School of Computer Science
University of Guelph

CIS*3490 The Analysis and Design of Algorithms

Winter 2021
Instructor: Fangju Wang

Assignment 5 Guide (2)

- Q4.1
  Please see slide 13 in "12 Coping with the Limitations of Algorithm Power" for using a backtracking algorithm to solve a Hamiltonian circuit problem. The algorithm creates a state space tree when traveling the graph. Keep in mind that the algorithm travels the graph with the help of the tree. When the algorithm visits a node, it marks the node as "visited". When the algorithm goes back from a node, it marks the node as "unvisited".

- Q4.2
  Please see slides 22 – 29 in "12 Coping with the Limitations of Algorithm Power" for using a branch and bound algorithm to solve a problem. Please read pages 438 – 440 in textbook for an example of branch and bound for TSP problem.

- Q5.1
  Please see slides 37 – 38 in "12 Coping with the Limitations of Algorithm Power" for the first-fit decreasing approximation algorithm.

- Q5.2
  Please see slides 35 – 36 in "12 Coping with the Limitations of Algorithm Power" for the Sahni's approximation scheme for solving a knapsack problem.