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Assignment-6
                      ROLL: AP19110010224
               csE-G
Take the elements from the user and fortteen
in decending order and do a using binary
 search DASK the user to enter any 2 locations.
# include «stdio.h»
# include < stolio h >
  comparator (const void * P1, const void *P2)
  xeturn (*(int*)P2 - *(int*)P1);
 int binary seach (int arr[], int size, int Bearch)
    int beg =0, end = size-1, mid;
     while (beg <= end) {
 mid = (beg + end)/2;
  . If lange tmid ] == search) {
             seturn mid
     else if (ary (mid) < search) }
            end=mid-1;
geturn -1;
    int main()
     int arr [100], size search, i, Pos==1, loc1,
                       loc 2;
      Preintf ("In Enter the Size of the array
          (max (00)");
```

Name: - Asritha. Meka

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scanf ("-1-d", 4 size);
        prints ("In Enter elements in array (n");
for (i= 0; ix size; i++)
   Scanf (" Ld", garrein;
and the first destates to exceed any parties were
      goort (arr, size, size of (int), conparator);
 psuintf ("In the sorted asistay is: In")-
         for (1:0; 1 < size; 1++)
       $ : ( ) ( * tai) * - 31( * ai) by motors
   print f ("-cd", arr [i]);
         printf("InFinter Search element");
         scanf ("1d", Aleasich);
          pos = binary search (arr, size, search);
        if (pos==-1) pountf("Not found (n"),
        else printf / " in the 1.d search element
           is found at index 1.dln", Search, Pos);
          preint f ("enter two index es (n"),
           Scant (" . (.d. f. d", & Loc1, & loc2);
           printf("Sum is 1/d in", arrtloc1] + arr
                (local);
           print f ("product is f-din", arr [loc])*
                          arr[loca]);
    od, 12 total, in forman in 12 (poll ero
```

and the ment of the size of the

```
enter the Size of the array [max 106] 5.

Enter elements in array .5 236.9

The Sorted array is: 96532.

enter bearch element 2.

the 2 search element is found at index 4.

Enter two indexes. 12

Sum is 11

product is 30
```

```
2) sorted the array using Merge sort where
 elements are taken from the uses and find
the product of Kth elements.
 # include & stolio.h >
  # define moloo,
  int a [ms];
  void mergelintly, intul, int 12, intul)
   Intinj, K, templins)
    K=0;
                     (du & d) ) 1
     i=11;
     J= 12-
    usuile ((ix=d1) + & (ix=u2)) &
      it (a lij carj)) procesor
        temp[k] = a [i]; 1++; k++;
    (diz, 16 Bires Birn, dx)
      elses
         temp[K]: a[i]; itt; ktt.
```

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else Exampler, is , is some
while (ix=a1) }
      temp[k]=a[i]; itt; k++;
     while (j<= u2) }
       temp[K] =a(j);jtt; ktt;
  while (j'z=w) }
        terap[k]=a[j];jt+;k++;
      for (i=11, K=0; K=U2; i+++ K++) g.
 a (i) = temp(k);
      void mergesort (int lb, in tub) ¿
        if (lb <ub)
         int mid= (abtlb.)/2,
         mergesort(lb, mid);
         mergesort (midtl, ub);
         merge ( Lb, mid, mid +1, Ub);
```

