**Database system**

**Implimentation 1 Task 1 Solution**

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# Highest Normal form

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**Step 1: Find the minimal super key.**

{T}+={TPQR}, P🡪QR and T🡪P =T🡪PQR

{U}+ ={U}

={UTV}(Using U🡪TV)

={UTVP} (Using T🡪P)

={UTVPQR} (Using P🡪QR)

U🡪TVPQR is valid Functional dependency

S🡪S is trival Functional dependency

W🡪W is trvial Functional dependency

Through using composite inference rule, we have,{USW}+={UTVPQRSW}

Hence, the minimal super key is USW.

**Step 2: Find the highest Normal Form**

A diagram of a television

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Since(USW) is the minimal super key, there exist a partial Functional dependency, U🡪TV. Which violates 2NF requirements.

**Ans: Hence, the relational schema R is in 1NF**

# Decompose the relational schema R into BCNF

Since there exist a partial dependency in the relational schema R, to transform the relational schema to BCNF, we need to remove the partial dependency, **U🡪TV**, and split it into three relational shcemas **R1=(USW), R2=( UTVPQR) and R3= (RWV)**

**In relational schema R1=(UWS),**

the minimal super key is (UWS), and the relational shcema R have no partial dependency, transitive dependency and non-trivial dependency violations. Hence, the relationasl schema R1=PUWS) is in BCNF.

**In relational schema R2=( UTVPQ),**

the minimal super key is (U), and the relational shcema R have no partial dependency, transitive dependency and non-trivial dependency violations. Hence, the relationasl schema R2=( **UTVPQ**) is in BCNF.

**In relational schema R3=(RWV),**

the minimal super key is (RW), and the relational shcema R have no partial dependency, transitive dependency and non-trivial dependency violations. Hence, the relationasl schema R3=(RWV) is in BCNF.