UNIVERSITY PARTNER
UNIVERSITY OF WOLVERHAMPTON

iAcademy
Quality Education Improving Lives

HERALD COLLEGE KATHMANDU

Academic Year	Module	Assessment Number	Assessment Type
S20	Introductory Data Structures and Algorithms (DipIT02)	A1	Assignment Submission

[Assignment Submission]

Student Id : [NP03A190299]
Student Name : [Yogesh Shrestha]
Section : [DC8]
Module Leader : [Mr. Prakash Gautam]

Submitted on : 06-03-2020

Page No.
Date : / /

Tutorial - 12

1-> Travelling Salesman Problem (TSP):
Given a set of cities and distance between every pair of cities, the problem is to find the shortest possible route that visit every city exactly once and returns to the starting point.
Travelling Salesman problem are highly unlikely to be solved using polynomial time.

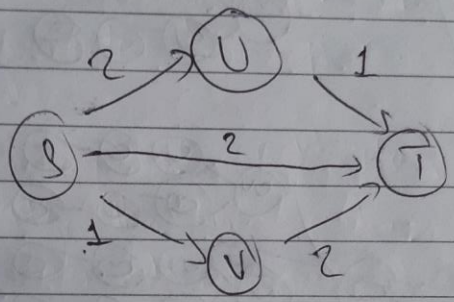
2-> P-Polynomial time solving problems which can be solved in polynomial time that can take time like $O(n)$, $O(n^2)$.

NP-hard -> Some problems can be translated into one another in such a way that a fast solution to one problem would automatically give us a fast solution to the other. There are some problems that every single problem in NP can be translated into and a fast solution such a problem would automatically gives us a fast solution to every problem in NP which is known as NP-hard.

Page No.
Date : / /

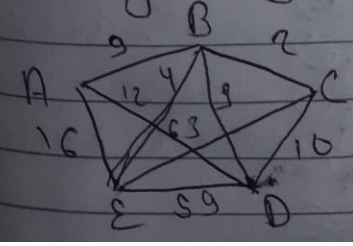
NP → The set of all the decision problems such that if the answer is 'yes' there is a proof of that which can be verified in polynomial time.

Hard problems



3→ The time complexity of Travelling salesman problem is $O(n^2 2^n)$.
The time complexity of Travelling salesman problem can be improve by solving it by using Dynamic programming process.

4→ A Hamiltonian path with an additional connection between the first and last vertices visited forming a cycle is called Hamiltonian cycle.



AB	BC	CE	ED	DA
9	2	63	59	12

∴ Total = 145