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```
03/05/2029 - many to bring had 12 ming
1 Linear Search
                                 30 1 3W4
#include < stdio - h>
void Isearch (int, int, int []);
void main ()
  int no
  print ("Enty the value of n: In");
  Scarf ("-1-d", &n); n /3 whole it was
  int auch ];
  print ("Enter array values: (n");
  int di
                   Exter search value:
  for(j=0;j<n;j++)
  Scamp(".1.d", 8ant j]), when the
  printl ("Enta search value: \n");
 Scarf (".T.d 4, 8 key);
 I search (n, key, are);
void I search (int n, int key, int arr [])
{ in i;
                           alone of the t
 for ( ?= 0; i < n; i++)
   il (au [i] == key)
```

```
I d found at position: -/. d In " key,
                               August 1413.
enit (0);
                         SA SAME SALESTANIA
perint ("./-d not found.", key);
Output: It is in a water the Harry plants
Enter the value of no all the
Enter the array values:
               wellow goests was a to see
Ever search value:
                     Their walls - 1/10"
o found at position: 5 cass to a - there
               saler downed her 3" (to 1)
Enter the value of no contract
                     free yes and man
Enter array values:
Enter search value
                 and the second decorate
7 not found.
                      THE REAL PROPERTY.
                     1, 1 / 20 mil 50
```

```
2 Binary Search
                    - 41(54 m Hall ) Fill - M
Hinclude (stdio.h)
void brearch (int, int, int []);
                     interior and
void brearch (int
void " main one trieng to bung to 1. " Thing
  int key;
  printl("Enter the value of n: (n")
  Scanf (0-1-d11, Rn);
  int arz[n]; (Thudos > polite du
  printl ("Enter sorted array values: \n")
  for (j=0;j<n;j++)
  Scanf (4-1.d", & arr [i]).
  printl(" Enter search value: \n")-
  Scanf (4.1. d", & key);
  bsearch (n, key, arr);
                    in the maker not went
 Void beearch (int nint by, int are ED)
   int lb = ou
                  tives by the value of
 in ub= n-1
   int mid = (15+ub)/2;
  int pos = - 17
   while (16 <= ue)
```

```
thans sure
                                         3 · Bubble Sort
 mid = (15+ ub)/2;
                         chestic but by
                                          # include < stdio. h >
  if (an [mid] == key)
                                          void bubble sort (int n, int []);
   pos=mid+1;
                         ENT TAKENS I MAN
                                                              Symphological to. Int.
                                          void main ()
    print(".1.d found at position: olod8 14"
        key, pos);
                                            int n;
   sxit (o).
                                            printl ( " Enter the value of n: 1 n y);
 else il (key > ara [mid])
                                           San (4.1.d 4, & n);
                      1 4 3 1 4 5 T 1 1 4 8 9
                                           int arr [n];
   16 = mid + 1;
                           In The ...
                                           printl ("Enter unsorted array values: In");
 else if (key (arramid))
                  Land why 3 th Harif
  ub=mid-1;
                                           for (i=0; i<n; i++)
                                           scanf("1.1.d", Lan(: ]);
 printl (" . I d not found . ( " key);
                                           bubble sort (n, arr);
Output:
                                           void bubblesort (int n, int au [])
                                                      William is the state of the C. ?
Enter the value of n:
                                             for lint i=o; icn-1; i++)
 Enter sorted array values:
                        Enter sorted array
                                              for (int j=0:j<n-1-1:j++)
                         Values !
                                               il (arr [ ] ) sarr [ ; + 17 )
                         146
Enter search value
                         Enter search value:
                                                int t = ara [j];
5 found at position 3 10 17/1) how to
                                              are Ej7=cor [j+1]
                         7 not found.
                                               2 are G+17 = E;
```

```
march Caraly (
                 They was to be be bound to a
perint (" Sorted array in ascending order: In.).
for (int i=o; i < n; i++)
                               July 1 Riggs
print (" old It", arr (ID;
           frage & when we care to be 15000
Enter the value of n:
E ver imported array values:
94182
Sorted array in ascending order?
2 4 7 8 9 - - C. Derst, "h. " host
                     - CAKO IN I dios abillind
4. Selection Sort
#include < stdio home town and trackland on
void selectionsort (int n, int []):
                ( ++ 1 = n sign this and
void mound
  int n; the many of the deat
  print ("Enter the value of n: 1 ").
  scarl (" . 1. d ", & n);
  Put au [n];
  print (" Enter consorted array values: In ");
                                          Enter unsorted values:
```

