Code No: R05211201 **R05** **Set No. 2**

II B.Tech I Semester Examinations,November 2010
ADVANCED DATA STRUCTURES AND ALGORITHMS
Common to Information Technology, Computer Science And Systems Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Describe the advantages and disadvantages of partition algorithm?
   (b) Explain the BFS algorithm with an example? [8+8]
2. (a) What's the difference between public, private, and protected?
   (b) Why can't the derived class access private things from my base class?
   (c) How can we protect derived classes from breaking when we change the internal parts of the base class? [5+5+6]
3. (a) Prove that let J be a set of K Jobs Suppose without loss of generating that the jobs are numbered so that d $d_1 \leq d_2 \leq d_3 \leq$ .....d_k. Then the set J is feasible if and only if the sequence 1,2,3,.....k is feasible.
   (b) Explain the Traveling Salesperson problem by using Dynamic programming. Also analyze the time complexity of this problem. [8+8]
4. (a) Show that [f(n)] is O(f(n)) is f(n) is a positive non decreasing function that is always greater than 1.
   (b) Define Theta notation. Explain the terms involved in it with an example. [8+8]
5. (a) Why should we use iostream instead of the traditional cstdio?
   (b) Why does a program go into an infinite loop when someone enters an invalid input character?
   (c) How can we get std::cin to skip invalid input characters? [5+6+5]
6. (a) What is an AVL search tree? How do we define the height of it? Explain about the *balancefactor* associated with a node of an AVL tree.
   (b) Explain how an AVL tree can be used to sort a sequence of n elements in O (n log n) time. [8+8]
7. (a) What is the structure to represent node in a skip list. Write the constructor for skipList.
   (b) Write a method in C++ to erase a pair in the dictionary with key theKey in a skip list representation. What is the complexity of this method? [8+8]
8. (a) What do you mean by Stack unwinding?
   (b) What is the difference between const char ∗myPointer and char ∗const

(c) Define precondition and post-condition to a member function.

(d) What are the conditions that have to be met for a condition to be an invariant of the class? [4+4+4+4]

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Code No: R05211201 **R05** **Set No. 4**

II B.Tech I Semester Examinations,November 2010
ADVANCED DATA STRUCTURES AND ALGORITHMS
Common to Information Technology, Computer Science And Systems Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Why should we use iostream instead of the traditional cstdio?
   (b) Why does a program go into an infinite loop when someone enters an invalid input character?
   (c) How can we get std::cin to skip invalid input characters? [5+6+5]
2. (a) What's the difference between public, private, and protected?
   (b) Why can't the derived class access private things from my base class?
   (c) How can we protect derived classes from breaking when we change the internal parts of the base class? [5+5+6]
3. (a) What is the structure to represent node in a skip list. Write the constructor for skipList.
   (b) Write a method in C++ to erase a pair in the dictionary with key theKey in a skip list representation. What is the complexity of this method? [8+8]
4. (a) What do you mean by Stack unwinding?
   (b) What is the difference between const char ∗myPointer and char ∗const
   (c) Define precondition and post-condition to a member function.
   (d) What are the conditions that have to be met for a condition to be an invariant of the class? [4+4+4+4]
5. (a) Describe the advantages and disadvantages of partition algorithm?
   (b) Explain the BFS algorithm with an example? [8+8]
6. (a) Prove that let J be a set of K Jobs Suppose without loss of generating that the jobs are numbered so that d $d_1 \leq d_2 \leq d_3 \leq$ .....d_k. Then the set J is feasible if and only if the sequence 1,2,3,.....k is feasible.
   (b) Explain the Traveling Salesperson problem by using Dynamic programming. Also analyze the time complexity of this problem. [8+8]
7. (a) Show that [f(n)] is O(f(n)) is f(n) is a positive non decreasing function that is always greater than 1.
   (b) Define Theta notation. Explain the terms involved in it with an example. [8+8]

Code No: R05211201 **R05** **Set No. 4**

8. (a) What is an AVL search tree? How do we define the height of it? Explain about the *balancefactor* associated with a node of an AVL tree.

   (b) Explain how an AVL tree can be used to sort a sequence of n elements in O (n log n) time. [8+8]

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Code No: R05211201 **R05** **Set No. 1**

II B.Tech I Semester Examinations,November 2010
ADVANCED DATA STRUCTURES AND ALGORITHMS
Common to Information Technology, Computer Science And Systems Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is the structure to represent node in a skip list. Write the constructor for skipList.
   (b) Write a method in C++ to erase a pair in the dictionary with key theKey in a skip list representation. What is the complexity of this method? [8+8]
2. (a) What's the difference between public, private, and protected?
   (b) Why can't the derived class access private things from my base class?
   (c) How can we protect derived classes from breaking when we change the internal parts of the base class? [5+5+6]
3. (a) What do you mean by Stack unwinding?
   (b) What is the difference between const char ∗myPointer and char ∗const
   (c) Define precondition and post-condition to a member function.
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5. (a) What is an AVL search tree? How do we define the height of it? Explain about the *balancefactor* associated with a node of an AVL tree.
   (b) Explain how an AVL tree can be used to sort a sequence of n elements in O (n log n) time. [8+8]
6. (a) Prove that let J be a set of K Jobs Suppose without loss of generating that the jobs are numbered so that d $d_1 \leq d_2 \leq d_3 \leq$ .....d_k. Then the set J is feasible if and only if the sequence 1,2,3,.....k is feasible.
   (b) Explain the Traveling Salesperson problem by using Dynamic programming. Also analyze the time complexity of this problem. [8+8]
7. (a) Show that [f(n)] is O(f(n)) is f(n) is a positive non decreasing function that is always greater than 1.
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8. (a) Why should we use iostream instead of the traditional cstdio?

(b) Why does a program go into an infinite loop when someone enters an invalid input character?

(c) How can we get std::cin to skip invalid input characters? [5+6+5]

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Code No: R05211201 **R05** **Set No. 3**

II B.Tech I Semester Examinations,November 2010
ADVANCED DATA STRUCTURES AND ALGORITHMS
Common to Information Technology, Computer Science And Systems Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is the structure to represent node in a skip list. Write the constructor for skipList.
   (b) Write a method in C++ to erase a pair in the dictionary with key theKey in a skip list representation. What is the complexity of this method? [8+8]
2. (a) What is an AVL search tree? How do we define the height of it? Explain about the *balancefactor* associated with a node of an AVL tree.
   (b) Explain how an AVL tree can be used to sort a sequence of n elements in O (n log n) time. [8+8]
3. (a) Prove that let J be a set of K Jobs Suppose without loss of generating that the jobs are numbered so that d $d_1 \leq d_2 \leq d_3 \leq$ .....d_k. Then the set J is feasible if and only if the sequence 1,2,3,.....k is feasible.
   (b) Explain the Traveling Salesperson problem by using Dynamic programming. Also analyze the time complexity of this problem. [8+8]
4. (a) Show that [f(n)] is O(f(n)) is f(n) is a positive non decreasing function that is always greater than 1.
   (b) Define Theta notation. Explain the terms involved in it with an example. [8+8]
5. (a) What do you mean by Stack unwinding?
   (b) What is the difference between const char ∗myPointer and char ∗const
   (c) Define precondition and post-condition to a member function.
   (d) What are the conditions that have to be met for a condition to be an invariant of the class? [4+4+4+4]
6. (a) Why should we use iostream instead of the traditional cstdio?
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   (c) How can we get std::cin to skip invalid input characters? [5+6+5]
7. (a) Describe the advantages and disadvantages of partition algorithm?
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