



SOMAIYA
VIDYAVIHAR UNIVERSITY

K J Somaiya College of Engineering

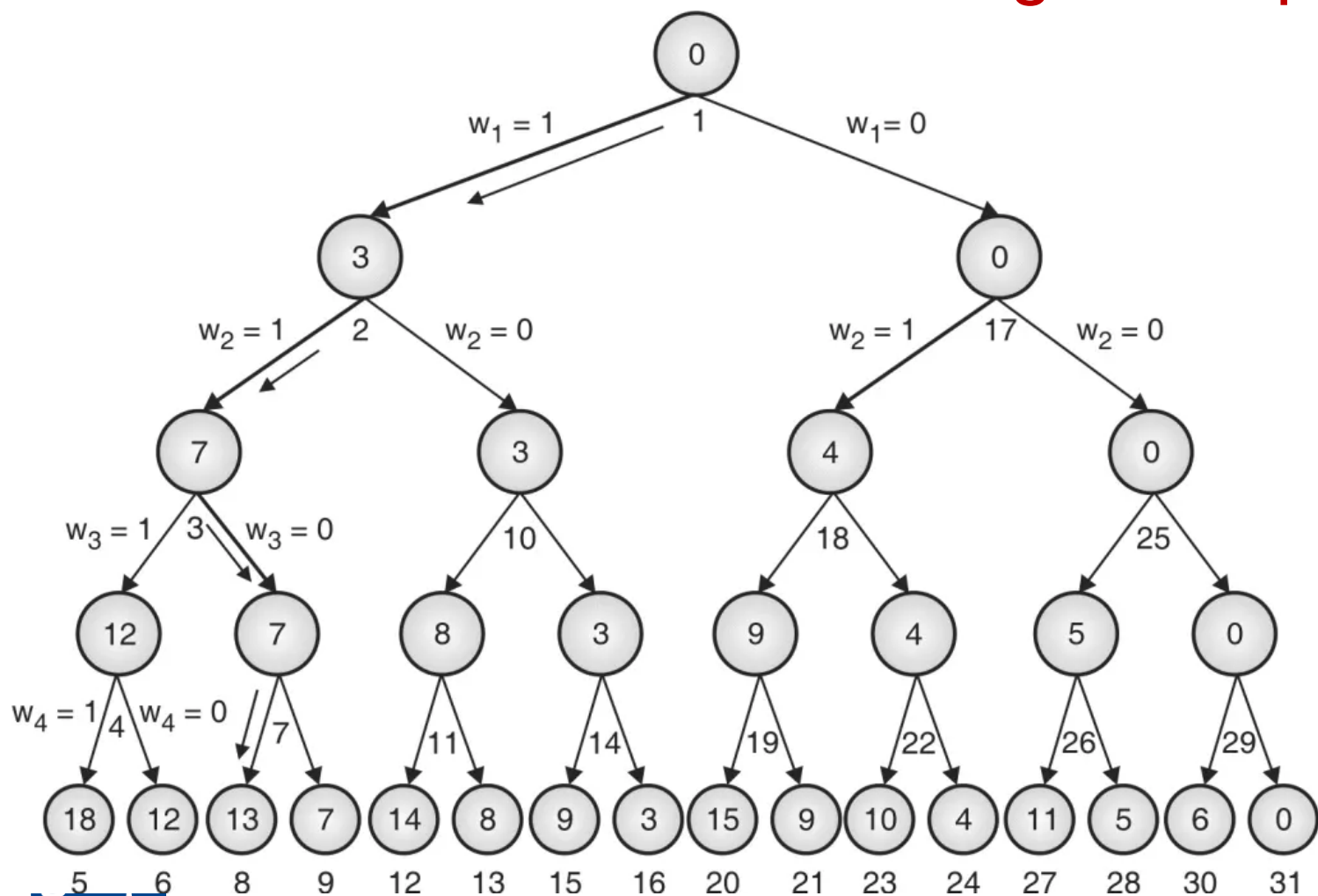
DATA STRUCTURES and applications

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Stack

- Undo operation in any application
- Browser history
- Forward back actions in web browser
- Recursion
- Function calls
- Conversion into prefix/postfix form
- Reverse strings
- Parenthesis/delimiter/ html tag check
- Postfix expression evaluation
- backtracking

Stack: Backtracking example



Queue : Simple queue

- First come first served
- OS queues: process queue, waiting queue, ready queue
- Printer/ Device queue

Queue: Circular queue

- Turn taking games
- passing pillow
- snakes and ladders*
- Antakshari
- Joseph's algorithm
- Round robin queue



Queue Priority queue

- Playlist based on certain criteria
- Emergency-non emergency queues
- Shortest job first
- Senior citizen, pregnant women in queue
- Doubly ended queue

Linked List

- Arrange cards in game
- Indexing
- Create a random playlist
- Slide show, see photo next/prev
- Chaining in hash tables
- Storing graphs
- Doubly linked list: Game play like Uno

Tree

- Family tree
- Classification tree
- Game tree
- Twitter conservation trie
- File system
- Directory structure
- Hierarchy

Graph

- Social networks
- Regions and maps representation
- Computer Networks
- Flow networks : Bandwidth, water etc
- Traffic control and navigation
- Traveling salesperson
- Time table scheduling

Hash tables

- Symbol tables
- Database storage
- File hash and searches

Set

- In the music player app to list all the songs in proper order.
- To determine the distinct values in an array.
- To detect cycles in a Linked List.
- In various database operations such as performing joins.
- To perform various operations such as union, intersection, and difference.

Map, Dictionary

- Lookup tables
- Dictionary
- Databases with key and values
- Statistics like monthly/yearly tempratures



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Thank you

