

Architecture model:

When developing software four architecture models can be used. These models are:

- MVC(Model View Control)
- Layered Architecture
- Repository Architecture
- Client-Server Architecture

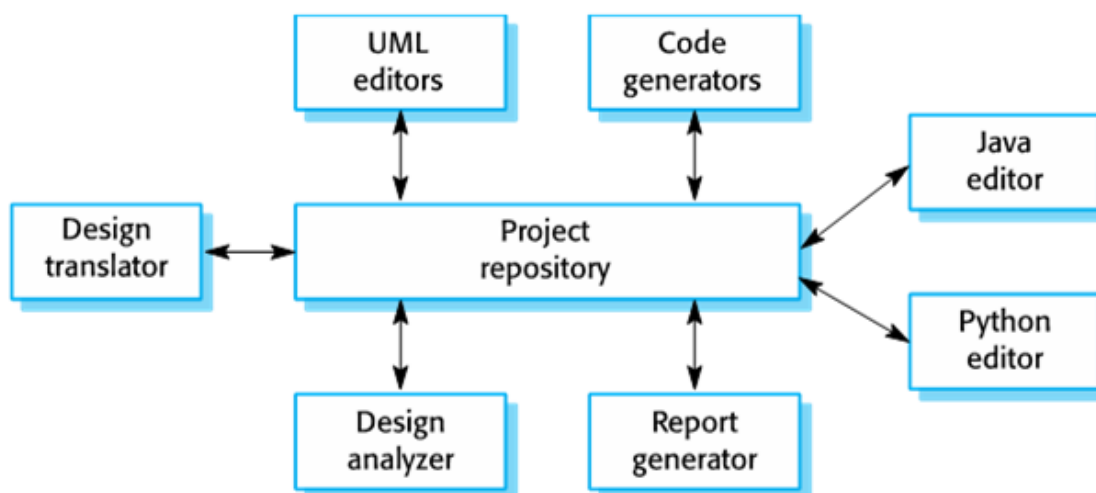
Among the models mentioned above, the architecture which will be used for our BracU Gate Entry system is the Repository model.

Repository architecture is a system that will allow several interfacing components to share the same data. Each component interfaces the same dataset that is utilized system wide. Data manipulation taking place in one component will reflect an identical representation of data in another component.

Each sub-system in our Gate Entry System maintains its own database and passes data explicitly to other sub-systems. When large amounts of data are to be shared, the repository model of sharing is most commonly used this is an efficient data sharing mechanism, accessible to all system components. Therefore by using this model we can load and store data of a student in the central system and then allow it to be shared to all other sub-systems. This way the central system can be used to monitor all the other ones.

One of the advantages of using this model in the gate entry systems is that all the components are independent, one component does not need to know the existence of another component. Also changes that are made to one component can be propagated to another component. Moreover all the data that is being stored are simultaneously being backed up by the central system.

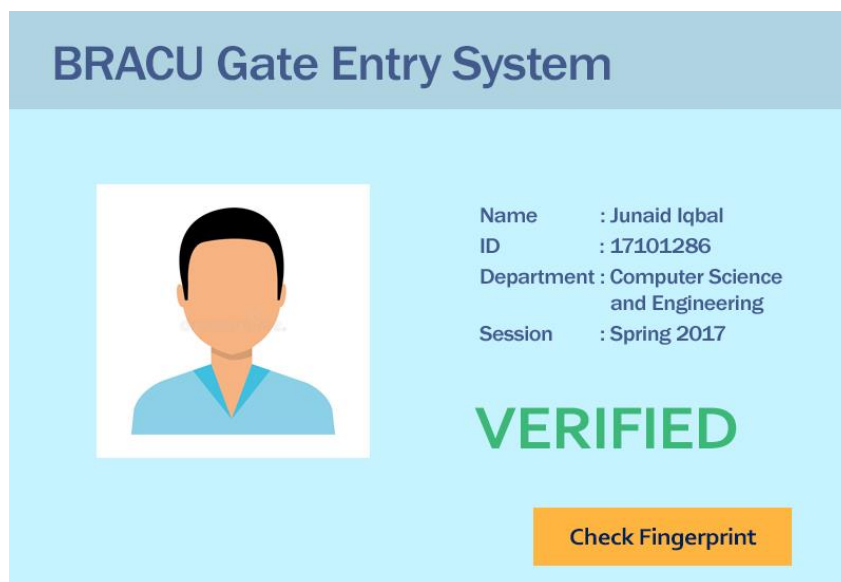
A diagram of the repository model is given below.