```
int main() s
      int i,m, peroduct = lik;
  printf ["In Enter the size of the array
      max(100) ");
    Scant (" [d", +n);
   for (i=0; ix n; itt) & soon or soplo
      printf('a [1.d] It =", i);
      8 can f("·[d", {a[i]);
     mergesort lo, n-1);
     porintal "enter Kin");
     Scanf ( 4 1 + K); 81
      for liso; ick; ittly
         product *= a [i].
       print f ("In the product till the k.
        the element is 1.d in", peroduct);
     greturn o
output
  Enter the size of thearray 5 h
      a (0) = -
                     the product till the
       a[1]:5
                    K the element is 4
         a [2]=1
        a(3) = 55
         a[4] = 34
  Enterk 3
```

3 Dicuss in sertion sort and selection sort with examples.

insertion Sorth

An array A with n elements A[i], A[o],
A[N). is in memory. the insertion gort
algorith scans A form A[i] to P[N], insertion
each element A[K) into its proper position
in the previous sorted sub array A[i],

A(2), --- A(K-1).

Examples

array intral: 15, 19, 12, 21, 9.

pars 1: 15,19,12,21,9

P2: 12/15/19/21,8

P3: 12/15/19(21/9

P4: 9, 13, 15, 18, 21 808 ted.

coden

(1) A(10) = minium integer value

Repeat Steps 3 trough 8 for K=1,2,3,

3) Lemp = A[K]

4 ptr = K-1

(5) Repeat Steps 6 to 7 While temps A[Ptx]

6) A (ptr +1) = ASP+1)
f ptr= ptr-1 books
3 And Marie Strate Stra
(8) A(ptrti)=temp
2
9 end
time complexity.
best: O(h) average o (n2n) worst o(n2)
Selection Sorth
Selection Sorth word stouch and
the basic idea of selection sort is
repeately select the smallest key in the
and all appeared of order & District to
ex:- 15, 6,13,3.
PD r 2 15, 6, 13, 3)
P2:-2,3,15,6,13
P3!- 2,3,6,15,(3)
P4 = 2,3,6,13 (5)
P512-12,3,6, 13,15.
pseudo code.
1) small= nP(4).
@ for 1 < 2 to u to {

3. Small = AR (i), POSI

4. for 6 = 176 udod

5-17 A & (j) < Small Acm (

Small = AR (i), POS (i)

6. 3

7. 5=J+1

8. temp= AR (i), AR (i) = Small

2 witing the array using bubble sor

sorting the array using bubble sort where (i) in alternate order with million (ii) sum of elements in odd positions & product g elements. (iii) elements which are divisibly by m. # include Lstalio. B. > ... void display Altsum pro (intarr(), int 317e); int i, sum =0, product=1; printf ("Alternate elements In"); for (1>0; 1 < size; i++); If (i1.2120) \$ 2 peroduct + = arr (i) elses

Surnt = arr[i];

pount ("-/d", arrlig);

```
posints ["In sum of the odd elements:
              ol.d(n", Sum);
 printf ("In product of the even elements
             = '(.d. \n", p910 duct);
4
void divM[Intarr[], Int size) s
 porint f ( VEnter the min");
    8canf ("1.d", 4m);
pountflælements divisible by 1.d
         (m, m)
    for (1=0,11< size; 1++) f
      if (arr[i] (m==0)
     ( (i) pount f (Mide ) arr (i));
 void bubblesort (intarr(7, intsize)
   int i, j, temp;
                 Sund odd Elemin
   for (i=0; i< 3/2 e-1; i+4)
     for lj=0; jxsize-i-1; itt)
      if (arrai) > arr (iti)) }
          temps arr (i);
               arrlij = arrljtlj;
```

```
arr(j+1) = temp;
    displayalt sum paro(arr, size);
divM (arr, size);
     int main ()
        int a trtiooj, site, i;
       pouint fl'in Enter the size of the
            array (max 100)";
       Scanf ("1.1.d", & size);
  pountf ("in Enter elements in arrayin");
       for lizo; ixsize; i++) &
          3 scanf ("1-d"; + arr (i));
           if (arril) Mar: : ()
        bubble Sort (arr, size-1):
        return o;
output:
 Enter size (max 100) 5
 enter elements: 10 3 4 1 7
   Alternate elements 14
  Sumgodd elements = 5
   product = 4
   enter them
   element divisible by 2
```

write a recursive program to implement binary Search -? Codings-#Include Kstolio. hs Int binary search (intarr[], int beg, intend, int search) p int mid; if (beg = end) s mid= (begtend)/2; if (arr(mid) == search) return mid; if (arr(mid) > search) \$ return binary search lary, beg, mid-1, Seach) return binary search(arr, mid+1, end, Bearch); return -1; int main() of tariant dropped intus int arr[100], Size, Searchi, pos; printf ("In Enter the Bite of annoy (max 100)"); Scanf ["/d", 13ize); print+("In Enter Sorted elements in array (n');

```
for(i= o; i < size; i++) }
          Scanf (" fd", tarr (iT);
     pournt f ("In Enter Bearch element");
      Scanf ("l.d", & Search);
      pos=binary Search (arr, 0, size-1, Search);
      if (pos ==-1) point + ("Not foundin");
      else printf l'in the Gd Search element
          is found at index !-d in", search, pod;
   return 0, (m) (m) (m)
     output & continues
     enter the size of a seriay [max 100] 5
     enter sorted elements
       enter Search element 2 1 min 1911
      the 2 search Element is found at
      index 1 marin plane
```