

Introduction To Algorithms
CS430

Spring 2013
HomeWork 10
Due 22 April

1. **Problem 1:** Remember that we let the two DFS numbers assigned to a vertex be denoted by $StartDFS(u)$ and $FinishDFS(u)$.
 - (a) Show how to use the $StartDFS(u)$ and $FinishDFS(u)$ to classify edges as either back or cross edges. Given a directed graph, how do you determine if there is a cycle. (Give the time complexity)
(10)
 - (b) Show to determine if an undirected graph has a cycle in $O(V)$ time.
(10)
 - (c) Is the following true for directed graphs? Suppose u has path to v , and $StartDFS(u) < StartDFS(v)$. Then v is a descendant of u in the DFS Tree.
(10)
2. **Problem 1:** Problem 22-1 (Pg 621, CLRS)
(20)