Machloga Sulvaish Jahlos Julia 21 Suryansh Makhloga CST SPI-1 Pseudo code for linear search 2017563 for (i=o to u) if Can: [17 = = value]

3 // element found Nowc Sche hen leitung Buble Sching. void consertion (unt au [7, unt m) Complete 184 Person o (20 (21) (120) 1) o (120) (12) · Med gartind (Description (aum-1) Suck Softers unit nous = au [n-1] Muge Sording workwhile (j>=0 +12 2 au [j] Sught) sider 8 ou [j+1] = outj]; Notwood? cui [j+1] = mth: two). | tool drups for literative f key & AliJ While (1 >= 0 and A (1) To key) A [jt J & ACJ]

Insertion soft is online sorting because it doesn't know the whole unjut, unone unjust can be inserted with the insertion sorting is running.

@ 3 Complexity

			A 8 4
Name	Best	Worst	Avelage
· Selection Sorting	0 (n2)	0 (n2)	(01 m)
· Bubble Sorting	0 (n)	0 (n2)	$0 (n^2)$
- Insertion Sorting	0(1)	(m2)	10 (n2)
· Meap Sorting	o (n logn)	o (nlogn)	o (n logn)
· Quick Soiting	o (ndogn)		o (nogn)
Meige Sorting	o (nogr	/ / / / / / / / / / / / / / / / / / /	o(ndogn)
		1-41 110 -	· W
Q4) Inplace S	orting St	table Sorting	Online Sorting
Bubble		eige Soit	Inscrition
Selection	100	Bubble	Tin C
Tusertion		Insertion	
Quick Soit		Count	· 9
Heap Soit		1449	UF (I iso
1	1013/3/1-1	011 57 1-1	11 - 1 1 - 111 - 1

Q5) juit binais

binary (vint an [], with limits, int n)

i) (x > = 1)if unid = 1 + (x - 1)/2if (and [wid] = = n)

we turn unid;

elso if (an [unid]>n)

Letur bucuy (an, d, m-1,21).

refuur binary (an junt 1, 3, 21); Setum -1; binary (unt au [] (unt l'unt a, unt u) while (d <= 1) int un = l + (1-1)/2 if (an Sun J == n) 1- moderne lagod of 10 funy sur; else if (au [un] >n) algue) and tion may elsewap total at 21 tion source 18 In whost prochisal situational april soit is the entitled of I choice of stability is important and Time complemely of binary search = 0 (logn) linear Search = 0 (n) . 6) Recuisive relation for binary recuisive search sol) - T(n) = + (n/2) +1 where t(n) is the time sequired for binary search in an away of size n. chi this case occur when the proper privat is alway expresse (sunthest or larger) recovers. This happen when single and is somether as sentile soften केंद्रा लगे १३ क्षिया कि उत्पान गांगले ता के मार्गता

int find (ACJO, n,k) Soif (A,n) for (1=0 to n-1) n= burary search (A, v, n-1, K-A[i]) return ! Jefun -1 (1 == [146] 40) Time (ouplosity = 0 (nilogn) + n. 0/logn) = 0 (n. log n) 8). Quick Soit is the fastest general purpose soit In wost practical situations, quick soit is the wethod of choice. If stability is important and Spare is available runeige soit might be best. A Pais (a[1],a[j]) is said to be unversion if a did sa Lid was In au []= 17,21,31,8,10,1,20,6,7,53 total no of vir version are 31 wing meige solt. 10) The worst case time complexuely of quick soit is o(n). This case occurs when the picked pivot is always on entreme (smallest or larged)/ element. This happens when input any is souted or reverse sorted. 7 The best and is when we select proof as a mean clement

Recurrence relation of u Merge soit = DT (n/= 2T(n/2)+4 0 0 1 I duird Soit) T(n) = 2T (n/2)+1 , Meige soit is more officient than quick soit in case of larger away size of detasets. · Worst case complemely for grack sort is o(n2) whereas o (nolog (n)) for merge sort. void stable selection (unt ay [], unt n) f for (unit i=0; i < n-1; i++) for (wit j = ifli j < n; jtt)

for (wit j = ifli j au [j])

unin = j? unt key= au [unm]; while (unm 71) f an [win] = an [vinin-1]; 3 3 au [i] = keyi Modified Bubble Soifing void bubble (int as I , int n) 13) for (int i=0; i< n; i++) { wint swaps=0

for Curt j=0 i j < n-1, $j \neq t$ $j \neq t$ Stable Schriften soit Stable selection hunt on the wife of IM 127 W = 494 + in City Mi - 1) f an Turn] = an Town -1. Trains special [1.6) a (dust 61), with 1 1 timb 1 - 0 pt 5 17 141 / Mari Liverps