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Ass2 Q1

1) *Candidate key for R?* {E, H}

Reasoning:

E → ABD
ABD → CD
G is “useless”
Each relevant variable {A,B,C,D,E} is functionally dependent on E
H is required to complete the candidate key as it is not functionally dependent on any other variable

2) *Highest Normal Form of R?* 3NF.

Reasoning: 2NF is violated because of the functional dependency of AG on nonprime attribute D. Because D is not a superkey, we have that R is in the form 3NF.

3) *Lossless Join?* No, the join is lossy.

Reasoning:

Unable to complete a row of a’s to indicate a lossless join.

A	B	C	D	E	G	H
a	a	a	a		a	
a			a	a	a	a

4) BCNF Decomposition? R1 (ABCDE) ⊗ R2 (ADG) ⊗ R3 (CDH)

Reasoning:

R (ABCDEGH)
By ACD → BE [ABCDE]
R1 = ACDGH
By D → AG [DAG]
R2 = CDH
[CDH]