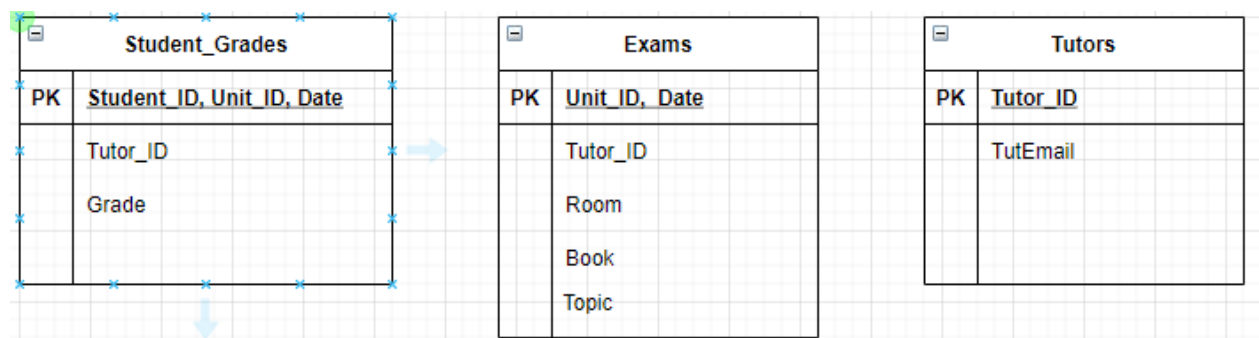


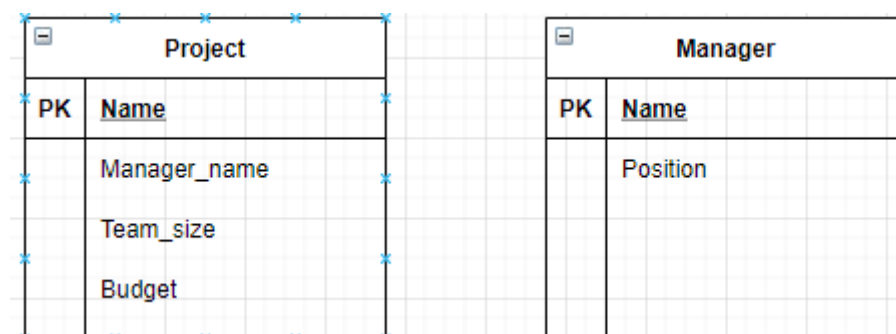
1. It is not always possible to reach both BCNF and dependency preservation.

Proof: consider a relation dept_advisor(student_ID, instructor_ID, department_name) where primary key is student_ID and department_name. Here dept_name depends on instructor and instructor depends on student and department together. But instructor is not a part of primary key. Hence, this is not in BCNF. None of decomposition of dept_advisor will include all the attributes in dependency of instructor on student and department. That means, the BCNF is not dependency preserving in any case.

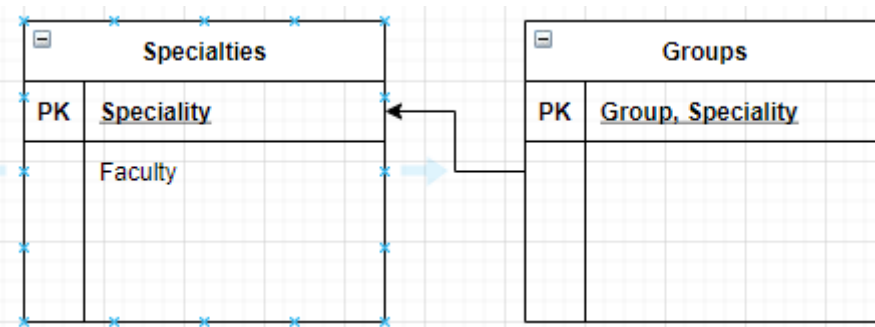
2.



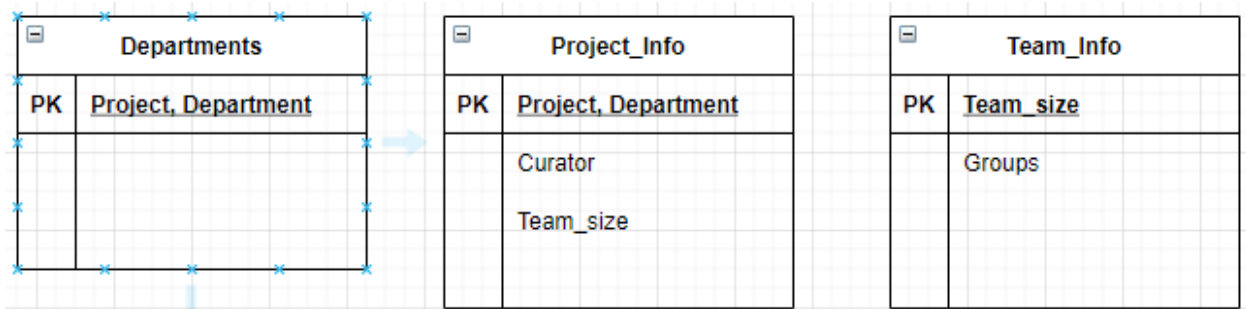
3.



4.



5.



6.

- 1) BCNF. It eliminates transitive functional dependencies.
- 2) Lossless join. Removes redundancy without loss of any information.
- 3) Dependency preservation. Makes easier to test functional dependency constraints.

Examples:

Desirable types of decomposition: lossless, dependency preserving,

Undesirable: lossy, not dependency preserving.