```
for (1=0) ikn ; itt)
scanf ("1.d", & ari[i]);
                    personal of the construction
selection sort (n, arx);
void selection sort (int n, int and I)
                       yer, int the dall
  for (in i=0; i< n-1, i++)
    Port min = 1: 10 at memorals and entered it
    for line j= i+1, j< n = j++) de pro-
 il (arr [ j] < arr [min])
        in tou
        min = j;
                           James Marcall M. S.
       Processor to the makes which is secured.
  int t = are Pi7;
  arr [i] = arr [min];
  arr Emin ] =+.
print (" sorted away in ascending order: 1"
for (int i=0; i<n; i++)
print (4.1.d (+ 4, arx [i]);
Output:
                          Sorted array in asa-
Enter value of n:
                          holing order:
```

3 mg & mid & sell mark For time complexity: Implement the following in main 31/05/2024 there the I form I so it 1. Tod Topological Sort - DES to set 2 most 2 seeks want void main() Owput: Enter no. of nodes: float a; I leve thing tailing the clock_t time_reg. Enter adjacency matrix: time_reg=clock(); the second of the second 00110 Il Execution statements 2g. Linear Search Eith rough territing was 1944 time-reg = clock () - time-reg; 0000 0010 Printf ("Processor time taken: -/- f & seconds in" 60000 (float) time-reg / CLOCKS - PER-SEC); To pologically sorted array is: 1 H 0 3 2 payment between the party Fox linear yearch. Processor time taken: 0.000 170 seconds 2. GCD - Recursive 1 / 120 - 1 Hall Marchard Care Co. Ewar two numbers to calculate gcd: Jan Justo = 517 Agen For I want NO Result - 2 must 1" sorted assess in asserbangalond in take thing which what 3. Towa of Handi (++) (was just to black Enter no of discs. T. (Lake , " +2 6-1-") H. +0" Move disc I from s to d The standard of the standard Mare 2 from s to 2 Move disc & from d to t More disc 3 from S to d

```
Move disc & from t to s
Mone disc 2 from t to d
                        . I haripeland so
 hove disc 1 from s to d
4. Topological sort-Source removal
 Owput:
 Enter no of nodes:
 Enter adjacency matrix:
                              1,000 0 0 8
               is parent person along of
Topologically sorted array is:
 14032
        the production of exchange part year of
5- Lomuto partition
 Enter no of elements;
 First array elements:
4 1 10 8 7 12 9 2 15
                           with he we went
Fotos Enter value of k:
                   had spend track and
Remed: 7
                     if the sample is and
                   to at the said of the said
```

A AT 1 HARD, I STOP WITH

```
07-06-2024 July to the Company him
1. Merge Sort
 #include <stdio.h>
                         (April 5 most) fi
 void simplemerox (int [], int, int, int);
void mergesort (int [], int, int);
 Int cliool; China, and a production
              claped 1 + bin , of thoughton
 Void many ()
            The phone is go to it is still being
int to n, low, high;
printf ("Eater the no. of elements: \n").
 Scarp (".1.d", & a) on wil gramalynia hor
 int a Cont; Capid Lin
 low=0;
 high = n-1;
                       10-3-4 CASA = 20
print (" Enter the unsorted array values in 4).
for (Int i= 0; Kn; i++) The applient that
 Scanf (4.1.d4, Sacil); St himes is chard
perints (" Sorted elements are = (n 7) -
merguort (a, low, high);
for (in i=0; i<n; i++5" 10 = [ - 12/3
  print (4.10 (+11, a (1)).
                     Int Just 1 - 1 18
```

