

ECSE701L (Advanced Data Structures and Algorithms)

Time allowed: 1 Hr

Max. Marks: 20

Note: Attempt any four questions. Attempt questions in order given.

Q1 There has been argument that whether AVL tree or Red-Black Tree is the right fit for certain applications.

Come out with your assessment about this, after discussing the key properties and their comparison. You need to support your claim with relevant method of proof. Also, cite few examples or applications to further illustrate the fact.

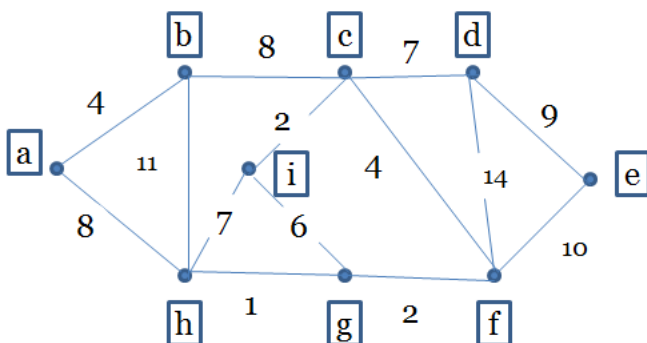
Q2. a) B+ Trees as a data structure has always been the choice of many real-life practitioners. What are the salient features of B+ Trees that make it a good data structure?

b) Given number of data records, what will be factors to decide about the actual construction of the B+ Tree. (e.g. what should be the branching factor, height etc.)

Q3. How you will plan and design the augmentation of a data structure. Discuss few points to decide about- "What additional information will be suitable and how much additional information is a right fit". Take examples to lend credibility to your statements.

Q4. Temporal data structures are proving to be a blessing for many new age applications. Take one application, you will make using temporal data structure. Design its architecture and highlight the importance of temporal data structure in your application. Why temporal data structures is the best choice for your chosen application.

Q5. Given the following graph. Apply Kruskal Algorithm to find MST using Disjoint Set or Union-Find data structure. Explain your solution Step-by-step with suitable explanation, while highlighting the beauty of Union-Find.



0	a	∅	1
1	b	∅	1
2	c	∅	1
3	d	∅	1
4	e	∅	1
5	f	∅	1
6	g	∅	1
7	h	∅	1
8	i	∅	1