USER INTERFACE:

The user interface of out gate entry system is restricted to administrative privileges only, this means that the person controlling the central system and the guards in charge of the gates will have an interface. The students will only be accessing the gates by scanning their identification card or fingerprints. After scanning the identification card or fingerprint the student will either be granted access or denied entry after being verified. If granted access then the information regarding the student will be recorded along with the time of entry and exit.

When a student has scanned their identification card or finger print if they get verified and granted access then the guard will be able to see default information regarding the student entering the gate at the time. However the guards will not be able to access the student information any other way directly apart from when they are entering the gate. The figure below shows what will be seen by the guard.



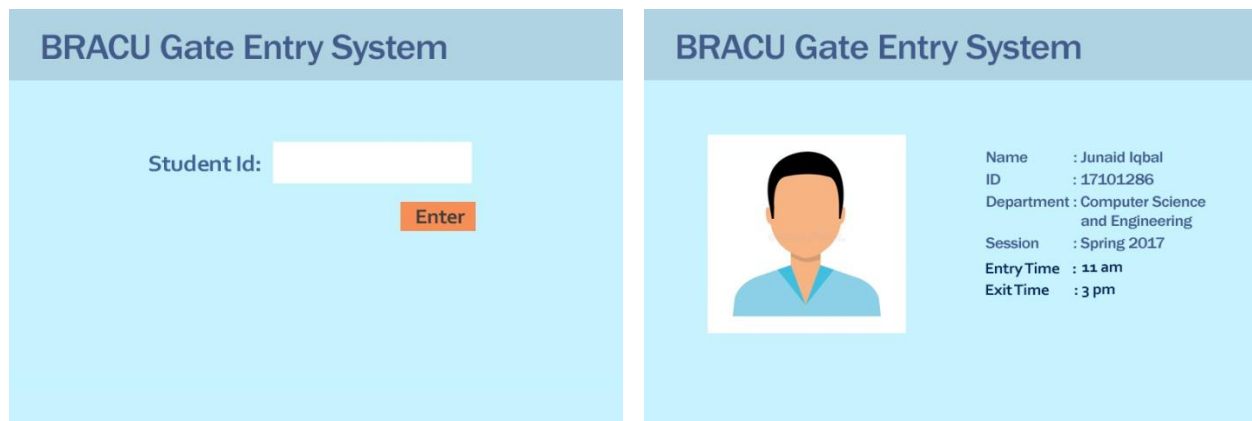
The interface displays a student's profile with a placeholder image, name, ID, department, and session. A large green 'VERIFIED' status is shown, along with a 'Check Fingerprint' button.

Name	: Junaid Iqbal
ID	: 17101286
Department	: Computer Science and Engineering
Session	: Spring 2017

VERIFIED

Check Fingerprint

The administrator who will be over looking and controlling the central system will be able to access and Students' information directly and will also be able to see the entry and exit time of the student, which cannot be seen or accessed by the guards as mentioned before.



The first screenshot shows the 'Student Id' input field and an 'Enter' button. The second screenshot shows the student's profile with additional 'Entry Time' and 'Exit Time' information.

