Find ALL candidate keys of the relational schema
R={A,B,C,D,E}

F = {
A → BC
CD → E
B → D
E → A
}

A decomposition of R into R1 and R2 is **lossless** IF
R1 ∩ R2 → R1 or R1 ∩ R2 → R2
OR
The decomposition of relation R into R1 and R2 is **lossless** when the join of R1 and R2 yields the same relation as in R.

The decomposition of relation R into R1 and R2 is **lossy** when the join of R1 and R2 does not yield the same relation as in R.

STUDENT

Id	**Sname**	**Dept**
111	green	ASDV
222	green	MATH

Lossy Decomposition

Id	**Sname**	**Sname**	**Dept**
111	green	green	ASDV
222	green	green	MATH

Key is Id Dept is key

The intersection? **(Id, Sname) Intersection (Sname ,Dept) = Sname**
Sname is not the key of neither of the 2 tables.

In lossy decomposition ,spurious tuples are generated when a natural join is applied to the relations in the decomposition. SPURIOUS TUPLES are generated.

JOIN ON COMMON ATTRIBUTE, **Sname**

Id	**Sname**	**Dept**
111	green	ASDV
111	green	MATH
222	green	ASDV
222	green	MATH

LOSSLESS Decomposition

Id	Sname
111	green
222	green

Id	Dept
111	ASDV
222	MATH

JOIN on common Attribute Id

Id	**Sname**	**Dept**
111	green	ASDV
222	green	MATH

Given R = (A, B, C, D, E).
Decompose it into R1 = (A, B, C), R2 = (A, D, E).
The set of functional dependencies is: A → BC, CD → E, B → D, E → A.
Show that this decomposition is a lossless or lossy by:
a) Creating tables with fictional data which reflect the existing dependencies
b) Applying the rule of the intersection of 2 tables.

Use the same R and F.
Decompose into R1 = (A, B, C), R2 = (C, D, E).
Show that this decomposition is lossless or lossy by:
a) Creating tables with fictional data which reflect the existing dependencies
b) Applying the rule of the intersection of 2 tables.