

**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Management and Entrepreneurship**

Time: 3 hrs.

Max. Marks:100

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

**PART - A**

- 1 a. Define Management. (02 Marks)
- b. With a neat sketch, explain the functions of Management. (12 Marks)
- c. Briefly explain the concept of Modern Management approaches. . (06 Marks)
- 2 a. Give any Four concrete reasons for the paramount importance of the planning functions. (04 Marks)
- b. Briefly explain the steps involved in planning. (06 Marks)
- c. What are the different types of decisions? Explain briefly. (10 Marks)
- 3 a. Briefly explain the principles of organization. (10 Marks)
- b. Write any four advantages of proper and efficient staffing. (04 Marks)
- c. Write short notes on the following : i) MBO ii) MBE iii) Span of control. (06 Marks)
- 4 a. With a neat sketch briefly explain Maslow's theory of motivation. (06 Marks)
- b. Define and explain the purposes of communication. (08 Marks)
- c. Briefly explain the essential of a sound control system. (06 Marks)

**PART - B**

- 5 a. Who is an Entrepreneur? (02 Marks)
- b. Briefly explain the characteristics of an Entrepreneur. (06 Marks)
- c. Explain in detail various types and functions of an Entrepreneur. (08 Marks)
- d. Distinguish between Entrepreneur and Intrapreneur. (04 Marks)
- 6 a. What is a Small – Scale Industry? (02 Marks)
- b. Briefly explain the rationale of Small – Scale Industry development in India. (08 Marks)
- c. List out the various objectives of developing small enterprises in India. (06 Marks)
- d. Explain briefly the Government support for SSI during 5 year plans. (04 Marks)
- 7 a. With a neat sketch, explain the activities of NSIC. (08 Marks)
- b. Write short notes on the following : (12 Marks)
- i) SISI ii) SIDBI iii) DIC iv) TECKSOK.
- 8 a. What are the criteria for selecting a particular project, an Entrepreneur should consider? (06 Marks)
- b. Briefly explain the importance of project identification. (06 Marks)
- c. Give the meaning of project appraisal. (02 Marks)
- d. What are the steps followed in project appraisal? (06 Marks)

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## Sixth Semester B.E. Degree Examination, June-July 2009

### Unix Systems Programming

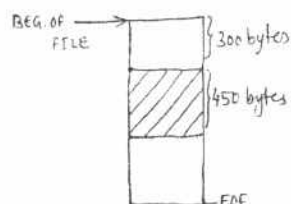
Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.  
2. Programs must be neatly documented.

#### PART – A

- 1 a. Bring out the importance of standardizing the Unix operating systems. What aspects of C programming language have been standardized in ANSIC? With suitable examples, bring out the two important differences between K and R C and ANSIC with respect to function prototyping and pointers to functions. (08 Marks)
- b. What do you understand by the term feature test macros? List all the five feature test macros along with their meanings. (06 Marks)
- c. Write a C++ program to list the actual values of the following system configuration limits on a given Unix OS.
  - i) Maximum no. of child processes that can be created.
  - ii) Maximum no. of files that can be opened simultaneously.
  - iii) Maximum no. of message queues that can be accessed. (06 Marks)
- 2 a. What are APIs? When do you use them? Why are the APIs more time consuming than the library functions? (03 Marks)
- b. What are the API common characteristics? List any four values of the global variable errno along with their meaning wherever the APIs fail. (05 Marks)
- c. List all the file attributes along with their meaning. Which of these attributes can't be changed and why? List the commands needed to change the following file attributes.
  - i) File size; ii) User ID; iii) Last access and modification time; iv) Hard link count. (05 Marks)
- d. What is an inode? Why are the inodes unique only within a file system? How does OS map the inode to its filename? Bring out the four important differences between soft and hard links. (07 Marks)
- 3 a. List the structure used to query the 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. (08 Marks)
- b. Describe the open API, clearly indicating its prototype declaration, the values the arguments take along with their meaning. Give two instances, when open API can fail. List all the access modifier flags and explain their meanings. (06 Marks)
- c. List the important uses of fcntl API. Give its prototype description. Write a C++ program to check whether the close – on – exec flag is set for a given file. If it is not set, use fcntl to set this flag. Also show the implementation of dupz macro using this API. (06 Marks)
- 4 a. Bring out the importance of locking files. What are mandatory and advisory locks? Why is advisory lock considered safe? What is the drawback of advisory lock? Explain in brief. (05 Marks)
- b. In a certain application, it is required to lock the hatched portion of the file as shown in Fig.4(b). Before locking the program must query the OS to see if some other process has locked the file. If yes, give the details of the locked portion and the PID of the process. Once the lock is obtained perform a write and unlock the file. Write a C++ program to implement this application. Assume suitable lock type. (06 Marks)