```
Void mergerort (int all, int low, int high)
   int mid;
   If (low < high)
       . (to this this I tail appropriate high
     mid = (1000 + high) /2300 + 1000
     mergesort (a, low, mid); . I on 10 bit
    merges oft (a, mid+1, high);
   Simplemerge (9, low, mid, high).
                        · Frid and not the
    · ( not stands from the about ) thing
void simplemerge (int a [], int low, int mid,
                 int high)
   int i= low, k= o,d;
· I de mid + 1,500 cas To the en it at it if the
  int n=high + 1; 1 ++1 N m = 1 will be
  while (i <= mid && jk=high)
   if (a [i] <a[j])
                     الاعمداد (۵, الاس الم
      c[k++]=a[i++];
                While the sale of the wind
     c[k++]=a[j++];
```

```
while (i <= mid)
                 C[k++]=a[i++]; -- 1 - 1 - 1 - 1 - 1 - 1 - 1
   while (j <= high)
           C[k++]= a[j++];
       for lint i=low; i<n; i++)
           وجرسالا ("لا ينظم الألم المنطوط المنطوع المنطو
                a [i] = c [i-low];
                                                                                       18 7 . D. M. 1. 1 June 7
   Output:
   Enter no of dements of male land of the
                                                                                               Lorence F ( A , Come, and b) ,
     Enter unsorted array values:
   8 6 2 4 3 1 75
   Sorted elements care: To the best party
    123456
2. Quick Cort to 17 at 1 and my
# include < stdio. h>
  int part tion (int [], int, int);
void quicksort (int [], int, int);
void main () ( to be and it can be as
```

and replan is the spain

Void mergesort (int all, int low, int high) some agreed ! timbule 28th . A. int mid: is it simplements list [] int in int); If (low < high) mid = (10,00 + high) /2 3 i) troughton bior mergesort o(a, low, mid); . Low 70 lat merges ort (a, mid+1, high); Simplemerge (a, low, mid, high); Loud to 11. band bright print (Enla the way should ! in!) void simplemerge (int a [], int low, int mid, int high) int i= low, k= o, d; · J= mid + 1/5 cours has ween with ret. 7 1 print int n=high + 1; (++1,10>1,0=1 tol) 14 while (i <= mid && jk=high) il (ari] catil) "c[k++]=a[++];

while (ic=mid) C[k++]=a[++]; with 10 w white") having while (j <= high) 10 - cod C[k++]= ag++]; 1 . n . Spiel for lint i=las; i<n; i++) Elipsimilar graces empored at min I'l their a (i) = c (i-low); (277 D. 1. 6-1.) puns ? Output: Enter no. of elements of the later of the strange (deal, wat a law, may b) Enter uncorted array values: 8 6 2 4 3 1 75 11 (11 3/13) 1 1/11/11 Sorted elements cord: To . " +1 hale ! kearly 2. Quick Sort - Land 27 & to breaking berry # include (stdio.h) int partition (int [], int, int); void quicksort (int [3, int, int):

```
ind 11, 10w, high;
print ("Enter no of elements ("");
Scamp (4.1.d4, &n);
                                              int partition (int alle, int low, int high)
int a[n];
low = 0;
                                                 int i= low;
high = n - 1;
                                                In j= high+1;
                                                int pivot = a [low];
print ("Enter the unsorted array values: (n").
                                                while (i<=j)
for (int i=o; i < n; i++)
   scanf (".1.d", & a [ i ]);
                                                    i= i+1:
                                                  I while (atiJ<pivot 88 iz=high);
                                       brighe
 printy ("Sorted elements are 2/4").
 quicksort (a, low, high);
                                                  9-9-13
                   enter person between white
for (int i=0; i < n; i++),
                                                fushile (a[j]>pivot 88 i>= ww);
   painty (4-1-d 1+4, a [i]); dumes hors
                                                if (ici)
                                                  int t=arij;
                                                  a [ i] = a [ i];
void quicksort (int a [], in low, int high)
                                                  a [j]=t;
    int mid;
                                               int k = a Clow];
    if (law < high)
                                               aclow] = acj ];
                     THE WILLIAM IS THE
                                               acj]=kj
      mid = partition (a, low, high);
     quicksort (a, law, mid-1);
                                                return di
      quickent (a, mid+1, brigh);
```

Output: 13-06-2024 Enter no of elements: 1. Warshall Algerithm: Enter ungotted array values: # include < Stdio. hy 76942 void warshall (int [][100], int); Started elements are: void main () 24679 Carrier and the second Ent nj pring ("Enter the no. of vertices: In "); scanf (".1.d", &n); print((" Enter the adjacency meetrix: In"); eldped of 28 recognition) line of int a [100] [100]; for (int :=0; i<n; i++) 1 6 6 for (int jeo; j < n; j++) Emart 88 angel 570) Nowi Sconf("1.d", &alit, D; printy (Path Manix 4: 15) JOVA- LAR washall (a,n); void warshall (int a [] [100], int n) int P[n][n]; int hijiki for (ind is of is no ital)

