## 21BCE9905

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I. Write a program to imprement brute-Force approach to some Traveling. Soires man problem

import sava-util. \*)

Public cross TEP Brureforce !. [192]

private State final Int INF = Integer-MAX\_VALUE;

Public Static Void main (String C), angs) {

intc] [] distances = [10, 10, 15, 203,

(10 0 35 25 b)

\$20,25,807,6999

System. our. Printm ("Thee Shortest distance is +

ts/\_bruteforce(distance));

(3200) 11 11200 mesod will

private static int too bruteforce infc3 (3 distances) ?

int n = distances length;

int min Distance = INF;

List (List (Integory) rours = new Array Lister ();

four odde). for (int i=0; izn; 1+1)?

List Linteger > tout 2 new Array Liste > (); tour. add (i)

```
generate Tours (distances is cuttered by
                Mroon & monarcis way n, book)?
     16 ( 1 Four : is Empty()) {.
                                           200 moran -101
             back . add ( Paur) 123 112 most of to-1 -100 mil
                         : 03512 vict 1 (1+1) = 2 4/11
   For (List ZIntiger > Rours ; Louis ! tomail = 1 70000
      int dist = conculabre Toran Distance (distances, tour);
                                          LIBRON PHYLOSOF
      if [dist & min Distance) L.
            min Distance = dist;
   return min Distance; 20 syrull's transmissions.
Privare estarie void governational Int (303 distances, int
          comlength, int n. listlinegers corrent Tour) {
   if (court ength == n)1.
       current Tour. add (Start Index);
       return;
   for lint i=0; ikn; i++) !.
     if (distances Cstart Inder)[i]!= 04f! conveniour. contain (i))
         corrent Tour add(i);
      generation (distances, i, currengent, n, current Tour);
      current Tour remove (current Tour Size() -1);
```

private staticint concentrate Total Distance (int C) distance LIST «Integer» tour) .) (() etam 3 21 - tuer 2 ) 9; int rescut = 0; Porcint i=0; is town. Site convitt/Lien some int i= (i+1)% taw. size(); result + = distances (tour gerci) ] ( tour : gerci) ]; ( visit concertify a mortial word statement - Fire 11, yourn resent; Joseph Light Light ? 1. Jub - Donostist in in Thee Shortest distance is 20 morried min

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2. Write al program to implement bruse force appro-
-ach to solve of mapsack problem.
 class knapsack to
                     Misselsky Instructives
    Static int max (into, int b) {
        return (ax b) ? ax bi
   Staric int Knapsack lint W. int (3 wt, int vous, intn, int (76)
                                                 memo) {
     tance files (5 mi) (65) (61) toblession with since to stilling
     if (n= 7011 w==0) 11-1 +00 1110 1110
          Account o:
     if (memocn3(ie3!=-I)
          ¿ [m) [u) Eurona monor
        memo(n3(w) = Knapsacu (w, cot, val, n-1, memo);
    if (w+ [n-1] > w)
    memocnJCwJ = max (vau Cn-1) + KnopScick (w-w+[n-]) wf
                  val, n-1, mamo) knopsack(w at val, n-1, mon)
    return momo CNJ [63];
 Public Static void main Cstring args C7)2.
     into voicy = now intc3 (60, 100, 120)
     int wt() = new int() (10,20,30%;
     in w2 50; Mother that morne the
  bint n z vai length;
     int C3C3 memo = new int Cn+3[ev+]];
    Por lintizo; iL=n; itt)
                              3/1261 min 5 120
       For cint i=0; j2= W; j++)2.
     ila memocisus = -1;
                         LECURA & HOUSE TEADS ING
 System. out-println ("maximum varuetrot can be but is" +
               Knapscale (W. w. var, n. meme)
  7
```

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Ochput + maximum value that can be put is 20
3. Write a program to implement prute-force opproag
  to some Assignment problem.
                          (a thino this while
import Lav. obil. Array List;
                             ( distribution of the second
import sava uni . Arrays;
       class Assignment Problem 7. 13 Harris
    Public Static int calculate braicost (int C) assignment,
                    interer cost Notrix 34. 110
    int totalCost = 0;
   forcint 120; 12 assignment . 1 ength; ittle
      total Cost + 2 Cost Marix Ci] (assignment [i]];
                P. NOT - two will be properly of Europe Journals.
   neturn total Cat;
  Public State Ent C) brute Force Assignment (int CJC) cost this
 int n = Cost Marrix . length;
    int [] Assignment = now intCn];
   for lint 120; i'ln i itt st.
       assign menici] = ];
  int () optimal Assignment = Amongs . Copy of (assignment, 1))
   int minCost = Integer . MAX - VALUE;
      int totalcost = concular Total co Hassignment, cost worth
    306
     if Ceoba Cost & min (ost) (
        min cost = total cot:
        optimed Assignment = Arrays. copy of (assignment, n);
    3 while ( nort Permutation ( 0155/gnment))?
     return oftimal 1455250 ment; ) 30 3291/1
```

```
Public Static boolean next Pormutation (interamony) !
     int 1 = array, length = 1;
    while lisoad arrayci-17 >= arrayci])(.
    ic cic=0) (.
       veturn foise;
    int i = array. length - 1:
    arrile kamay (i) <= array (i-13) L.
  int temp = array (i-13;
   array Ci-13 = array (i))
   arrows [i] = temp;
   S = arroy: length = I:
   confic (izo) (
      temp = arroy(i) !
      array (i) = array (i);
      amon (i) = (cmp;
       itt; verum true;
public Static void moun (string c) any for
   int () () cost Matrix = 2. [3, 2, 73,
 int() oftimal Assignment = brute Force (Assignment (cost routing);
System-out- Println C"Optimal Assignment 49
                   Arrays, tostring (optimal Assignment));
  Optimal Assignment: [1,0,2]
```