## Lecture 14-radix sort

1. What is the definition of radix according to Webster's dictionary?

a) The base of a number system

b) A sorting algorithm

c) A data structure

d) A type of computer memory

Answer: a) The base of a number system

2. What is the radix of binary numbers?

a) 10

b) 16

c) 2

d) 26

Answer: c) 2

3. What is the time complexity of radix sort?

a) O(n log n)

b) O(n^2)

c) O(n \* k)

d) O(n)

Answer: c) O(n \* k)

4. What is the basic idea behind radix sort?

a) Divide and conquer

b) Bucket sort on each digit, from least significant to most significant

c) Comparing adjacent elements

d) Partitioning around a pivot

Answer: b) Bucket sort on each digit, from least significant to most significant

5. In radix sort, how many buckets are used for a radix of R?

a) R-1

b) R

c) R+1

d) 2R

Answer: b) R

6. What is a potential problem when sorting elements with a large range?

a) The algorithm becomes unstable

b) The range (L, H) may be too large

c) It requires more comparisons

d) It cannot handle negative numbers

Answer: b) The range (L, H) may be too large

7. What is the range for sorting 4-byte unsigned integers?

a) [0, 2^16-1]

b) [0, 2^32-1]

c) [-2^31, 2^31-1]

d) [0, 2^64-1]

Answer: b) [0, 2^32-1]