```
for (j=0; j<n; j++)
                              in planting
  PCIJE; J=aCiJEjJ;
                                         4
              of Chin Cont In I am " Harton Land
for (k=0; k<n; k++)
                                 n No.
  for (i=0, i (no i+t))
                        tool "he James
   for G=ojknjjth
                principle of the principle
                         [Paritical A tal 6 0 0 0
    il ((P[i][j]==0 88 (P[i][k]==1 88
       P[6][j]==1))
     PCiJCjJ=1;
              F (Ilas "5,1") -02
for (i=0; ich; i++) were from the of the
                        · (n. n) shakes
 for 8 = 0, jen , j++)
   prints ("-/d\e", P[:][;]);
                         TAILOLY WAR
print( ( 1 n 1).
                            18 16 1 W
                   (min to still and their self
                                         Est contline and whom
```

```
Output:
Enter the no-of vertices:
                     Carley Brander
Enter the adjacency matrix:
                police making minimary for in
Path matin is: Jan 15 15 15 16 should be
                                 ide poi sol
2. Floyds algorithm
 # include (stdio-h)
void floyds (int [][100], int);
int min (int, int); [ ] [ ] [ ] [ ] [ ] [ ]
 void main ()
  gnt no
 print ("Enter no-of vertices: In").
 scan (".1.d", & w);
 print ("Enter the cost adjacency matrix: 14")-
 int a [100][100];
 for (int 100; Kn; +4)
```

```
for (int j=ojj <n;j++)
   Scanf ("1-1.d", &a[i](j);
                                      for (1=0; Kh; 1++)
printl ("Distance Matrix is: In"):
                                                print("1-d +", D[: ][; ]);
floyds (a, n);
                                              prints (" \n");
void floyds (int al][100] int n)
  int D[n][n];
                                             int min (int a , int b).
  Put isjok;
 for (i=oji(n;i++)
                                               il (a < = b)
                          adding a south
                                                seturn a,
  for (j=0;j<n;j++)
                                               else
                                                return 53
    D [ ; ] [ j ] = a [ ; ][ j ];
                                Comment will
                                             Output:
                                             Senter no of vertices:
for (k=0; k<n; k++
                                             fuller the cost odjacency matrix:
 for (i=o; Kn; i++)
                                                    999 999
  for(j=0;j<n;j++)
  DE: JEJ J= min(DE: ] EJ J, (DB ] CHJ + D[LJ G]
```

```
Distance matrix
                                                 printy (" (n")-
                                                 void print All Permutations (int o)
    16 10 0
                                                   for (int i=0, i < n; i++)
                                                   PC: ] = 1;
3. Johnson Torther
                                         Poplar
                                                oliv [i]=-1:
# include cstdio. hy
#include < stabout - h>
                                                 prime Permutation (n);
#include (stallib.h)
                                                 Put mobile, mobileladore;
# define MAXN 20
                                                 bool found;
Int p [MAXN];
                                                while (1)
                                        2000
int pi [maxN];
int der [MA XN].
                                                 mobile = -1.
void swap (int xa, rut xb)
                                                 found = false;
find temp = xa;
                                                  for (in 100; icn; i++) // finding larger mobile
                                                   i'nt west = i + dir [i];
  * b = temp; the was one. has
                                                   if (next >= 0 & 8 ment (n & 8 pr. J> privert ])
                                                     if (p[i] > mobile)
  forline i=o; icn; i++)
                                                       mobile = pCij.
                                                       Plil = mobilinden : i.
    printy ("-1-d", P[i]);
                                                      found = true; 333
```