File name = "test.txt"

Fig.4(b). Region to be locked.



- c. What are the different ways in which a process can terminate? With a neat block schematic, explain how a process is launched and terminated clearly indicating the role of C – startup routine and the exit handlers. (05 Marks)
- d. With a neat diagram, explain the memory layout of a C program. In which segments are the automatic variables and dynamically created objects are stored? (04 Marks)

### PART - B

- 5 a. With a prototype description of fork, explain the special features of this API. Write a program to create a child process and print the PPID and PID in the child process. The parent process must ensure that the child doesn't become a zombie process. The parent process must wait for the child and print exit status of the child using appropriate macros. (06 Marks)
- b. Explain in brief, what happens when exec is called in a child process. List the 6 different forms of exec APIs. Write a program that execs a program echoall to display all the command line and environment variables when this program is execed in the child process space. (06 Marks)
- c. With a neat block schematic, explain the terminal login process in BSD Unix. What is a session? Explain how do you create a session using appropriate shell commands. (04 Marks)
- d. What is job control? What are the three forms of support from the OS required for job control? (04 Marks)
- 6 a. What are signals? Mention the different sources of signals. What are the three dispositions the process has when signals occur? List any four signals along with one or two line explanation. Write a program to setup signals handlers for SIGINT and SIGACARM signals. (08 Marks)
- b. Describe the API used to mask the signals. What are signal sets? List the functions that are used to manipulate the signal sets. Write a program to demonstrate the use of sigprocmask and sigpending functions. (06 Marks)
- c. What are daemon processes? Enlist their characteristics. Also write a program to transform a normal user process into a daemon process. Explain every step in the program. (06 Marks)
- 7 a. What are pipes? What are their limitations? Write a C program that sends "Hello world" message to the child process through the pipe. The child on receiving this message should display it on the standard output. (06 Marks)
- b. With a neat schematic, explain how FIFO can be used to implement client – server communication model. (04 Marks)
- c. What are the three different ways in which the client and server processes can get access to same IPc structure? List the APIs along with their argument details that are used to create, control, send and receive messages from a message queue. (07 Marks)
- d. What are semaphores? What is their purpose? List and explain the APIs used to create and control the semaphores. (03 Marks)
- 8 a. What is a socket? Describe the socket API. Write a C program to illustrate the process of creating socket, initializing the socket address structure and establishing a connection from a client to the server. Assume the server IP address as 10.10.2.5 and port number = 8000. The client after establishing a connection, should send "Hello World" message and wait for a reply. (08 Marks)
- b. What is out – of – band data? Illustrate with an example, how would you specify out – of – band data. (03 Marks)
- c. Write short notes on the following:
- i) Sigsetjmp and Siglongjmp
  - ii) Race conditions;
  - iii) Error logging facility in BSD Unix. (09 Marks)

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**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Compiler Design**

