CSE 473 Autumn 2020 --- Paul G. Allen School of CS&E --- Name: Eric Boris

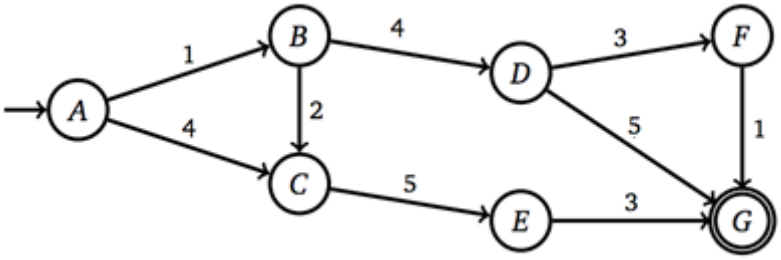
Assignment 1 – Question 9 (Written Problem)

This non-programming problem is part of Assignment 1. Please add your answers to this document and submit your completed document along with your Pac-Man solutions.

Look at the following graph. Node A is the start node (indicated by the arrow with no tail node) and G is the goal (indicated by the double circle).

The table gives you the heuristic values $h(n)$ for each node, however $h(C)$ is unknown.

n	$h(n)$
A	5
B	5
C	?
D	3
E	3
F	1
G	0



(a) Provide the range of values for $h(C)$ for which h would be admissible.

$h(c) \leq w(c, w(E, G))$

$h(c) \leq 8$

$h(c) : [0, 8]$

Assuming $h(c)$ is always non negative

(b) Provide the range of values for $h(C)$ for which h would be consistent.

$h(c) - h(E) \leq w(c, E) = 5$

$h(c) - 3 \leq 5$

$h(c) \leq 8$

$h(c) : [0, 8]$

(c) If you were to follow the search strategies listed in the table, which of the listed paths are possible? Indicate valid paths by marking an X in the appropriate row(s). You may assume that h is admissible in each case. In some cases, more than one path may be a valid result, and you should mark all such paths.

Search algorithm	A – C – E – G	A – B – C – E – G	A – B – D – G	A – B – D – F – G
Depth first	X	X	X	X
Breadth first				
A^* with heuristic h	X	X		X