```
print All Permutations (1);
                                               return o;
    break;
Merinting west permutation
                                              Enter the value of n (mon 201:3
                                               Output:
int next = mobile Index + dir Emobile Index J.
Swap ( &p [mobile Index], &p [next]);
Swap ( & pi [ p [ mobile Indus]], &pi [ p [ news ]]).
Swap (& dis Emobile Indese 7, & dis Eners I);
pent Permutation (n)
// Reverse direction of all dements larger than mobile
                                              4 knapsack Problem
for (intizo; icn sitt)
                                              #include < std10- h>
    of (pCiJs mobile)
                                              int man (int a, int b)
      dis [1] = - 1;
                                                 verum (a>b) ja:b;
                                               int knapsack (int W, int W+[], i'm val[], int n)
                                                  int I, we .
                                                 int K [n+1][ W+1]:
  scarif (" Enter the scalue of n (men 20).")
                                                 for (i=0; i<=n; i++)
                                                  for (w=0; w <= Wjw++)
   if(n >MAXN IIn < 1)
    Prints (" Invalid Input - 14").
                                                   if (i==0 1w==0) =
    return 1;
                                                       KCIJ [w] = 0;
```

```
M 3 = > ( 1 - 1 ) ( = (3 W)
  K[i][w]: man (val [i-i] + K[i-i][w-
                                    Kri-IJCwIJ
else
 KEIJLWJ = K[1-1][W]
 return K [n][N].
   printy ( " Enou the word items: 144).
  Seanf (1.1.d4, &n);
  Put wt Luoj;
  for val [100];
  int W= 10;
 painty ("But the weight of each item and its corresponding value: 144).
for (in 1=0;1'ch;1++)
   seam (".1.d.1.d", &wtC:7, &valCiJ);
printle ("Mann num value that can be obtained is . I.d 1 n ", knapsack (W, wt, val, n));
 Yetum O;
```

Cutput:

Tutu no.of items:

3

Sutu the weight of each item and its corresponding value:

10

60

20

100

30

120

Maninum value that can be obtained is 220.

```
21/06/2024
 1. Horspool algorithm
 #include ( stdio. h >
#include < stallib. h>
#include < string h>
 Void shifttable (char [] , int []);
i'nt horspool (char [], char []);
 int s[128];
Put n,m;
             have the or me want
 Port main ()
 char & [100]:
 Char p[100];
prints (" Enter the text string; ( " 4);
 fgets (t, size of (t), stdin);
 t [strospn (t, " (n))]="10".
perintl (" Enter the pattern string to");
Egets (t, size of (p), 8 tdin)
p[encepn(p,"\n")]=1/01,
int n=horspool(p, +);
ij(x = = -1)
  perintl ("Parlum not found in the text. (n");
else print ( fathern The position where the partern starts is: . / . d \n ", x);
```

```
yeturn 0; -
int horspool (char p [], char t[])
 int i
 shifttable (p, s);
  n=strlen(+);
 m=stlen(p);
 i=m-li
 while (1 <= n-1)
  while ( k <= m -1 & & +[i-k]==p[m-1-k])
  K=0;
    k=k+1-7-11 12/42/ 11 =0 1111 1201
 4 (k==m)
   return i - m + 15
    i=i+s[+[]];
return -1;
```

```
void & shiftfable (char pls, in st )
    m = shlen (p);
   for (i=0; i<=127; i++)
    s[i]=m;
  for (i=0; i = m - 2; i++)
    Sfp[i]=m-1-i;
Enter the text string:
dim Saw me at a barbar shop
Enter the pattern string:
barber
The position where the gathern starts is: 16
```