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 are the various phases of compiles? Explain each phase in detail. Write down the output of each phase for the expression “position = initial + rate\*60”. (14 Marks)
- b. Define Token, Pattern and lexeme? Explain the role of the lexical analyzer with block diagram. (06 Marks)
- 2 a. What are the Error – Recovery strategies in parsing? Explain briefly. (04 Marks)
- b. Prove that the following grammar is ambiguous for the string “if E<sub>1</sub> then if E<sub>2</sub> then S<sub>1</sub> else S<sub>2</sub>”.
- $$\begin{aligned} \text{stmt} &\rightarrow \text{if expr then stmt} \\ &\quad | \text{if expr then stmt else stmt} \\ &\quad | \text{other} \end{aligned}$$
- (04 Marks)
- c. Define context free grammar and remove the left recursion from the grammar.
- $$\begin{aligned} S &\rightarrow Aa | b \\ A &\rightarrow Ac | Sd | \epsilon \end{aligned}$$
- (04 Marks)
- d. Compute FIRST and FOLLOW for the grammar :
- $$\begin{aligned} E &\rightarrow TE^1 \\ E^1 &\rightarrow +TE^1 | \epsilon \\ T &\rightarrow FT^1 \\ T^1 &\rightarrow *FT^1 | \epsilon \\ F &\rightarrow (E) | \text{id} \end{aligned}$$
- (08 Marks)
- 3 Consider the following grammar :
- $$\begin{aligned} E &\rightarrow E + T \\ E &\rightarrow T \\ T &\rightarrow T * F \\ T &\rightarrow F \\ F &\rightarrow (E) \\ F &\rightarrow \text{id} \end{aligned}$$
- a. Construct LR(0) automation for the above grammar. (12 Marks)
- b. Show the moves of the parser for the input string id\*id (08 Marks)
- 4 a. Write an algorithm to construct canonical – LR parsing tables. (08 Marks)
- b.
- $$\begin{aligned} S^1 &\rightarrow S \\ S &\rightarrow CC \\ C &\rightarrow cC | d \end{aligned}$$
- For the given grammar find out the LR(1) items using LALR parsing method. (12 Marks)

PART – B

- 5 a. i) What is Syntax-Directed Definition? Write the Semantic-Rules for the grammar
- 1)  $L \rightarrow En$
  - 2)  $E \rightarrow E_1 + T$
  - 3)  $E \rightarrow T$
  - 4)  $T \rightarrow T_1 * F$
  - 5)  $T \rightarrow F$
  - 6)  $F \rightarrow (E)$
  - 7)  $F \rightarrow \text{digit}$
- ii) Option Annotated parse tree for  $3*5+4n$  (10 Marks)
- b. Explain the application of syntax. Directed Translation with an example. (10 Marks)
- 6 a. Obtain a directed Acyclic Graph and three address code for the expression  
 $a + a * (b - c) + (b - c) * d$  (06 Marks)
- b. Obtain the Quadraples and triples for above expression. (04 Marks)
- c. Explain briefly the translation of expression with an example. (10 Marks)
- 7 Write short notes on :
- a. Storage Organization
  - b. Activation Tree and Activation Record
  - c. Memory Manager
  - d. Performance Metrics in Garbage Collection (20 Marks)
- 8 a. Obtain the optimal machine code for the following three-address code sequences.
- |             |             |
|-------------|-------------|
| $t = a + b$ | $t = a + b$ |
| $t = t * c$ | $t = t + c$ |
| $t = t / d$ | $t = t / d$ |
- (06 Marks)
- b. What are Basic blocks and flow graphs? Write an algorithm to partitioning three-address instructions into basic blocks. (06 Marks)
- c. Mention the different types of optimization of basic blocks? Explain any two with example. (08 Marks)

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**Sixth Semester B.E. Degree Examination, June-July 2009**  
**File Structure**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1
  - a. Discuss about the Fundamental File processing operations. (10 Marks)
  - b. What are the major strengths and weakness of CD – ROM? (06 Marks)
  - c. Suppose that we want to store a file with 60,000 fixed length data records where each requires 80 bytes and records are not allowed to space two sectors, sector/track = 63 bytes per sector = 512, tracks per cylinder = 16 and average rotational delay = 6 m/s. How many cylinders are required for the file? (04 Marks)
- 2
  - a. Explain the different Record structures used in the organization of a file. (10 Marks)
  - b. Explain unix tools for sequential processing. (05 Marks)
  - c. How indexing is done that is too large to hold in the memory. (05 Marks)
- 3
  - a. Explain the advantages and disadvantages of 3 types of placement strategies. (08 Marks)
  - b. Explain the key sorting algorithm, with an example. (07 Marks)
  - c. Briefly discuss about the class Hierarchy for Record Buffer objects. (05 Marks)
- 4
  - a. Explain the model for implementing the consequential processing and its applications to general ledger program. (12 Marks)
  - b. Describe how merging is used to sort large files on the disk. (04 Marks)
  - c. Write a note on conceptual tool kit for external sorting. (04 Marks)

