K. Sai Abhinav CSE-F AP19110010339

1) #indudekstdio.h> void binary (int [], int, int, int); / t declaring two functions starting function is to soft the elements in the array #/ (1-1) [< 100; thi) 1+1) void sorting (int[] int); / * binary function is to implement binary search in away int main() pullinguests on il client a gran! int num, length, i, x, y, sum, peroduct; /+ Initialising the array and declaring variables +/ Int our (100); pointf (" finter the length of array: "); scanf ("xd", & length)); (1700 " 17 12") pointf (" Enter elements in array in: "); foor (i=0; ix length; i++) scanf ("x-d", & ara[i]); sorting (our, length); / we are calling the softing function to sort the elements in areay +) (("n/") Atriseq porintf (" Enter number to search in array (n")) Scanf ("xd", & num); binary (we, o, length, num);

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14 by using binary function we done searching
the element given by user +/
void sorting ( int ans [7, int length )/ Inside the
Int temp, i, j, sum, peraduct, x, y,
   Ron (1=0; 10 k longth; itt)
      from (5=1; jxlength; j++)
                     17) A By leting this logic w
       if (aux [i] > oor [j]) / or so withing the clemi
          temp = ans [i]; in descending order +/
         ز [ز] الانه= (ز] الانه
( colling des Ci] = timp; (b) is ( a) and (mu)
                   intralizing the consum and
  porintf(" sorted away is: \n");
   Ros(i=0; ix length; i++)
    parint f["Xd>t" agarsi))
   porintf("Enter 18t position: (n");
   Scanf (47.d", bx);
 porint ("Enty and position (20"))
    scanf ("xd", ey);
    if (2 > length If y > length)
     "pountf ("Enter, Valid porthions");
                          amin & The way
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else
                       A we are calculating sum
2
                           and peroduct of particular
  sum=009 (x) + 009 (y);
   porintf (" sum = /-d", sum); two positions in auray
  peroduct = ans[x] + ans[y];
  porint ("poroduct = xd", poroduct);
void binary (inter asu []. intx, inty, int hum)
  int mid;
   ¥(274)
    pointf (" Number is not found in agray"))
  if (ausmid) == num) are implementing binary
    pointf ("Number 18 found in agray in"); search +
  élse if (avoi[mid] >num)
     binary (aur, x, mid-1, num);
  else if (auscmid] < num)
      binony (avor, midtl, y, num);
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8) English of the soll of the control of was your day in the Many " (& many) void merge sort (Intas), intipinti) void merge (int al), int it, int je, intiz, intiz). It By using merge sout we are dividing the array into two halves we are sorting the two arrays individually */ At After completion of sorting of two arrangs we are murging the two arrays to get the sorted array +/ Ent main () still ferrior it 1' fint and sio of, n, i, k, peroduction = (bim 7000) pointf ("Enty number of elements in avoray: \n"); scont [" ",d", &n); porint ("Enter elements in assay, 4) Poorli 20; (xn) i++) (scant ("y.d", born si]); merge-sort (art, 0, 7-1); porint ("In Sorted ourray is "")) foa (1=0; (<n; 1++) porint (4 /.d/E", are (i)); gorintfluEnty the value of K less than y.d. 1, 2) 1