```
2. Heap Soot
 # include (stdio. h)
 void heapify (int [ I, int);
 void marin ()
 int n;
 int a [so];
 print ("Enter the no. of elements: (nº)-
scan (4.1.d4, 80);
 print(" inter as say elements to heap sort - In?)
for (int i=0; i<n; i++)
  Scanf [4.1-d", 2a[i]);
perint (" The sorted array elements as: "h");
heapily (a, n);
for (int izo; i < n; i++)
  print(luled thati T).
```

respiry lint all int m int p; for (k=1; k == n-1; k+1) key = a[x]; g= (< - 0/2 ; while (c>o 88 key >a[p]) a TeJ = a TpJ; 8=10-1012; Dusput = Sure the wood elements:

Enter array elements to heap sort.

50 25 30 75 100 45 80

The tested elements are:

100 75 80 25 50 30 45

Self-14

Mary the state of the state of

L. Kirling ak

An an area of the second

in the second second

```
1. Prims algorithm
 #include < ordinah)
 void prims (int [] [ so], int).
 void main O
   int cost [so][so];
    print ("Enter no. of vertice: \n");
    scanf ("-1.d", &n);
    printl ( " Enter cost adjacency nation : In ").
    for lint i = osiens i++)
      tor (in j=0;j<0;j++)
        Scanfl".1.d", &cost [:3[4']).
  print ("Result: In").
 prims (cott, n); /
void prims(int cost[][so], int n)
   int drio].
   int prio]:
   in st 10];
   int min = 999;
   int source =0;
```

```
int sum
int L:
int and
int thioTroJ;
forling Eosikh; i++)
 for (int j=0; j <n = j++)
   il (cost [: J[j]]=0 && cost [: J[j] J<mis)
     min =cost [i][j.j.
      Solur a = i.
forlint i= o; i < n; i++)
  dr: J = cost [so wasTi]:
  s[i]=o;
p[i]=source;
 S Esource 3 =1;
 Sum = 0;
```

```
for (int i=1; i < n; i++)
                                         it toto
                                          d[v]=cost[u][v];
    min :999;
                                          p CV J= u;
    for (int joo; 12 n; j+t)
       if (s[i]==0)
                                         printl ("chorres + part cost: 1.d in", sum).
          if (d [j] < min)
                                         print ("Minimum spanning tree hertices: 1 my).
                                        for (int 1=0, ix n) it+)
             min = d[j];
                                           print(1"1-d, -1-d \n", +[i][o],+[i][u]
             U=j-;
                                        Owput:
                                        Irwa no d yeartices
 E [K] [O] = U;
                                         Enter cost adjacency matrix:
 t [k][x] = p[u];
 k= k+ 1;
                                          0 9999 9999
 sum-sum+cost[4][p[4]];
                                         5 9999 6 3
 -1= Cole
for (int v=0; v<n, v++)
                                        Result:
E il (SEU) =0 88 cost[u][v](dEv])
                                        Shortest path cost: 6
                                        Minimum spenning tree vertices
```

```
3,0
  2,3
  0,0
2. Kruskal algorithm
# include < stelio. h>
int count = 0;
int is f. 4, V, k =0, min, sum =0.
int + [10] [10] cost [10].
int plio], d [10];
void knuskal (int cost [10], int n);
int find (int i);
 int anion 1 (int is int i);
void main ()
  print ("Fater no of vertices - 4).
  Scanfl"=1.d", & gx;
  print (" Futer the cost adjacency matrix:
  for ( int i = 0; kn; i++)
      tor(j=0;j<n;j++)
           and the sales produced by
```

```
scare (" 1.d", & os+ [: ][ ]);
il ( cos+[:][j]==0)
   1 cost (i)[j]= 999;
 knusked (cost, n);
paint I" The edger in the minimum spanning
 tru are: (n").
 for(1=0; i< k; i++)
  print ("(1-d, 1-d) \n", +[:][0], +[:])
punt (" Minimum cost: . I.d \n", sum),
void knusted lint cost [10 71 w], int n)
 forlint i=o; i < n=(++)
   P 9:1=1;
while ( count (n-1)
```

```
3,0
2. Kruskal algorithm
# include < stolio h>
int count = 0;
int is july, k =0, min, sum =0.
int + Cro] Cro], cost Cro)Tro].
int plio], d [io];
void kruskal (int cost [10], int n);
int find (int i);
int anions lint is int of );
void main ()
 print ("Enter no of vertices - 4)
 Scanfl" . 1. d", & gx;
print / " f nty the cost adjacency matrix:
 for(int i = 0; Kn; i++)
     tor(j=0;jen;j++)
```

