Code No: R05211201

R05

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, June/July-2014
ADVANCED DATA STRUCTURES AND ALGORITHMS
(Information Technology)

Time: 3 hours **Max. Marks: 80**

Answer any five questions
All questions carry equal marks

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1.a) When are copy constructors called?
b) What is Virtual Destructor?
c) What is the difference between "new" and "operator new"?
d) Define local class. Discuss about its usage.

2. Define polymorphism. How to implement run time polymorphism using virtual function? Explain with suitable example.

3.a) Write a program that reverses the order of the characters in a string.
b) Write a program named replace that takes three command-line arguments representing an input text file, a string to replace (call it from), and a replacement string (call it to). The program should write a new file to standard output with all occurrences of from replaced by to.

4.a) Define stack. Implement stack ADT using template class.
b) Write a short note on probabilistic analysis and amortized analysis.

5. Use linear probing, a hash table with b = 17 buckets, and the hash function f(k) = k% b; Start with an empty hash table and insert pairs whose keys are 7, 42, 25, 70, 14, 38, 8, 21, 34, 11. The pairs are inserted in this order.
a) Draw the hash table for each insertion.
b) What is the loading factor after last insertion?
c) What is the maximum number of buckets examined in an unsuccessful search of your table?
d) What is the maximum number of buckets examined in a successful search?

6.a) Write an algorithm for Red-Black tree insertion.
b) Explain the operation of splay trees with an example.

7. Write and explain a non recursive algorithm for post order traversal of a Binary tree with an example.

8. What are minimum cost spanning trees? What are their applications? Write a program to implement kruskals algorithm.

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