking. **(06 Marks)**

b. List the structure used to query file attributes in UNIX. Write a program in C++ to list the following file attributes of a given regular file passed as command line argument:
(i) File type
(ii) Hard link count
(iii) File size
(iv) File name. **(10 Marks)**

5 a. Write an explanatory note on environment variables. Write a C/C++ program that outputs the contents of its environment list. **(08 Marks)**

b. What is Job Control? Summarize the job control features with the help of a figure. **(08 Marks)**

6 a. Describe the UNIX Kernel support for process. Show the related data structures. **(08 Marks)**

b. Explain the following system calls:
(i) fork
(ii) vfork
(iii) exit
(iv) wait . **(08 Marks)**

7 a. What is daemon process? Explain the characteristics and coding rule for creating daemon process. Write a program to create daemon process. **(10 Marks)**

b. Explain with prototypes of KILL function, sigsetjmp and siglongjmp APIs. **(06 Marks)**

8 a. What are signals? Mention the different sources of signals. Write a program to setup signals handlers for SIGINT and SIGALARM signals. **(08 Marks)**

b. Write a short note on Error Logging facility in BSD UNIX. **(04 Marks)**

c. How sigsetimp and siglongjmp functions are differ from setjmp and longjmp functions. **(04 Marks)**

9 a. What are different system calls available to create and manipulate semaphore? **(08 Marks)**

b. What is FIFO? Explain how it is used in IPC. Discuss with an example. **(08 Marks)**

10 a. What are pipes? Explain their limitations. Explain how pipes are created and used in IPC with an example. **(08 Marks)**

b. Written program to implement popen and pclose functions and also explain their prototypes. **(08 Marks)**

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15CS754

Seventh Semester B.E. Degree Examination, July/August 2021
Storage Area Networks

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. Define Datacenter. Explain the key characteristics of Datacenter. **(05 Marks)**
b. With a neat diagram, explain how storage centric IT Architecture can overcome the limitations of severcentric IT architecture. **(05 Marks)**
c. Illustrate read and write operations in cache. **(06 Marks)**

2 a. Describe RAID levels with reference to RAID0, RAID1, RAID3 and RAID6. **(06 Marks)**
b. What is file system? Illustrate the process of mapping user files to the disk storage subsystem with an LVM. **(05 Marks)**
c. With a neat diagram, explain the types of Intelligent storage system. **(05 Marks)**

3 a. List the basic interconnectivity options that are supported by FC architecture. Explain FC-AL and FC-SW transmission in detail. **(06 Marks)**
b. Describe in detail different topologies of iSCSI connectivity. **(06 Marks)**
c. Define zoning. Explain different categories of zoning. **(04 Marks)**

4 a. Define NAS. Explain its benefits and common implementation methods. **(08 Marks)**
b. Illustrate the steps involved in storage and retrival of data objects in Object based Storage Device (OSD). **(08 Marks)**

5 a. What is Business Continuity? With a neat diagram, explain the different stages in BC planning Life cycle. **(08 Marks)**
b. With a neat diagram, explain different Backup Topologies. **(08 Marks)**

6 a. What is Local Replication? With a neat diagram, explain Host based and Network Based Local Replication. **(08 Marks)**
b. What is Data Deduplication? Explain the Data Deduplication Implementation methods for backup. **(04 Marks)**
c. Describe in detail cascade / multihop Three-site Replication methods. **(04 Marks)**

7 a. Define Cloud Computing. Explain the characteristics and benefits of Cloud Computing. **(08 Marks)**
b. Illustrate the deployment models for Cloud Infrastructure. **(08 Marks)**

8 a. List and explain different Cloud Service models. **(06 Marks)**
b. Describe in detail the layers in Cloud Computing Infrastructure. **(06 Marks)**
c. Explain different key considerations for Cloud Adoption. **(04 Marks)**

9 a. Briefly explain the different storage security domains. **(08 Marks)**
b. Illustrate the various steps in Kerberos Authorization process. **(08 Marks)**

10 a. With a neat diagram, explain Information Lifecycle Management (ILM). **(05 Marks)**
b. Explain the basic security Implementations' for IPSAN with CHAP authentication. **(05 Marks)**
c. What is the need of Storage Tiering? Explain its types. **(06 Marks)**

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15IS72

Seventh Semester B.E. Degree Examination, July/August 2021
Software Architectures and Design Pattern

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. What is design pattern? Explain design pattern with necessary elements. **(06 Marks)**
b. Explain about catalog of design pattern in detail. **(10 Marks)**

2 a. How do we describe design pattern? Explain in detail. **(06 Marks)**
b. What are different approaches to select design pattern? **(10 Marks)**

3 a. Give an overview of analysis phase. **(08 Marks)**
b. Explain domain analysis with an example. **(08 Marks)**

4 a. Describe conceptual classes and their association in to single diagram. **(12 Marks)**
b. List the activities of analysis phase. **(04 Marks)**

5 a. Discuss intent, applicability, sample code known use of the following patterns in detail:
(i) Adapter (ii) Fly weight. **(12 Marks)**
b. What is motivation for façade pattern? Explain in detail. **(04 Marks)**

6 a. Describe the Bridge Pattern with an example. **(08 Marks)**
b. Describe composite pattern and decorator pattern with example. **(08 Marks)**

7 a. What is Architectural pattern? Explain MVC architectural pattern with example. **(10 Marks)**
b. Define the issues in context of implementing undo operation. **(06 Marks)**

8 a. Explain implementation of MVC architectural pattern? Explain benefits of MVC. **(06 Marks)**
b. How to identify the classes and their responsibilities in the design of subsystem? Explain with class diagrams and identify methods. **(10 Marks)**

9 a. What are distributed systems? Explain advantages and disadvantages of distributed systems. **(08 Marks)**
b. Explain the basic architecture of client server system. **(08 Marks)**

10 a. Explain Java remote method invocation in detail. **(08 Marks)**
b. Discuss the classification of distributed systems. In the architecture of client / server systems how difficulties can be handed. Explain in detail. **(08 Marks)**

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