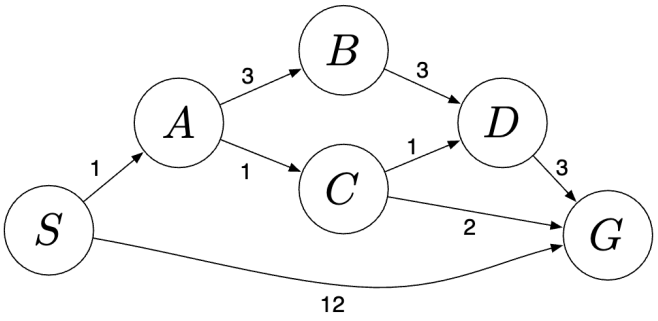
BRAC University
Department of Computer Science and Engineering

CSE 422: Artificial Intelligence (A)

Quiz 01: Spring 2025 Time: 30 Minutes Marks: 10

Name		ID		Section	



State	h_1	h_2
S	5	4
A	3	2
B	6	6
C	2	1
D	3	3
G	0	0

1. Consider the graph in the figure and the two heuristics defined. Are these two heurstics admissible? Are they consistent? Why or why not?

Answer:
Is h1 admissible? No
Is h1 consistent? No
Is h2 admissible? Yes
Is h2 consistent? No
An admissible heuristic must underestimate or be equal to the true cost.
A consistent heuristic must satisfy $h(N) - h(L) \leq \text{path}(N \longrightarrow L)$ for all paths and nodes N and L.
h1 overestimates the cost $S \longrightarrow G$ as 5 when it is 4, so it is inadmissible.
h1 is not consistent because $h(S) - h(A) \leq \text{path}(S \longrightarrow A)$ is violated as $5 - 3 \leq 1$.
h2 does not overestimate costs and is admissible.
h2 is not consistent because $h(S) - h(A) \leq \text{path}(S \longrightarrow A)$ is violated as $4 - 2 \longrightarrow 1$.