

PROJECT PHASE 1

CONCEPTUAL DATABASE DESIGN

GROUP 6



PROJECT TITLE

DORMITORY ALLOCATION SYSTEM

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Mapping of Strong Entity

The strong entities are Dorm building, proctor staff and Student

Dorm_Building

<u>dorm_Building_no</u>	No_of_Dorms	No_of_Students
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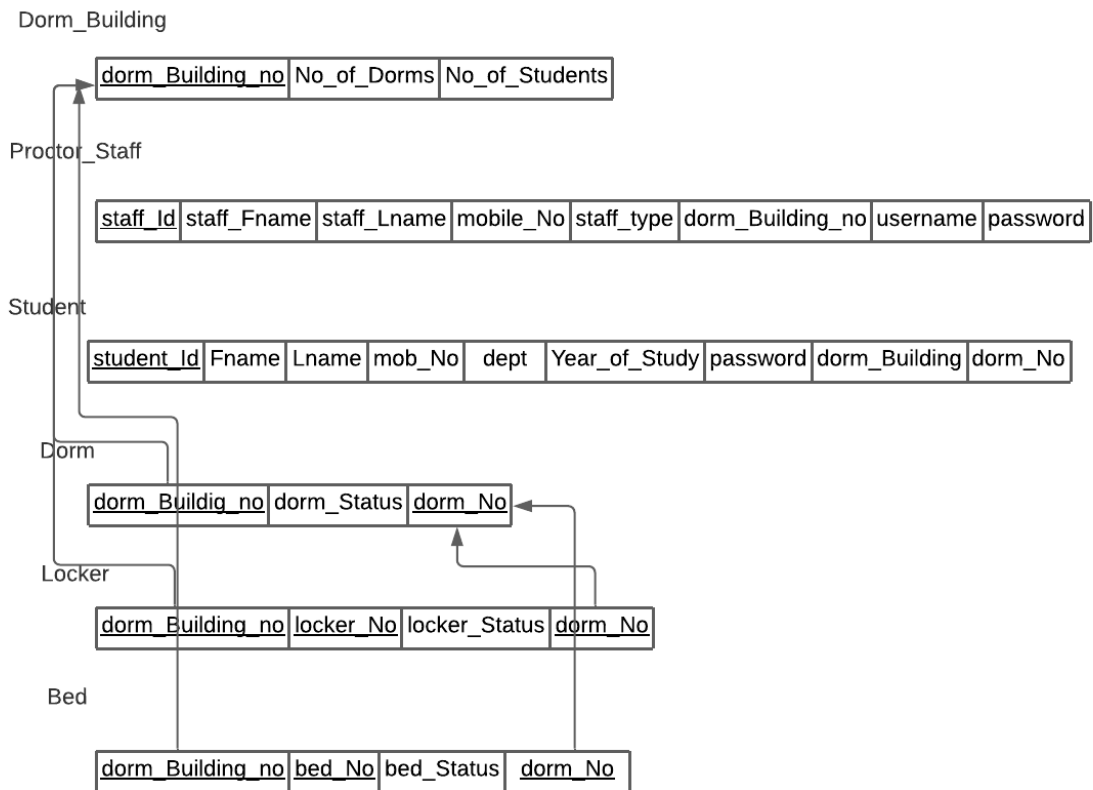
Proctor_Staff

<u>staff_Id</u>	staff_Fname	staff_Lname	mobile_No	staff_type	dorm_Building_no	username	password
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Student

<u>student_Id</u>	Fname	Lname	mob_No	dept	Year_of_Study	password	dorm_Building	dorm_No
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Mapping of Weak Entity



