HUST

ĐẠI HỌC BÁCH KHOA HÀ NỘI

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

ONE LOVE. ONE FUTURE.

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Applied Algorithm Lab

CBUS

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CBUS

- Find the best route for a bus serving some passengers
- There are n passengers. The passenger i travel from point i to $i + n$

  Transportation: a bus with capacity $= k$
- **Input:** n, k and the distance matrix $c[1..2n][1..2n]$
- **Output:** the minimum length for the bus

CBUS

- Example

stdin	stdout
3 2 0 8 5 1 10 5 9 9 0 5 6 6 2 8 2 2 0 3 8 7 2 5 3 4 0 3 2 7 9 6 8 7 0 9 10 3 8 10 6 5 0 2 3 4 4 5 2 2 0	25

CBUS

- Idea to solve: backtracking and branch & bound, similar to TSP
  - An array x[1..2n] - permutation of 1,…,2n representing the locations of our bus
  - Supporting variables:
    - Marking array: *appear*[1..2*n*]

      appear[*v*] = true means that *v* has appear in the route.
    - load: number of passengers in the bus
  - Programming:
    - Try(k): select value for *x*[*k*]
  - Branch and bound: similar to the solution of TSP

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THANK YOU !