

42 Lecture - CS301

Important Subjective

- 1. What is collision in hash tables?**
Answer: Collision in hash tables occurs when two or more keys hash to the same index.
- 2. How can we resolve collisions in open addressing?**
Answer: In open addressing, we resolve collisions by probing through the table and finding an empty slot to store the collided key.
- 3. What is chaining in hash tables?**
Answer: Chaining is a technique used to resolve collisions in hash tables by storing the collided keys in a linked list at the hashed index.
- 4. What is the load factor in hash tables?**
Answer: The load factor in hash tables is the ratio of the number of keys stored to the total number of slots in the hash table.
- 5. What is rehashing in hash tables?**
Answer: Rehashing is the process of increasing the size of the hash table and redistributing the keys in order to reduce the load factor and maintain $O(1)$ average time complexity.
- 6. What is the worst-case time complexity of hash table operations?**
Answer: The worst-case time complexity of hash table operations is $O(n)$, where n is the number of keys stored in the hash table, but in practice, hash tables have an average-case time complexity of $O(1)$.
- 7. What is the difference between linear probing and quadratic probing?**
Answer: Linear probing resolves collisions by probing the next slot in the table, while quadratic probing uses a quadratic function to determine the next slot to probe.
- 8. How do you calculate the load factor of a hash table?**
Answer: The load factor of a hash table is calculated by dividing the number of keys stored by the number of slots in the table.
- 9. What is the worst-case time complexity of searching in a hash table?**
Answer: The worst-case time complexity of searching in a hash table is $O(n)$, but in practice, searching has an average-case time complexity of $O(1)$.
- 10. What is a perfect hash function?**
Answer: A perfect hash function is a hash function that generates unique indices for every key, so there are no collisions.