**PART – B**

- 5
  - a. What is multilevel indexing? Explain the concept of B – Trees in multilevel indexing with an example. (10 Marks)
  - b. Explain deletion, Merging and redistribution of elements in B – Tree. (10 Marks)
- 6
  - a. Explain the concept of indexed sequential access. (05 Marks)
  - b. Give the structure of indexed set blocks with an example. (10 Marks)
  - c. Compare and contrast the organization of B – Trees and B<sup>+</sup> Trees. (05 Marks)
- 7
  - a. What is Hashing? Explain the different Hashing functions with an example. (10 Marks)
  - b. What is collision? Explain the process of collision resolution by progressive overflow. (10 Marks)
- 8
 

Write a short notes on:

  - a. Extendible Hashing
  - b. Inverted lists
  - c. AVL Trees
  - d. K – Way Merge.

(20 Marks)

**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Computer Networks - II**

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 are datagram and virtual circuits? Distinguish between them. (10 Marks)  
 b. Consider the network in the Fig.1(b).  
 i) Use the Dijkstra Algorithm to find the set of shortest path from node 4 to other node.  
 ii) Find the set of associated routing table entries. (10 Marks)

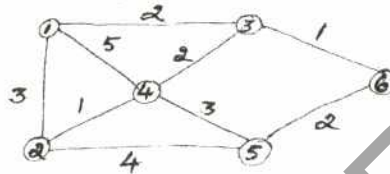


Fig.1(b)

- 2 a. With a neat diagram explain leaky bucket policy. (08 Marks)  
 b. Explain the following fields in the IP packet header.  
 i) Time to live ii) Fragment offset iii) Header checksum. (06 Marks)  
 c. A large number of consecutive IP addresses are available starting at 200.40.160.0. Suppose that 3 organizations A, B & C request 4000, 2000 and 1000 addresses respectively and in that order. For each of these, give the first IP address assigned, the last IP address assigned and the mark in the w.x.y.z/s notation. (06 Marks)
- 3 a. Explain the three way handshake for establishing a TCP connection. (08 Marks)  
 b. Explain in detail, the operation of OSPF. (12 Marks)
- 4 a. With a neat diagram explain the ATM cell header format. (08 Marks)  
 b. Write a short note on AALI. (06 Marks)  
 c. Explain the PNNI signalling with example. (06 Marks)

**PART - B**

- 5 a. Apply RSA and do the following: i) Encrypt  $a = 3$ ,  $b = 11$ ,  $x = 3$  and  $m = 9$ .  
 ii) Find the corresponding  $y$  iii) Decrypt the ciphertext. (06 Marks)  
 b. Explain in detail, any two major categories of threat to network security. (08 Marks)  
 c. Write a short note on SNMP. (06 Marks)
- 6 a. Explain the operation of fair queuing scheduler in context with packet scheduling of integrated service. (06 Marks)  
 b. Explain the various types of resource allocation schemes. (06 Marks)  
 c. Discuss the concept of tunnel and point-to-point protocol in context with UPN. (08 Marks)
- 7 a. Design a Huffman encoder for a source generating  $\{a_1, a_2, a_3, a_4, a_5, a_6, a_7\}$  and with probabilities  $\{0.05, 0.1, 0.1, 0.15, 0.05, 0.25, 0.3\}$ . (06 Marks)  
 b. Explain in brief SIP. (08 Marks)  
 c. Explain in brief the structure of a SCTP packet. (06 Marks)
- 8 a. Explain the following:  
 i) CGSR of Ad-hoc networks. ii) Types of attack in Ad-hoc networks. (10 Marks)  
 b. Briefly explain direct and multi hop routing of intracaluster routing protocol with the help of relevant diagram. (06 Marks)  
 c. Write a short note on Zigbee technology. (04 Marks)



