■ DSA Viva Notes – Suyash Jadhav

■ 1■■ Array Operations

Q: Array mhnje kay?
➡■ Array mhnje same type cha data ekatra store kraycha structure.
Q: Insertion kasa hota?
➡■ Position nantarche element right la shift krun new element takto.
Q: Deletion kasa hota?
➡■ Delete kelelya position nantarche element left la shift hotat.
Q: Array cha drawback kay?
➡■ Fixed size asto ani insertion/deletion la time lagto.

■ 2■■ Stack using Array

Q: Stack mhnje kay?
➡■ Stack ek linear data structure aahe je LIFO principle follow krta — Last In First Out.
Q: Stack madhe kay operation hotat?
➡■ Push (add element), Pop (remove element), Show (display stack).
Q: Stack overflow mhnje kay?
➡■ Stack full asel ani push kel tar overflow.
Q: Stack underflow mhnje kay?
➡■ Stack empty asel ani pop kel tar underflow.

■ 3■■ Infix to Postfix using Stack

Q: Infix ani Postfix mhnje kay?
➡■ Infix madhe operator middle la yeto (A+B), Postfix madhe shevti yeto (AB+).
Q: Convert ka karto infix to postfix?
➡■ Postfix evaluate karayla easy asto, brackets lagat nahi.
Q: Ya program madhe kay use kelay?
➡■ Stack use kelay operator store karayla.

■ 4■■ Queue using Array

Q: Queue mhnje kay?
➡■ Queue ek linear structure aahe je FIFO principle follow krta — First In First Out.
Q: Queue madhe kay operation astat?
➡■ Insert (enqueue) ani Delete (dequeue).
Q: Overflow kadhila hota?
➡■ Queue full asel tar.
Q: Underflow kadhila hota?
➡■ Queue empty asel tar.

■ 6■■ Linear Search

Q: Linear search mhnje kay?
➡■ Ek ek element check karto jo paryant item sapt nahi.
Q: Time complexity kay aahe?
➡■ O(n).
Q: Kadhila use karto?
➡■ Small or unsorted array madhe.

■ 7■■ Binary Search

Q: Binary search mhnje kay?
➡■ Sorted array la middle element gheun divide krun search karto.
Q: Condition kay aahe?
➡■ Array sorted pahije ascending order madhe.
Q: Time complexity kay aahe?
➡■ O(log n).

■ 8■■ Bubble Sort

Q: Bubble sort mhnje kay?
➡■ Adjacent elements compare krun swap karto jya mule biggest element last la jato.
Q: Time complexity kay?
➡■ $O(n^2)$.

■ 9■■ Selection Sort

Q: Selection sort mhnje kay?
➡■ Pratek round madhe smallest element select krun tyala correct position var takto.
Q: Time complexity kay?
➡■ $O(n^2)$.

■ ■ Insertion Sort

Q: Insertion sort mhnje kay?
➡■ Array cha pratek element la tyachya proper position var insert krto.
Q: Advantage kay?
➡■ Small dataset sathi fast kaam karto.

■ 11■■ Quick Sort

Q: Quick sort mhnje kay?
➡■ Divide and Conquer algorithm — pivot gheun array la don parts madhe divide krto ani sort krto.

Q: Average time complexity kay?
➡■ O(n log n).
Q: Worst case kadhila yeto?
➡■ Pivot smallest/large element asel tar.

■ 12■■ Merge Sort

Q: Merge sort mhnje kay?
➡■ Array la don parts madhe divide krto, donhi sort krun merge krto.
Q: Time complexity kay?
➡■ O(n log n).
Q: Stable aahe ka?
➡■ Ho, merge sort stable sorting algorithm aahe.