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BCNF Normalization Proof

RESEARCHER

<u>Researcher_ID</u>	First_Name	Last_Name	Dept_Location
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FD1 {Researcher_ID} \rightarrow {First_Name, Last_Name, Dept_Location}

\therefore Researcher_ID is a candidate key for RESEARCHER since it is needed to identify First_Name, Last_Name, and Dept_Location.

Proof: Since FD1 has the determinant as a candidate key, this relation is in BCNF.

PERSON

<u>Person_ID</u>	Gender	Age	Occupation	Res_ID
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FD2 {Person_ID} \rightarrow {Gender, Age, Occupation, Res_ID}

\therefore Person_ID is a candidate key for PERSON since it is needed to identify Gender, Age, Occupation, and Res_ID.

Proof: Since FD2 has the determinant as a candidate key, this relation is in BCNF.

HEALTH

<u>Person_ID</u>	Gender	BMI	Heart_Rate	Systolic_BP	Diastolic_BP	Blood_Pressure
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FD3 {Person_ID} \rightarrow {Gender, BMI, Heart_Rate, Systolic_BP, Diastolic_BP, Blood_Pressure}

\therefore Person_ID is a candidate key for HEALTH since it is needed to identify Gender, BMI, Heart_Rate, Systolic_BP, Diastolic_BP, and Blood_Pressure.

Proof: Since FD3 has the determinant as a candidate key, this relation is in BCNF.

LIFESTYLE

<u>Person_ID</u>	Gender	Stress_Level	Daily_Steps	Physical_Activity
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FD4 {Person_ID} -> {Gender, Stress_Level, Daily_Steps, Physical_Activity}

∴ Person_ID is a candidate key for LIFESTYLE since it is needed to identify Gender, Stress_Level, Daily_Steps, Physical_Activity.

Proof: Since FD4 has the determinant as a candidate key, this relation is in BCNF.

SLEEP

<u>Person_ID</u>	Gender	Sleep_Disorder	Sleep_Duration	Sleep_Quality
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FD5 {Person_ID} -> {Gender, Sleep_Disorder, Sleep_Duration, Sleep_Quality}

∴ Person_ID is a candidate key for SLEEP since it is needed to identify Gender, Sleep_Disorder, Sleep_Duration, Sleep_Quality

Proof: Since FD5 has the determinant as a candidate key, this relation is in BCNF.