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**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Computer Graphics and Visualization**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain the concept of pinhole camera which is an example of an imaging system. Derive the expression for angle of view. Also indicate the advantages and disadvantages of this. (10 Marks)
- b. With an aid of a functional schematic, describe graphics pipeline with major steps in the imaging process. (10 Marks)
- 2 a. Write an Open GL program for a 2 – D Sierpinski gasket using mid – point of each of triangle. Indicate the assumptions made in generating the above. (10 Marks)
- b. Briefly explain the orthographic viewing with open GL functions for 2 – D and 3 – D viewing. Indicate the significance of projection plane and the viewing point in this. (10 Marks)
- 3 a. What are the various classes of logical input devices that are supported by open GL? Explain the functionality of each of these classes. (09 Marks)
- b. Enlist the various features that a good interactive program should include. (04 Marks)
- c. Suppose that the open GL window is 500 x 500 pixels and the clipping window is a unit square with the origin at the lower left corner. Use simple XoR drawing mode to draw erasable lines using open GL code. Also elicit as to how the first end points of the object coordinates are obtained and stored. (07 Marks)
- 4 a. Explain the complete procedure of converting a world object frame into camera or eye frame, using the model view matrix. (10 Marks)
- b. With regard to modeling discuss the following:
  - i) Data structures for object representation.
  - ii) Bilinear interpolation
  - iii) Vertex arrays. (10 Marks)

**PART – B**

- 5 a. Write an OpenGL program that allows to orient the cube with one mouse button, to translate it with a second and to 200m in and out with a third. (10 Marks)
- b. What are quaternions? With illustrative example, explain how quaternions are used in rotations in a three – dimensional space. Give the mathematical representations of quaternions. (10 Marks)
- 6 a. With neat sketches, explain the various types of views that are employed in computer graphics systems. (10 Marks)
- b. Briefly discuss the following along with the functions used for the purpose in OpenGL.
  - i) Perspective projections
  - ii) Orthogonal projections. (10 Marks)
- 7 a. Explain the Phong lighting model. Indicate the advantages and disadvantages of this model. (10 Marks)
- b. What are the different methods available for shading a polygon? Briefly discuss any two of them. (10 Marks)
- 8 a. Explain the concept of polygon clipping with neat sketches. What is the necessity of it? Can we apply Cohen – Sutherland and Liang – Barsky algorithms for clipping the polygons? If so, how it is done? Explain. (10 Marks)
- b. Discuss the Bresenham's rasterization algorithm. How is it advantageous when compared to other existing methods? Describe. (10 Marks)

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**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Information Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Define Information System and information technology. (06 Marks)  
b. Describe in detail the IS framework for business professional. (06 Marks)  
c. Explain in detail the types of information systems. (08 Marks)
- 2 a. How customer focused business builds a customer value and loyalty using internet technology? Explain. (10 Marks)  
b. What is the role of IT in reengineering most business processes? Explain it with an example. (04 Marks)  
c. What is knowledge management system? How it is viewed? (06 Marks)
- 3 a. Define e-business. Explain with a neat sketch the transaction processing cycle in detail. (10 Marks)  
b. Explain the accounting information system with an example. (10 Marks)
- 4 a. Define CRM. Explain the major application clusters in CRM. (12 Marks)  
b. Define ERP. Explain the major application components of ERP system in manufacturing company. (08 Marks)

**PART – B**

- 5 a. With a neat diagram explain the essential e-Commerce process architecture in detail. (12 Marks)  
b. What are the key factors for success in e-Commerce in detail? (08 Marks)
- 6 a. Define MIS. Explain the four major reporting alternatives provided by the MIS. (08 Marks)  
b. Define DSS with an example. (04 Marks)  
c. Using DSS, Explain the 4 basic types of analytical modeling activities. (08 Marks)
- 7 a. List out the ethical guidelines provided by AITP standards for professional conduct. (08 Marks)  
b. What are the other security measures that are commonly used to protect business system and networks? Explain in detail. (10 Marks)  
c. Define computer virus and worms. (02 Marks)
- 8 a. What are the major dimensions of global e-Business technology management? Explain with a neat diagram. (12 Marks)  
b. What are the major components of information technology architecture? Explain them. (05 Marks)  
c. What are the reasons for IT failure in management? (03 Marks)

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