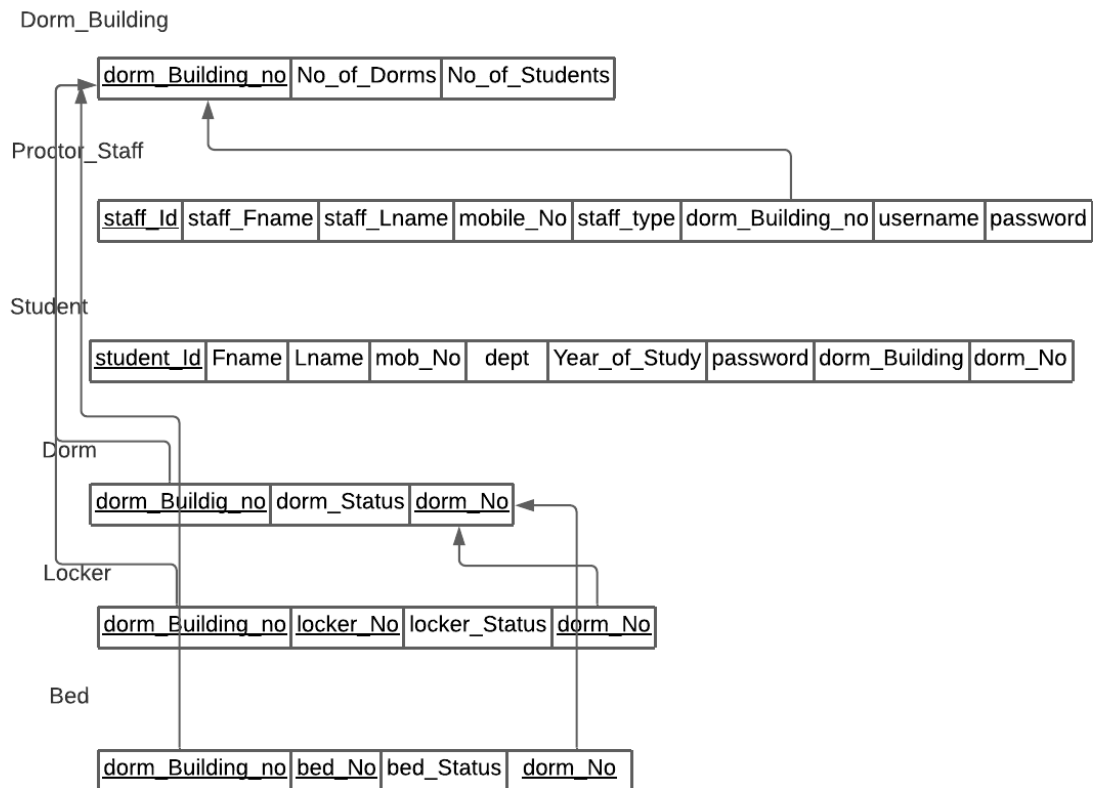
The weak entities are Dorm, Locker and Bed

