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HOSTEL ALLOCATION PORTAL

1. System Requirement Specification (SRS)

1.1. Introduction

1.1.1 Objective

The main objective of this will be to deal with Hostel Management Portal in an efficient and transparent way.

1.1.2 Scope of the Project

- This portal is designed for allocation of hostels to students according to their preference in universities and colleges.
- The student database contains the required information for the students who have to be allocated a room.
- Student is supposed to fill his ID as well as the IDs of five more students who are in his Wing along with their Hostel Preference, a Wing is allocated to the students based upon their choices.

1.2 Overall Description

1.2.1 System Requirement

We need latest version of Chrome on the system to run sql files, a software to run Python-TKinter library(Frontend) and Node Js(Backend) and MySQL to run SQL queries.

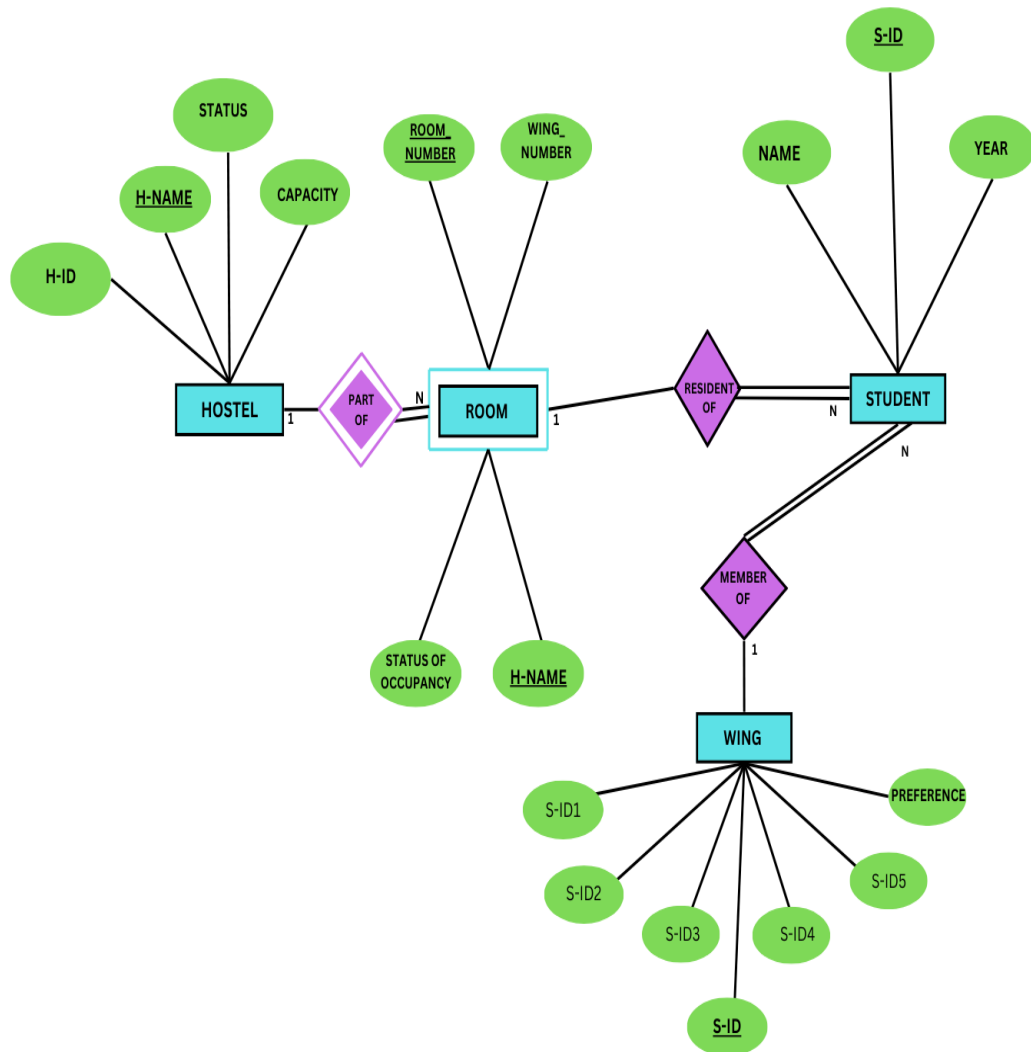
1.3 User Requirements Definition

The major User Requirements from the Hostel Management Portal are as follows :

- Less human error
- Strength and strain of manual labor can be reduced
- Data consistency
- Data redundancy can be avoided to some extent

2. SYSTEM MODELLING

A) E-R Model



B) Schema Design

1)

Student	S_ID	NAME	YEAR
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The Relation Student consists of:-

Student Id(INT) , NAME(Char) , YEAR(INT)

Here primary key of the table is S_ID.

All Fields are compulsory i.e.no field can be marked NULL.

2)

Hostel	H_ID	H_NAME	STATUS	CAPACITY
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The Relation Hostel consists of :-

Hostel Id(Int) , Hostel name(Char) , Hostel Status(BOOLEAN) ,

Hostel capacity(Int).

Here primary key is H_NAME.

3)

Wing	S_ID	S_ID1	S_ID2	S_ID3	S_ID4	S_ID5	PREFERENCE
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The relation Wing consists of :-

S_ID(Id of Leader of wing) , S_ID1 , S_ID2 , S_ID3, S_ID4, S_ID5

(Id's of members of wing) ,

Preference(Which hostel they want , they need to fill in the Id of that hostel).

