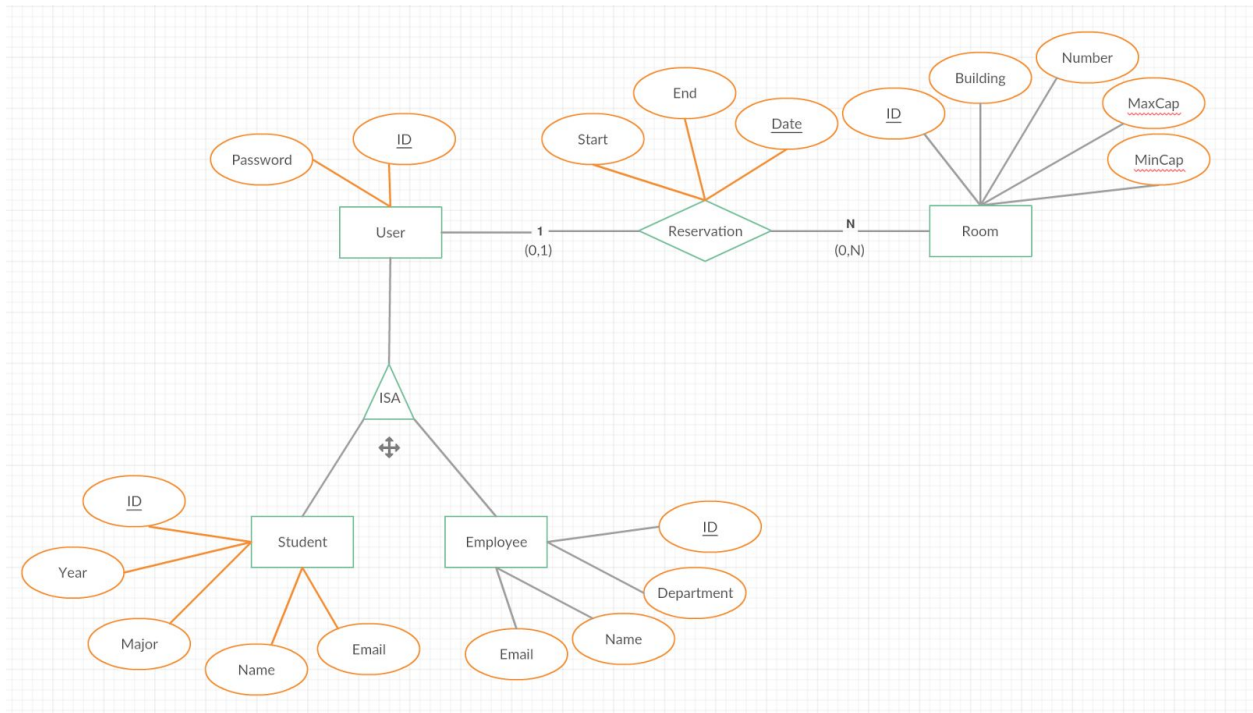


Project 1 Milestone3
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Task A

(We've slightly modified our database based on the feedback of milestone2)



Our initial schema is already in BCNF.

The functional dependencies of the schema:

TABLE User:

$\{UserID\} \rightarrow \{Password\}$

Since there are only two attributes in this table and the userID determines the password of the user, the schema is already in BCNF.

TABLE Student:

$\{StudentID\} \rightarrow \{Year, Major, Name, Email\}$

$\{Email\} \rightarrow \{StudentID, Year, Major, Name\}$

Since all the functional dependencies are non-trivial, and $\{StudentID\}$ and $\{Email\}$ are superkeys for Student, the schema is already in BCNF.

TABLE Employee:

$\{\text{EmployeeID}\} \rightarrow \{\text{Department, Name, Email}\}$

$\{\text{Email}\} \rightarrow \{\text{EmployeeID, Department, Name}\}$

Since all the functional dependencies are non-trivial, and $\{\text{EmployeeID}\}$ and $\{\text{Email}\}$ are superkeys for Employee, the schema is already in BCNF.

TABLE Room:

$\{\text{RoomID}\} \rightarrow \{\text{Building, Number, Maxcap, Mincap}\}$

$\{\text{Building, Number}\} \rightarrow \{\text{RoomID}\}$ (from which we can get $\{\text{Building, Number}\}^+ = \{\text{RoomID, Maxcap, Mincap}\}$)

Since all the functional dependencies are non-trivial, and $\{\text{RoomID}\}$ and $\{\text{Building, Number}\}$ are superkeys for Room, the schema is already in BCNF.

Table Reservation:

$\{\text{Date, UserID, RoomID}\} \rightarrow \{\text{StartTime, EndTime}\}$

Since the only functional dependency is non-trivial and $\{\text{Date, UserID, RoomID}\}$ is a superkey of Reservation, the schema is already in BCNF.