COMP3711: Design and Analysis of Algorithms

Tutorial 8

HKUST

Question 1

A string of parentheses is said to be balanced if the left- and right-parentheses in the string can be paired off properly. For example, the strings (()) and ()() are both balanced, while the string ((()))(is not. Given a string S of length n consisting of parentheses, design an algorithm to find the longest subsequence of S that is balanced.

Question 2

Let $G = (V, E)$ be an undirected graph where V is the set of vertices and E is the set of edges.

a) What is the maximum number of edges in G?

b) What is the maximum number of edges in G if two vertices has degree 0.

c) What is the maximum number of edges in G if G is acyclic?

d) What is the minimum number of edges in G if G is connected graph and contain at least one cycle?

e) What is the minimum degree among all vertices in G if G is connected graph?

f) What is the maximum length of any simple path in G?