BRACU Gate Entry System

Student Id:

Enter

BRACU Gate Entry System

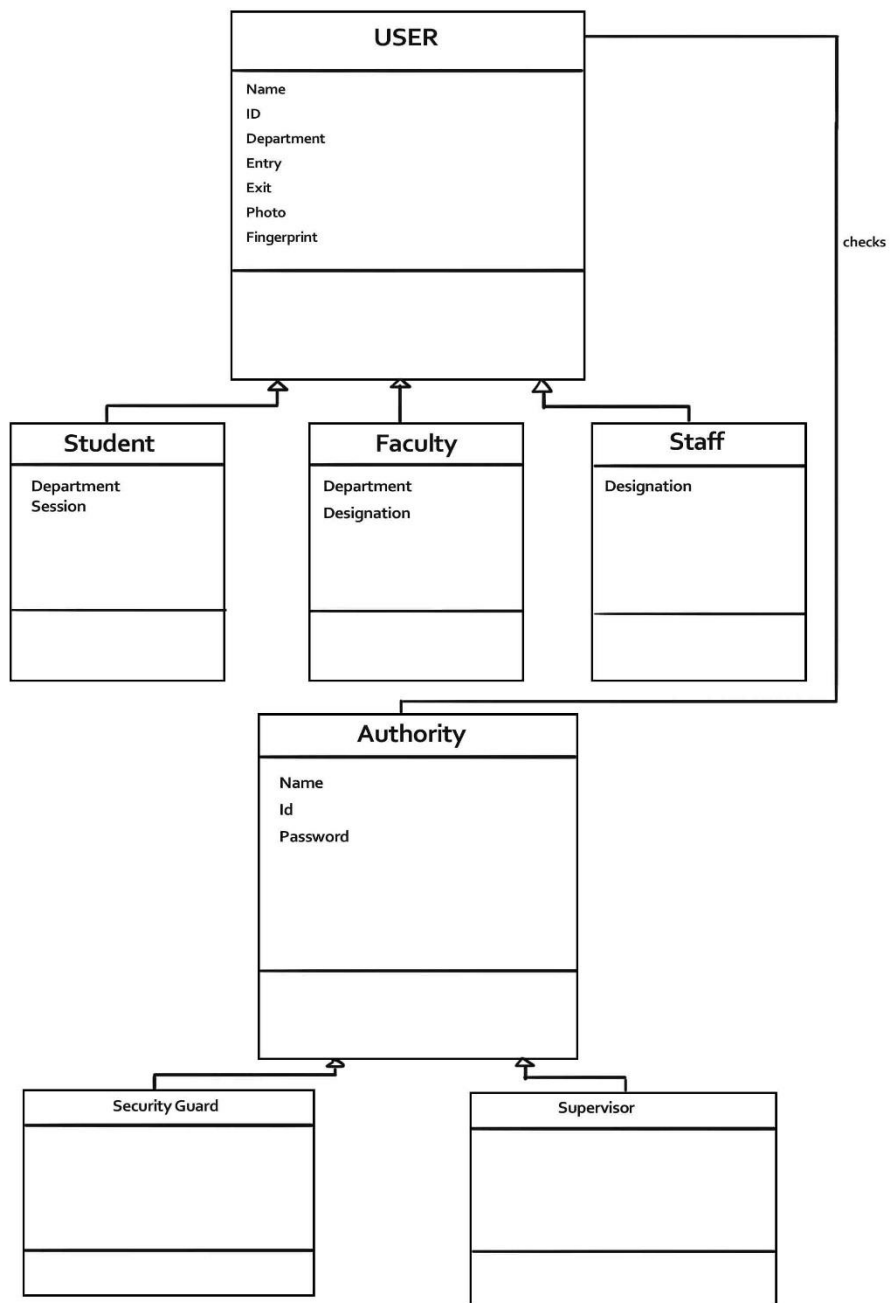
Name	: Junaid Iqbal
ID	: 17101286
Department	: Computer Science and Engineering
Session	: Spring 2017
Entry Time	: 11 am
Exit Time	: 3 pm

Data Base Model Design:

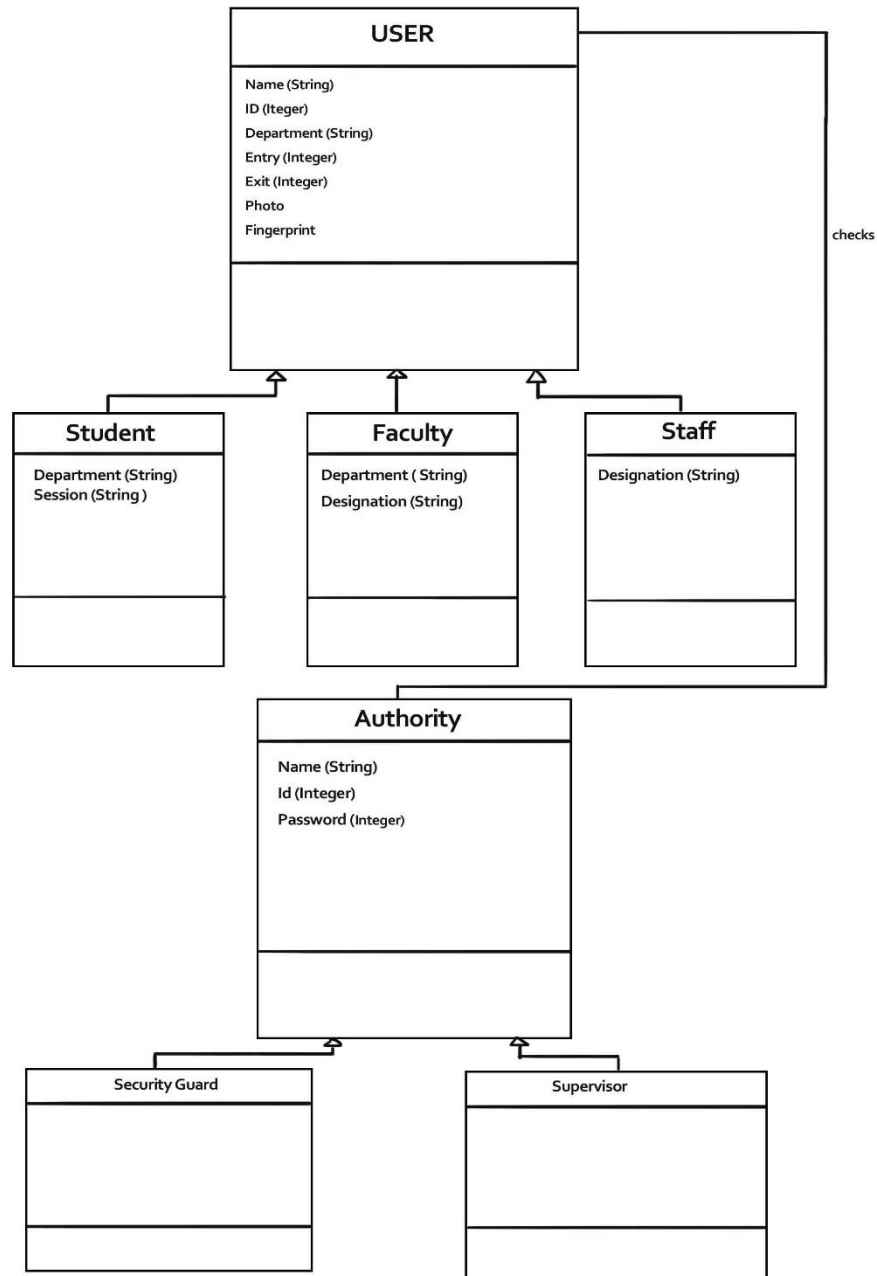
To discuss the Database model of this system there are 3 part of this Data Model Design

1. Conceptual Data Model: It shows what are in the database in our system so here we have User. It has child: Student, Faculty, Staff Again another is Authority. It has 2 child: Security Guard, Supervisor. This is the concept how the data model will work.
2. Logical Data Model: It provides further information from conceptual Model. It helps to build the Physical Model. In this model, we do not have any primary key. It is basically the logic we planned to execute.
3. Physical Data Model: This is the model we are actually working on. It has primary key to build relation among the tables in the database. In this part we made our database's table interconnected.