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scanf (4xd") & 10);
 paroduct = ars [K] + ars [n-K];
pointf! In Psoduct of two elements is x.d",
void mage sort (int ass(7), inti, inti)
  int mid;
   if (ili) " " sold it appete , she note some of in
   a mid= (iti)/2)
                           1. 10 port 1 276 36
    mesge sout (asa, i, mid);
      merge sout (arr, midtlij)
       merge (ara, i, mid, mid +1, j)
void mage (int au [], intil, intj1, int 12, int 12)
a Int temp[100] "isi, K'
   i=i1,j=1 i=i1) j=i2, K20;
   while (1<= 11 22 j<=j2)
     if lare(i) < are (j))
        temp[Kt+]= are Gi++]
         temp(K++)= ang[j++];
while (ix=ji) 2
          temp(K++) = a018 (i++7; }
    while (j<=j2){
    temp [k+t) = ans(j+t); }
69 (i=i1) j=0; & i<=j2; i+t) j++) {
              aga(i)=temp(j);3
```

3) Insertion south and selection south? (1) MEN + (1) Insertion sout is a souting algorithm where I askay is sorted by taking one element at a time. The poinciple behind the insertion soul; to take one clement, iterate through the sorted areay and find its correct position; the sorted array. Insertion array works a similar way as we arrange the deck of courds, o, si hir, if toi, I think, Miles this appears Algorithm: step 1: If the element is the first one, it is already sorted. step 2: Move to the next element. step 3; compare the gurant element with the elements in the souled array. Step 4: If the element is the sorted agay is smaller than the aurent element, Herate to the next element otherwise, shift all the greater element in the array by position towards the enight.

Step 5: Insert the value at the correct position step 6: Repeat until the complete list is sorted. As the average and worst case complexity of this algorithm are o(n2) where n is the norg elements, insertion sout is not good for large data sets. Strate, 1933 + northy, H " Selection Soutiselection sout is the most conceptually simple of all the souting algorithms. It works by selecting the smallest element of the array and placing it at the head of avaay. Then the process is repeated for the remainder of array; the next largest element is selected and put into the next slot, and so on down the line-Because a selection sout looks at parogressively smaller parts of array each time, a selection sort is slightly faster than bubble sout and can be better than a modified bubble sort.

Examples 1 Foon sorting the array 52314 first, 2 4 inserted before s, resulting in as 314 Then, 3 vi inster inserted between 2 and 5 Resulting in 23514, one is inserted at start, 12354 finally, 4 is inserted 14802 11 between 311 and 5, 18345 Time complenity: O(n2) as there are two nested loops -By adult the print of the bull of west and the feet for the season in and i the maker the control of the orid prise the rest with a son Figure 1 - Division the section of the section of the time. off in the distribution of the plant of the control of the control

of sometimes buttle so

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H) #include <stdfo. h>
                    n. . I carrolly by the As assist States
 int main() {
 int agrisso), n, i, j, temp, sum=0, peroduct=1, k;
  pointf(" Enter no of elements in everag \n")
   scanf (4xd", 2n);
                        cliften y mus - miles
   Porcizosicn; i++) ( and "our en) Hours
      i ((ii) lear "b.d", and (ii) )
                  Sylvania) ) The A yoursaid " ) thinks
   for (1=01, 1<n-1) 1++)
      for (j=0; j'xn-i-1; j'++)
      if (der G) > and C(+1)) have = fortherm
             temp = ans (j);
             angij = angijitijijin 2 uting ~124
             oussiti) = temp; (x; "how) dami
   3 3 Brian Lx got obstitute etimorism strong
   printfl "sorted arrany in ascending order is try)
   foo(i=0;i<n;i+t)
                       Co = = × X / 11/11/2/21
   porint ("xdin", are ci));

porint ("sorted areay in atemate order is m");
    food(=0) ikn ( = 1+2)
        porint [4y.d\n", ook [i]);
```

paintfl sum of all elements in odd positions ase = \015 1 100 (0 m) gast (1 1 10 100) For (i = 0; Knii = i+2) diomato 40011 util sum = sum + ars sid E paint (uy.dn), sum); (Oken "box") found prantf(" Product of all elements in even (++fi, /21, 0=1) 1. נ ("חוי מהלומס Pon(1201; (<n)1=1+2) (-1-1-12) 100) \mathcal{L} peroduct = peroduct * are lift ? pountfluxain", paroduct)s point Menter a number 15)> (1989) Sounf (4/d &K); ignot a (4) Repair point [" Elements divisible by /d are: 107, x)] fonti=6, ixnjita), ni F(097[i] x k = 20) (++ in > i (0 = i) x = porint (">d\n' arksi)); hom) + tring and well in the sound of the so (< + ; - ; j 11 5', i = = i) reseturno" 1 (17) res " 17 - 6 5 m Jening

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5) Hindudekstdioip 7 1 de line a la grand has
roid binary (int [], int, int, int);
void soonking (int[], int);
int main() {
    int nums length, it is a resident of senting
     int ass (100);
    porint ("Enter length of asiray",");
    scanf (" > d", & length) (jann -- (tom) see) Hi
    pointf ("Forter elements for assay (n");
    foor (i=0) ix length ; i++)
      Scanf (4xd", & ans (i)); [10, mont of sels
    sorting (our length) & but in contract
    ·pount ("File number to search: ");
     scanf (4 /d", brum) grant I banker 1 41 seb
     binary (aro, o, length, num),
Toid souting (int aux (), int length)
                            It has promited
I int temp, i, j;
   from (i=0; i< length; i+1)
   a fogij=1) j< length.j++)
           if (agg [i] > agg [j])
              ana [i] = ana [j);
              cange (flee
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void binary lint aros [7, sont x, sonty, int news) (Au, 11) for 3 being int mid; 14(スフソ) paint 14 Number is not found ") if (ass cmid) = = rum) (mun = = (bim) real i point ["Number is found")'s else if (ass(mid) trum) binary lara, a, mid-1, num); ison of ison win to state else if look cond] < num) many to, and ment binary (arr, mid+1, y, num); Contract State Head (Circon X4 Overoll)