Mapping Using Foreign Key approach

Mapping 1:1 relation Types

The only 1:1 relationship is between Proctor_Staff and Dorm_Building

Mapping Using Foreign Key approach



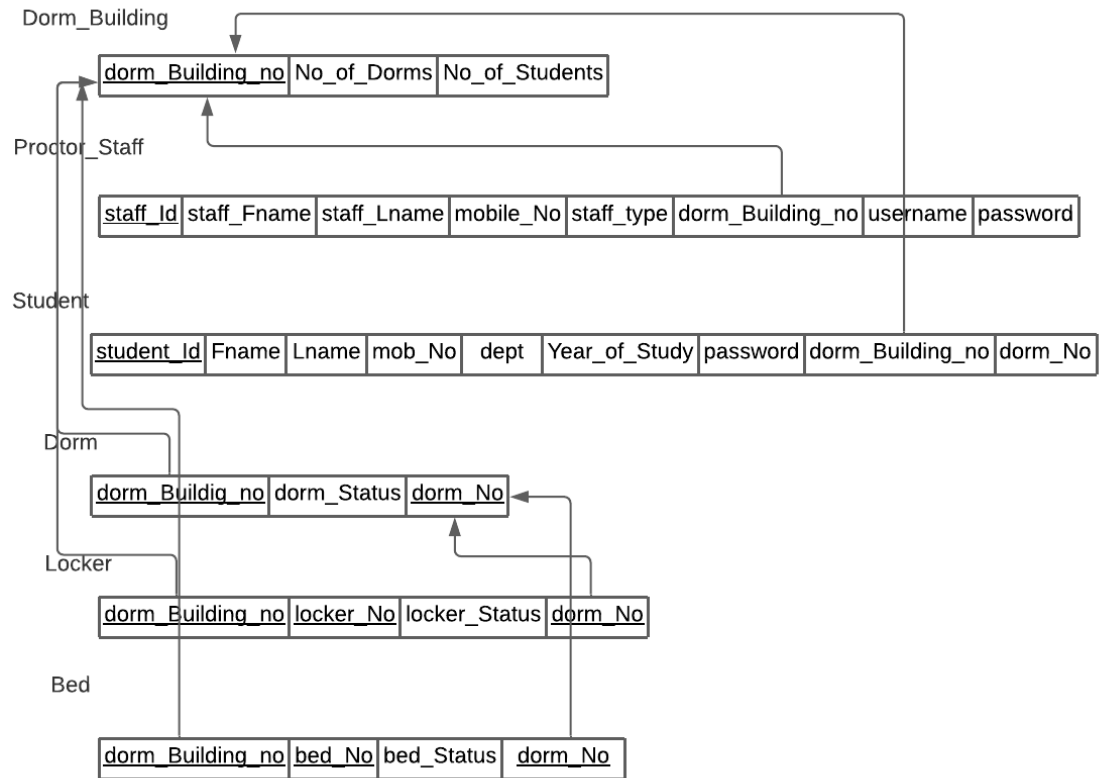
Mapping of Multivalued Attributes

Since we decide we only receive one Phone number from every entity there will be no multivalued attribute

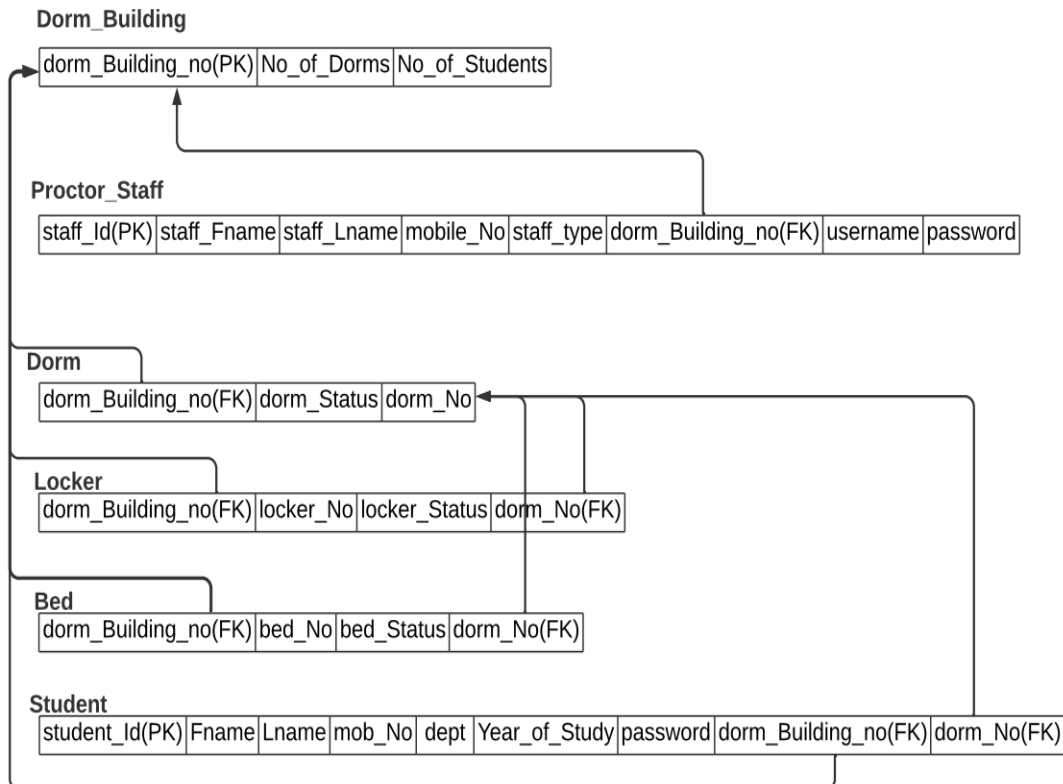
Mapping 1:N relation Types

The one to N relation ship is between Dorm_Building and Student, Dorm_Building and dorm, Dorm and Bed, Dorm and Locker. And this is done using foreign key approach