```
scarf (" 1.d ", & ost [ : ] [ ] ];
if (cos+ [:][] ] == 0)
    { cost ( : ][ ] = 999 ;
 knusked (cost, n);
 paintly (" The edger in the minimum spanning
 free are: (n").
 for(1=0; i< k; i++)
  print ("(1-d, 1-d) \n", +[,][o], t[:]]
print ("Minimum cost: 1.d \n", sum).
void knuskal lint cost (10 71 w), int n)
 forlint 1:0; is not ++) :
   P7:1=1;
while ( count (n-1)
```

```
int find (int i)
feeling isogiengien)
                                        f white (p$131=2)
 for God is o, i (h; j++)
                                            TEPTITE
  if (contlisty I comin)
    min - cost [ TT j ]
                                         return i
                                        void union I (inti) int g)
                                        fint as find (1);
                                         in b- find (j);
  (sind (w) )= find (v))
                                         PEA J=b;
                 Service Services Services
   + [x] [0] = u;
   + FETCIEV.
                                       Output.
                                        Enter the not vertices: 4
   count ++;
                                        Ruter the cost adjacency nation.
  Sum = min;
  unions (u, v):
                                        1 0 9999 9999
                                        £ 9999 0
                                         2 9999 3 0
contingions = contingions = 999;
                                        The edger in mynimum panning tree are:
                                         (0,1)
                                        (0, 3)
                                         (2,3)
```

```
3. Dijkstras algorithm
 # include < stdio. h>
 void digitations (int [][so], int).
 void main ()
    int cost [wo][so];
   print ("Ena no. of vertices - (n");
   scan (" . 1. d", & n);
    print ("Enter cost adjacency matrix; 1")
    for (int iso ; ich ; i++)
     tor (int 3=0; 4 < h; 4+1)
        scanf ("-1.d", & cost [; ] [ ] ]);
  print (" Result: (n"),
 dijketras (aux+, n);
```

```
void dijkstras (int a [][so], int n
Eint d[10];
  int visited [10];
  int priot;
  int u, v;
  int s'
 int min;
 print ( " Enter the source : In ") &
  scand(". 1.d", &s);
 for (int 1=0) 1<0; 1++1
    drilza[s][i];
    Visited[1]=0-
    p[:]=(;
 visited [s]=1.
forlint 1=0; (cy/i++)
   min = 999:
  forling 1=0: 1 < n; (1+1)
```

```
4 (visited [i] == 0)
                                     11 ([1=5)
  s is (d [ ] < min)
                                      printl ( To verten . I.d : Distance = o/od.
       min = d [ ];
                                           fam = " lod", i, d[i], i);
       h=j;
                                     int jej
                                      white (p[ j ] ] = s)
Visited Fulzi;
                                      J=P[J]
foxlint v=0; V<n; v++);
                                     print (" <- - 1. d") j)
   if histed [v]==0 88 d[n]+arull) }
                           < dEv] pring (" <- 1. d In 4, 5);
     d[v]=d[u] + a[u][v];
      PC V] = 4;
                                     Output:
                                     true no. of vertices:
                                    Enter cost adjacency matrix:
prints ( " The shortest paths from vertex . ). I
        au: (" s);
                                      0 90199 0999
for ( IN 1 =0; ixn; i++)
```

```
Result:
 Rules the source:
 The shortest pathe from verten o as:
To verten 1: Distance = 1, Path = 1 = 0
 To verten 2: Distance = 5, Path = 2 <-0
 To verten 3: Distance = 2, Path = 3 < 0.
4. Knapsack (Fractional: plus ratio
                        method)
It include <stdio.h>
void knapsack (int n, int pt7, int w 1),
               Pat W)
   int used [n];
   for (int i=o; i <n; i++)
     used [:] = 0;/
  int our-w=N;
 front tot-v=0.0;
 int is morni;
 while (cus - w > 0)
```