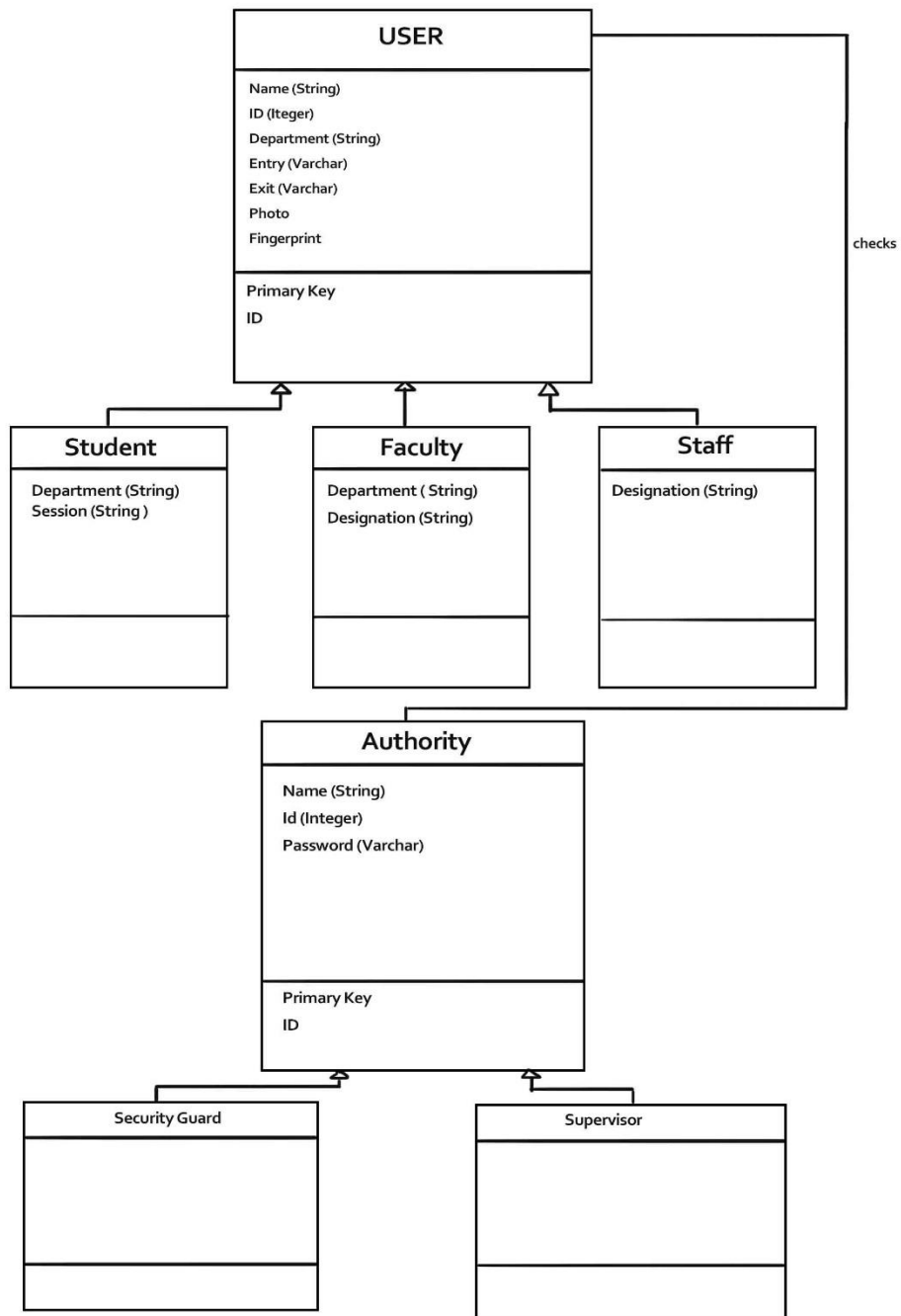
Conceptual Data Model:



Logical Data Model:



Physical Data Model:



References:

<https://cs.ccsu.edu/~stan/classes/CS410/Notes16/06-ArchitecturalDesign.html>