

$R1(id, classid, gender, manager, salary)$

$R2(id, name)$

$R3(name, age)$

To show if it is loss-less join or not

$R1 \cap R2 \rightarrow R2$

$\Rightarrow id \rightarrow (id, name)$  which is true as  $id \rightarrow name$  is present in  $F^+$ .

$R2 \cap R3 \rightarrow R3$

$\Rightarrow name \rightarrow (name, age)$  which is true as  $name \rightarrow age$  is present in  $F^+$ .

$R1 \cap R3 \rightarrow R3$

$R1 \cap R3$  is a null set. Thus,  $R1 \cap R3 \rightarrow R3$  or  $R1 \cap R3 \rightarrow R1$  do not follow.

Thus, the decomposition is not loss-less.