Finally



Finally the relational Model will be

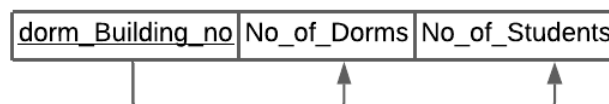


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Functional Dependencies

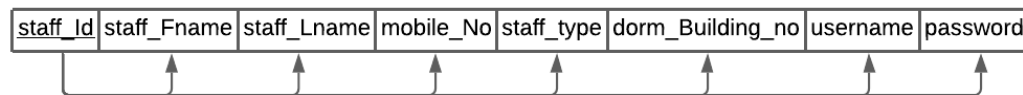
Dorm_Building: In this relation the primary key (dorm_Building_no) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be: { dorm_Building_no }⁺ = { dorm_Building_no, No_of_Dorms, No_of_Students } = Dorm_Building

Dorm_Building



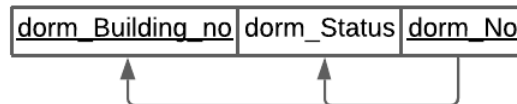
Proctor_Staff: In the this relation the primary key (staff_Id) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be:
 $\{ \text{staff_Id} \}^+ = \{ \text{staff_Id}, \text{staff_Fname}, \text{staff_Lname}, \text{mobile_No}, \text{staff_Type}, \text{dorm_Building_No}, \text{username}, \text{password} \} = \text{Proctor_Staff}$

Proctor_Staff



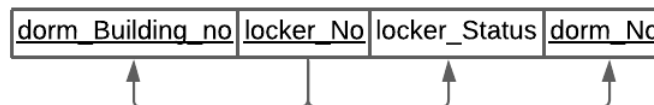
Dorm: In the this relation the primary key (dorm_No) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be:
 $\{ \text{dorm_No} \}^+ = \{ \text{dorm_No}, \text{dorm_Status}, \text{dorm_Building_No} \} = \text{Dorm}$

Dorm



Locker: In the this relation the primary key (locker_No) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be:
 $\{ \text{locker_No} \}^+ = \{ \text{locker_No}, \text{dorm_No}, \text{locker_Status}, \text{dorm_Building_No} \} = \text{Locker}$

Locker



Bed: In the this relation the primary key (bed_No) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be:
 $\{ \text{bed_No} \}^+ = \{ \text{bed_No}, \text{dorm_No}, \text{bed_Status}, \text{dorm_Building_No} \} = \text{Bed}$

Bed

<u>dorm_Building_no</u>	<u>bed_No</u>	bed_Status	<u>dorm_No</u>
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Student: In the this relation the primary key (staff_Id) determines every other entity so this will be the only functional dependency because there are no other dependencies, thus the closure of ID will be:
{ staff_Id }+ = { student_Id, Fname, Lname, mob_No, dept, Year_of_Study, Password, dorm_Building_No, dorm_No} = Student

Student

<u>student_Id</u>	Fname	Lname	mob_No	dept	Year_of_Study	password	dorm_Building	dorm_No
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The diagram illustrates the functional dependency of the primary key 'student_Id' on all other attributes in the 'Student' table. A horizontal line with an upward-pointing arrow at its left end originates from the 'student_Id' column. From this line, eight vertical arrows point upwards to the center of each of the following columns: 'Fname', 'Lname', 'mob_No', 'dept', 'Year_of_Study', 'password', 'dorm_Building', and 'dorm_No'.

Normalization

All the entities which are dorm_Building, Proctor_Staff, Student, Bed, Locker and Dorm are already normalized to 3NF through process during the previous Steps