Here S_ID is the primary key.

4)

Rooms	ROOM_NUMBER	STATUS OF OCCUPANCY	H_NAME	WING_NUMBER
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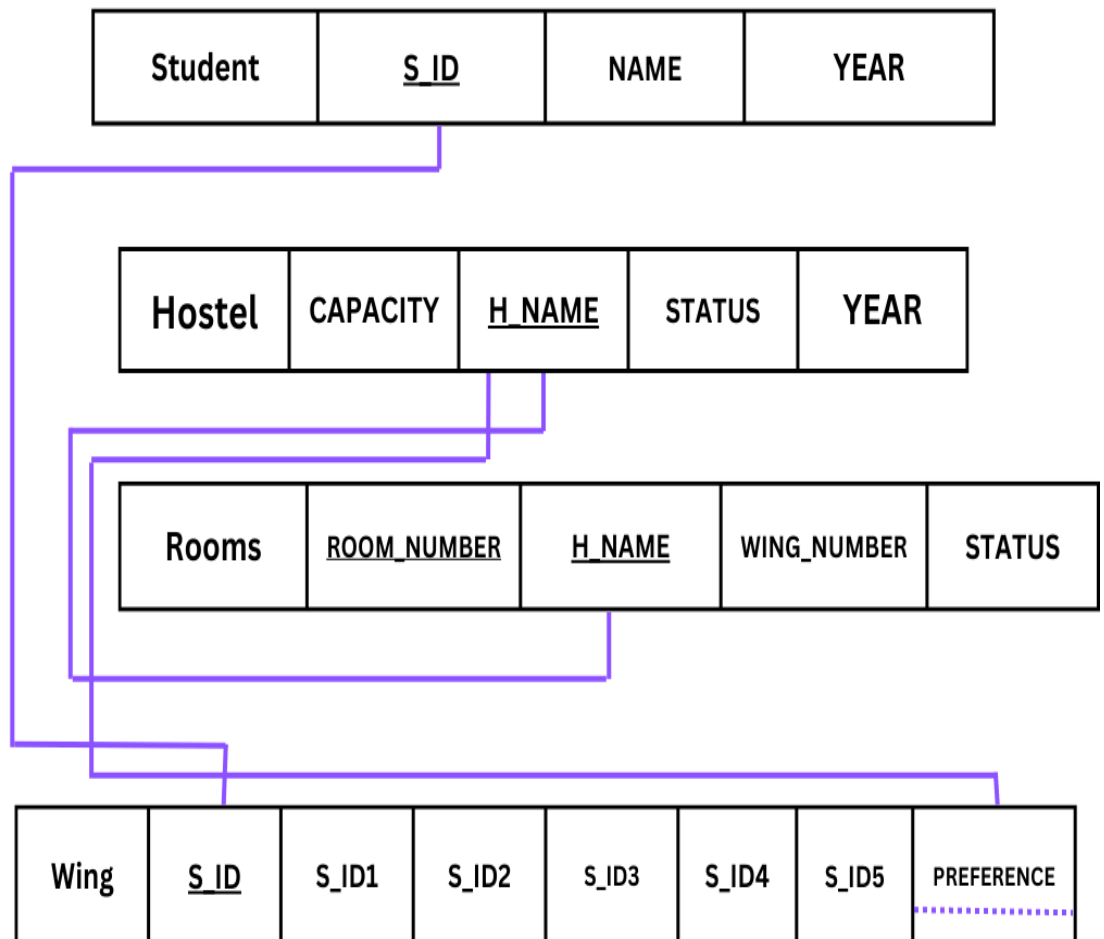
The Relation rooms consists of:-

H_NAME(Char) , ROOM_NUMBER(INT) and STATUS OF OCCUPANCY(INT) i.e it is allotted or empty and WING_NUMBER(INT)

Here Primary key is (H_NAME + ROOM_NUMBER). And foreign key is a H_NAME.

Above is the description of 4 tables used in the SQL.

The diagram shown below in the Schema diagram.....



1.4 Data Normalisation

The Er diagram and Schema design and diagram I have made are after normalisation. Some of the major redundancies I removed are as follows:-

1. I am using Student Id in every other relation , to avoid saving student name again and again in every other table.
2. I am using Hostel Id in every other relation , to avoid saving Hostel name and capacity again and again in every other table.
3. To avoid writing Wing id again and again in front of every student of the respective Wing , I added all students with the same wing id and same hostel preference in the same row.
4. In Rooms Table , it was necessary to repeat Hostel ID again and again because room number 1 is present in all the hostels , if I used the row representation of rooms i.e all rooms of the same hostel in the same row then it would be very chaotic to update the Status of room for all five hostels.

1.5 Tables Required :-

- Student (S_ID,H_NAME, YEAR)
- Hostel (H_NAME,H_ID,CAPACITY,STATUS)
- Rooms (H_NAME , ROOM_NUMBER, STATUS OF OCCUPANCY,WING_NUMBER)
- Wing(S_ID, S_ID1, S_ID2, S_ID3, S_ID4,S_ID5, Preference)
- One additional ALLOCATION will be created to represent the allocated hostels to each respective student. Allotment(S_ID, H_NAME , ROOM_NUMBER)

1.6 e) Additional components

For simplicity , I have assumed that wing leader will himself enter the name of all it's Wing members and enter his Preference of the Hostel rather than giving other students to join the wing. Also, I have kept size of wing constant i.e. 6. If the entered number of students is lesser than this number of students, system won't accept them as a wing and give an error.