```
for (1=0; icn; i++)
 4 ((used [i]=20) 82 ((maxi ==-1)11
 ([floar) w (i]/p [i] > (floar) w (man i]/
                       P[mare i])))
  mani=1;
wed Cman i]= 1;
if (w (man i ] c= ew-w)
   eur -w- = w (max 17;
   tot-v+= p Cman i];
   print ("Added o'b) ect 10d (1/0),
        . I.d) as appletely in the bag.
Space left: I.d. moni +1',
       w [man i], p cmon i], cur_w);
else
 int taken = cus - w;
 Cus - w = 0;
tot-v+=(+ coat) taken/p [man i ] xp [man i].
```

```
print (" Added of d. 1. 1. (. 1. d) , -1. d) ,
 object led in the bag . In", (in) ( frage
 taken 1 w (max i ] * 100), w maxi ] phan
 mani+1);
perind ("Filled the lag with objects work
      01-.2f. \n", tot -v)-
in main ()
                                       Output:
  pounts ("Enter the no of objects: ")-
 scanf (">1.d", & n);
 int plat, whit;
  perind ("Enter the profits of the objects:").
  for (int 100; i < n; i++)
                                        bag: 15
   scomp(".1.d", 2p(,3);
print ("Enter the weight of the
      object: ");
forline i= o; i<n; i++)
```

```
{ scanf (". ). d", 2 co (; 1);
pound ("Enter the manimum welght of
     the bong: 1);
scand (".1.d1, 2W)
Enapsack (n, p, w, W);
return 0;
Enter the most objects: 7
Enter the profits of the objects: 5 10 15
Enter the weights of the object: 13 5 4 1
Enter the manimum weight of the
Added object 4(4, 1) completely in the
bag. Space left:11
Added object of (2,4) completely in the
bag. Space left: 9
```

```
print (" Added = 1-d. 1-1- (.1.d) +
 object old in the bag. In", (int) (lten)
taken / w [max i] + 100), w (maxi), pho
 mani+1);
& Alleman II
perind (" Filled the lag with objects work
      of. 2f. \n", tot -v);
int main ()
 perint (" inter the no of objects: ").
 scarf ("1.d", & n);
 int plad, while
  perind ("Enter the profits of the object:").
 for (int 1=0; $ < n; i++)
  scomp(".1.d", &p(1));
print ("Enter the weight of the
      object: ");
forling is of icu; itt)
```

{ scanf (4.1, d", 2 w (; 1); print ("Enter the manimum weight of the being : "); Scom (". 1.d1, 2W). Enapsack (n, p, w, W); return 0; Output: Enter the most objects: 7 Enter the profits of the objects: 5 10 15 Enter the weights of the object: 13 5 4 1 Enter the marriam weight of the bag : 15 Added object 469,7) completely in the bag. Space left:11 Added object 7 (2,4) completely in the bong Space left: 9

Added object 3 (5,15) completely the bay. Space left: 4. Added object 6 (3,9) completely in the bag. Space left: 1. holded 331 (3,10) of the object 2 in the bag. Filled the bug with objects worth 300 beauty the de can a The said when the said

```
12/07/2024
Q. Implementation of n-Queens:
#include <stdio-h>
#include < stdbool. h>
bool place (int [], int);
roid print Solution (int [], ind);
void nqueens (int);
int main ()
 printl ("Enter the no. of queens; 4).
 scarf (". 1.d", &n).
 nQueens (n);
 return Oi
 I have a with the second of her of I have
 void nqueens (int n)
 int of 103;
  int count = 0;
  int k=1;
  While (k1=0)
   2[1]=x[1]+1;
 4 (x[k] <=n)
```

```
print Solution (x, 1)
print ( " solution found in ").
count ++;
else
                                    int i;
perint ("Total Solutions: 10 d \n" count)
             (H IN) LOS OF A
bool place (in x [10], int b)
                                  Owput :
                                  2413
forli=1; i<k; i++>
 4 ((x[i]==x[e]) | (i-x[i]== 6-x[4]
    11(1+x[i]==k+x[k])) Solution formel
 return false;
                                 Total solutions: 2
```

return true; void print Solution (int a [10] int o) for (i=vic=n; i++) point (" 1/0d", n [:]); prints ("In"); Enter the mumber of queens : 4 Soution found