

Mumbai Education Trust's
INSTITUTE OF ENGINEERING, NASHIK.
COMPUTER ENGINEERING DEPARTMENT

Subject : DSA

ASSIGNMENT NO – 01

Unit - I

1. What is **hashing**? Explain the **properties of good hash function** with examples.?
2. What is **Hash function**. Explain any **4 types of Hashing function** with example.
3. Explain the concept of **quadratic probing using example**. What are the advantages and disadvantages of quadratic probing over linear probing?
4. What is **collision with respect to hash function** ? What are different **collision resolution techniques**. Explain in details with example.
5. Explain **Rehashing** with suitable example.
6. Difference between 1) **Open hashing and Closed hashing**
2) **Hashing and Skip list**.
3) **Quadratic probing and Double hashing**.
7. Write a short note on **Extendible hashing**.
8. Explain about a **skip list with an example**. Give **applications of skip list**.
9. For the given set of value **35, 36, 25, 47, 2501, 129, 65, 29, 16, 14, 99**. Create a hash table with **size 15** and **resolve collision using open addressing techniques**.
10. Represent the following key in memory **using Linear probing with and without replacement**. Use **modulo 10** as your hashing function.

24, 13, 16, 15, 19, 20, 22, 14, 17, 26

11. Insert the following data in the hash table of size 10 using **linear probing with chaining without replacement** :

131, 3, 4, 21, 61, 6, 71, 8, 9

12. For the hash table size of 10 using hash function key $F(\text{key}) = \text{key} \% 10$ insert the following keys :

- 65, 75, 25, 29, 85, 39, 36. Use **linear probing with chaining without replacement**
- 25, 3, 21, 13, 1, 2, 7, 12, 4, 8 Use **linear probing with replacement**

13. Assume the **size of hash table as 8**. The hash function to be used to calculate the hash value of the data **X is : $X \% 8$** . Insert the following values in hash table: **10, 12, 20, 18, 15**. Use linear probing without replacement for handling collision.

14. Insert the following data in the **hash table of size 10**, using linear probing with chaining with replacement. **Here $h(x) = x \% 10$**

21, 35, 31, 37, 32, 33, 48

15. We have a hash table of **size 10** to store integer keys, with hash function **$h(x) = x \bmod 10$** . Construct a hash table step by step using linear probing without replacement strategy and insert elements in the order **31,3,4,21,61,6,71,8,9,25**. Calculate average number of comparisons required to search given data from hash table using linear probing without replacement.

16. Insert the following data in the hash table of **size 10** using linear probing with chaining by applying with replacement : **11, 33, 20, 88, 79, 98, 68, 44, 66, 24**. Calculate average number of comparisons required to search given data from hash table.

17. Add following keys in hash table by applying **extendible hashing mechanism**. Assume capacity of each directory to **store buckets is 3**.

Keys are 10, 20, 15, 12, 25, 30, 7, 11, 08.

***** **Best of Luck** *****