

II B.Tech I Semester Examinations, May/June 2012

ADVANCED DATA STRUCTURES

Common to Electronics And Computer Engineering, Computer Science And Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) State the conditions under which insertion of a vertex in a Red-Black tree will result in a sequence of recolouring steps that terminate with the root changing colour.
(b) Will the root of a Red-Black tree always be black after performing a deletion operation? Justify with an example. [8+8]
2. (a) Explain the KMP flow chart for the pattern 'ABAABA' where $\{A, B, C\}$
(b) Explain the complexity of Brute Force pattern matching algorithm. [10+6]
3. Define the abstract class for dictionary. Write the methods *find*, *insert*, *erase* used in dictionary. Explain the time complexities to perform above three operations. [16]
4. What is a Doubly linked list? Define the node structure for a doubly linked list. Write a class called **doublyLinkedList**. Implement all the methods defined for a doubly linked list. [16]
5. (a) Each class has some special member-functions, which calls can be inserted by the compiler into a code without explicit instruction of the programmer. Enumerate such functions, members and cases, when implicit calls can arise.
(b) If when creating a variable the programmer explicitly did not initialize it, in some cases, the compiler itself would give it a certain, predefined initial value, and in some cases the initial value would be unpredictable. What does it depend on? [8+8]
6. (a) Give the properties of a red black tree.
(b) Let T be a B-tree of order m and height h. Let $d = \lfloor m/2 \rfloor$ and let n be the number of elements in T
 - i. $2d^{h-1} - 1 \leq n \leq m^h - 1$
 - ii. $\log_m(n + 1) \leq h \leq \log_d((n + 1)/2) + 1$. [6+10]
7. (a) What is multilevel inheritance? Write a program to illustrate the concept of Multilevel Inheritance.
(b) What is Hybrid inheritance? Write a program to illustrate the concept of Hybrid Inheritance. [8+8]

Code No: R05210503

R05

Set No. 2

8. Write a program to read and write the employee details using files and generate the pay report of a particular employee. Assume any other data required suitably. [16]

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R05

Set No. 4

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6. (a) Give the properties of a red black tree.
(b) Let T be a B-tree of order m and height h. Let $d = \lceil m/2 \rceil$ and let n be the number of elements in T
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R05

Set No. 1

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R05

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