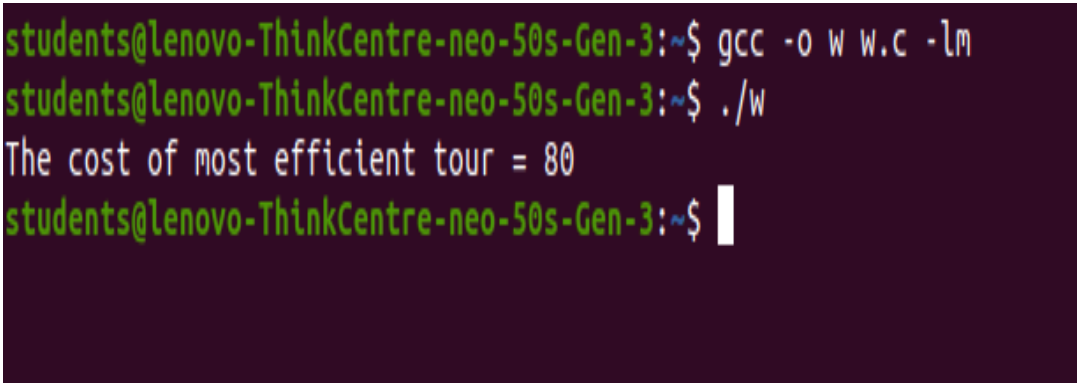




Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous College Affiliated to University of Mumbai)

PRACTICAL NO. 09	DESIGN AND ANALYSIS OF ALGORITHMS
NAME	VEDANTI ANIL WADATKAR
UID	2021700072
BATCH	D4
PROBLEM STATEMENT	Approximation algorithms (Travelling Salesman Problem)
CODE	<pre>#include <stdio.h> #define n 4 #define MAX 1000000 int dist[n + 1][n + 1] = { { 0, 0, 0, 0, 0 }, { 0, 0, 10, 15, 20 }, { 0, 10, 0, 25, 25 }, { 0, 15, 25, 0, 30 }, { 0, 20, 25, 30, 0 }, }; int memo[n + 1][1 << (n + 1)]; int fun(int i, int mask) { if (mask == ((1 << i) 3)) return dist[1][i]; if (memo[i][mask] != 0) return memo[i][mask];</pre>

	<pre> int res = MAX; for (int j = 1; j <= n; j++) if ((mask & (1 << j)) && j != i && j != 1) res = (res < fun(j, mask & ~(1 << i)) + dist[j][i]) ? res : fun(j, mask & ~(1 << i)) + dist[j][i]; return memo[i][mask] = res; } int main() { int ans = MAX; for (int i = 1; i <= n; i++) ans = (ans < fun(i, (1 << (n + 1)) - 1) + dist[i][1]) ? ans : fun(i, (1 << (n + 1)) - 1) + dist[i][1]; printf("The cost of most efficient tour = %d\n", ans); return 0; } </pre>
OUTPUT	 <pre> students@lenovo-ThinkCentre-neo-50s-Gen-3:~\$ gcc -o w w.c -lm students@lenovo-ThinkCentre-neo-50s-Gen-3:~\$./w The cost of most efficient tour = 80 students@lenovo-ThinkCentre-neo-50s-Gen-3:~\$ </pre>