CIS 3223 Miniquiz 5 | **Name:**

Dr Anthony Hughes | **Temple ID (last 4 digits:**

1 (16 pts) Perform a dfs on the following digraph $G = (V, E)$, V = {S, A, B, C, E, F, G, H}.

Adjacency list E :

E{S} = [A, F]
E{A} = [C, S]
E{B} = [C, E, H]
E{C} = [A, B, F]
E{E} = [B]
E{F} = [C, G, S]
E{G} = [F, H]
E{H} = [B, G]

Data:

Parent	**S**	S	C	A	B	G	H	B
Pre	**1**	2	4	3	5	9	8	7
Post	16	15	13	14	6	10	11	12
Vertex	**S**	**A**	**B**	**C**	**E**	**F**	**G**	**H**

Non-tree edges	Parent	Stack	Pre	Post	Tree edges
F-C, F-G, F-S	G	F	9	10	G-F
G-H	H	G	8	11	H-G
E-B	B	E	5	6	B-E
H-B	B	H	7	12	B-H
B-C	C	B	4	13	C-B
C-F	C	F			
C-A	A	C	3	14	A-C
A-S	S	A	2	15	S-A
S-F	S	F	-	-	
	S	S	1	16	root

Can use spanning tree

Non-tree edge analysis			
A-S	(2,15)	(1,6)	back
C-A	(3,14)	(2,15)	back
B-C	(4,13)	(3,14)	back
H-B	(7,12)	(4,13)	back
E-B	(5,6)	(4,13)	back
G-H	(8,11)	(7,12)	back

Non-tree edge analysis (continued)			
F-C	(9,10)	(3,14)	back
F-G	(9,10)	(8,11)	back
F-S	(9,10)	(1,16)	back
C-F	(3,14)	(9,10)	forward
S-F	(1,16)	(9,10)	forward

Draw a spanning tree (red) and include ~~pre/post~~ numbers and back edges (black).