**SCHOOL MANAGEMENT SYSTEM:**

In this management system we tried to explain everything a School Management System contains.

By moving forward, we get to know that what type of Entities and Attributes this management system contain with their datatypes and why we are using these entities and attributes?

This management System consists of the following Entities:

**ENTITIES:**

1. Employee
2. Department
3. Student
4. Subject
5. Classes
6. Fee
7. Result
8. Timetable
9. Attendance

**EXPLAINATION OF ENTITIES WITH THEIR ATTRIBUTES AND DATATYPES:**

1. **Employee:**

Every school consists of staff members and every staff member has it’s own unique **id(Primary key)** and it should be of **integer type**, with id it’s **fname, lname** with datatype of **varchar** and it’s **CNIC** of **varchar** type because it includes hyphen with integer values. **Date\_of\_Birth** as **date** type and it’s **gender** with **varchar** type, **Cell\_no** of **integer** type, **Email** of **varchar** type, **address** of **varchar** type **mgr\_id**(manager\_id) of **integer** type and it is a **foreign key with reference to Employee (id)** because manager of any department is from any of the Employees. **Dept\_id**(department\_id) of **integer** type and it’s a **foreign key with reference to Department (id)** it will give us the information about Manager of Department and Employees working in that department. **Martial Status** (weather employee is married or unmarried) of **varchar** type. **Date\_of\_Hiring** of **date** type and it’s **Salary** of **integer** type.

1. **Department:**

A school consists of different departments with their managers. A unique attribute in department is it’s **id(Primary key)** of **integer** type, it’s **name** of **varchar** type and it’s **mgr\_id**(manager\_id) of type **integer** which is a **foreign key with reference to Employee\_id** which gives us the manager of every department.

1. **Student:**

A school is made for Students where they can study so, every student has it’s unique **id** in school (assign to them during the admission process) of **integer** type, his/her **fname, lname** of **varchar** type and his **father\_name, mother\_name** of **varchar** type. **Father\_cell\_no** of **integer** type and **mother\_cell\_no** of **integer** type which **may be NULL**, students B.Form number as **bform\_no** of **varchar** type as it include hyphens. **Date\_of\_Birth** of **date** type, **Place\_of\_Birth** of **varchar** type, his **Cell\_no** of **integer** type it may be **NULL**, **Address** of **varchar** type, **Gender** of **varchar** type, and his **class\_id** of **varchar** type which will provide us information about his class and his timetable. It’s a **foreign key with reference to Classes\_id.**

1. **Subject:**

Every student study subjects in school according to their class. Every Subject has it’s unique **id** of **integer** type and his **name** of **string** type. **Class\_id** of **integer** type which is a **foreign key with references to Classes(id)** which will tell us that which class is studying which subject. **Teacher\_id** of **integer** type which is a **foreign key with references to Employee(id)** which will give us the information that which teacher is teaching which subject.

1. **Classes:**

Teacher teaches and students study in class. Every class has it’s name. **id** **of student and employee** which is a **primary key** in classes but **foreign key with reference to their corresponding tables** which will give information about classes of teacher where they have lectures and about students where they have class. **Section** of **varchar** type which tell us about the name of class.

1. **Fee:**

Every student pays fee in school. It requires **student\_id(Primary key)** of **integer** type which is a **foreign key references to Student(id)**, **discount** of **integer** type, **fine** of **integer** type, **scholarship** of **integer** type, **miscellaneous**(other charges) of **integer** type. We can count total fee or monthly fee by calculating these attributes.

1. **Result:**

Every student got result after the end of his class. **Student\_id**(primary key) of **integer** type for specific student, **term1,2,3\_grade** of **varchar** type to get overall grade of student and **term1,2,3\_marks** of type **float** to get overall marks of student, **total\_marks** of **integer** type.

1. **Timetable:**

Every teacher and student has a timetable or schedule of their classes.

It needs **class\_id** of **integer** type which is a **foreign key with reference to Classes(id)**, **timing** of **time** type to show timings.

1. **Attendance:**

Attendence is a key component of every school to make it better. It includes **id(primary key)** of **both student and employee** of **integer** type which is a **foreign key with their corresponding tables**. **Status** of type **varchar** (absent,present,leave), **Date** of **date** type.