Incertion Sort =) Partially sorting the array Eg: 5,3,4,1,2 For every inden : Put that andox element 1St pais: 3, 5, 4, 1, 2 at the convert Poden 2nd pass: 3,4,5,,2 3rd paer: \$13,4,5,2 Indon Paul 20 Inden 2 2 2 3 3 4 Storted array Working: 01234 9×(n-2) 9>0 5,3,4,1,2 Swap 325 3,5,4,1,2 3,5,4,1,2 ) .10 2 2 445 Swap 3,4,5,1,2 Swap 1<5 3,4,1,5,2 3,1,4,5,2 1,3,4,5,2

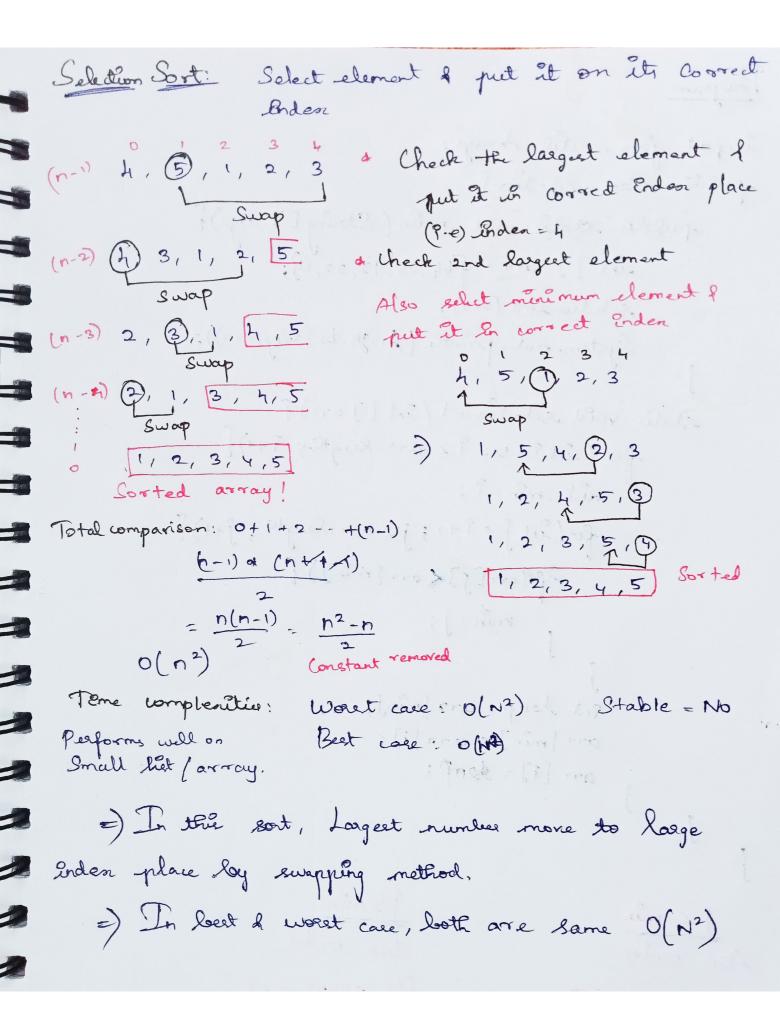
Sorted

1,3,2,4,5 2-3

1,2,3,4,5

100

Time tompleadies Bost case: Array 2 already worted 123 45 (N-1) Lineag F Worst case: Desc sorted 5 4 3 21 N(N+1) Companion  $(N-1)(N-1+1) = N^2 - N = 0 (N^2)$ (A) F Why we wee? No of swaps gudered compared to bubble sort - Adaptive: -) Used for smaller values of N Evorks good when arrowy
So parteally sorted, In Hybered Sorting algo import fava. util. Arrouge; pulolie class insectionedt ( pulolie statie void main (String [] args) { int [] arr= [3,1,4,5,2]; insertion (ason); System. out. println (Arrays. toString (arr)); state vold insertion (int[] arr) { for ( it P=0; Px arr. lingth-1; P++){ for ( int j = 1+1; j >0; j--){ L'ef Corr[j] Zarr[j-]){ et (arrig] >arr [g-1]) ind temp = ourr[j]; → [5,4,8,2,1] [1, 2, 3, 415] arr[j] = arr[j-1]; N arr [j-1] = temp; Jelse { ! } M



```
Porogram:
 import java. util. Arrays;
 public class solution?
      pulole state void main (Stoung [] args) {
            ent [] arr = {64,25,12,22,14;
            selections ort (arr);
            System. out. prontle (Arrys. to Stong (arr));
      estatic void exelectionest (int [] arr) {
          - for (int? = 0; ? L arr. length+; ?++){
               vent min = 1;
               for (ent j = 1+1; j 2 arr. leigte; j++){
                  of (arr[]] arr [min]) {
               ent temp = arr[min];
               arr [min] = arr[i];
               ara [i] - temp;
                                15 min
    1 6 min
                                Desc order
 Asc order
                                64,25,22,12,11]
 [4,12,22,25,64]
```

F

F

H

M