

# Assignment Day 1

Name: Shraddha Vitthal Kshirsagar

## Module 1: Introduction to Database System

Explain the below concepts in short

1. DBMS:

**A Database Management System (DBMS) is software designed to store, retrieve, define, and manage data in a database. A DBMS serves as an interface between an end-user and a database, allowing users to create, read, update, and delete data in the database.**

2. RDBMS:

**A relational database management system (RDBMS) is a collection of programs that enable IT teams and others to create, update, administer and interact with a relational database. RDBMS is a type of database management system (DBMS) that stores data in a row-based table structure which connects related data elements. An RDBMS includes functions that maintain the security, accuracy, integrity and consistency of the data.**

3. Entity Relationship Diagram:

**An Entity Relationship (ER) Diagram illustrates how “entities” such as people, objects or concepts relate to each other within a system. In database an entity is nothing but a table and an attributes are columns.**

4. Types of relationship with examples

a) One to one:

**Each record of one table is related to only one record of the other table.**

**e.g. each person can have only one passport and each passport belongs to only one person.**

b) One to Many Or Many to One:

**Each record of one table can be related to one or more than one record of the other table.**

**e.g. customer can have many accounts and many accounts can be associated with one customer.**

c) Many to Many:

**Each record of the first table can be related to one or more than one record of the second table and a single record of the second table can be related to one or more than one record of the first table.**

**e.g. each customer can buy more than one product and a product can be bought by many different customers.**

5. Concept of Data Dictionary:

**A data dictionary contains metadata i.e data about the database. A Data Dictionary is a collection of names, definitions, and attributes about data elements that are being used or captured in a database.**

**e.g. user\_tables, user\_objects, user\_constraints, user\_cons\_columns, etc.**

6. Types of Constraints with their use:

- a) NOT NULL:** It is used to prevent inserting NULL values in the specified column. If we are using this constraint for a column then we cannot ignore the value of this column during insert.
- b) UNIQUE:** It makes sure that duplicate values are not inserted into a specific column. It can contain null values. One table can have many unique keys.
- c) PRIMARY KEY:** A Primary key uniquely identifies each row in a table. It cannot accept duplicate and null values. One table can have only one primary key.
- d) FOREIGN KEY:** It is a field in the database that is primary key in another table. It references to the primary key in another table or the same table. It can contain duplicate and null values and can contain only values present in primary key column of another table.
- e) CHECK:** It is used for user-defined constraints. It checks for a specific condition before inserting data into a table.
- f) DEFAULT:** It is used to specify default value for a column. If during an insertion any value is not specified for this column then the default value will be inserted.

## Module 2: Introduction to SQL and various DDL statements

1. Create the following tables as per details mentioned

### Sports\_House

Field Name	Data Types	Field Size	Description
House_Code	Text	5	Unique house code Primary key
House_Colour	Text	6	House colour
House_Name	Text	10	Name given to the sporting house

```
CREATE TABLE Sports_House
(
    House_Code VARCHAR2(5) PRIMARY KEY,
    House_Colour VARCHAR2(6),
    House_Name VARCHAR2(10)
);
```

### Students

Field Name	Data Types	Field Size	Description
Student_ID	Text	6	Unique Student ID Primary key
First_Name	Text	50	Student's first name
Last_Name	Text	50	Student's last name
Gender	Text	1	Male or Female

```
CREATE TABLE Students
(
    Student_ID VARCHAR2(6) PRIMARY KEY,
    First_Name VARCHAR2(50),
    Last_Name VARCHAR2(50),
    Gender VARCHAR2(1) CHECK (Gender in ('M','F'))
);
```

### Roll\_Class

Field Name	Data Types	Field Size	Description
Roll_Class_Code	Text	10	Unique code for roll class Primary key
Roll_Class_Standard	Number	2	Description of the roll class
Roll_Class_Division	Text	1	Division details
Roll_Class_Year	Text	4	Start Year (for 2012-13 : it will be 2012)

**CREATE TABLE Roll\_Class**

```
(  
    Roll_Class_Code VARCHAR2(10) PRIMARY KEY,  
    Roll_Class_Standard NUMBER(2),  
    Roll_Class_Division VARCHAR2(1),  
    Roll_Class_Year VARCHAR2(4)  
);
```

### Student\_Roll\_details

Field Name	Data Types	Field Size	Description
Student_ID	Text	6	Foreign key
Roll_Class_Code	Text	10	Roll class code Foreign key

**CREATE TABLE Student\_Roll\_details**

```
(  
    Student_ID VARCHAR2(6),  
    Roll_Class_Code VARCHAR2(10),  
    CONSTRAINT details_fk1 FOREIGN KEY(Student_ID)  
    REFERENCES Students(Student_ID),  
    CONSTRAINT details_fk2 FOREIGN KEY(Roll_Class_Code)  
    REFERENCES Roll_Class(Roll_Class_Code)  
);
```

2. Alter the Students table to add DOB column with Date datatype.

```
ALTER TABLE Students  
ADD DOB DATE;
```

3. Modify the size of House name column to 20 characters long.

```
ALTER TABLE Sports_House  
MODIFY House_Name VARCHAR(20);
```

4. Modify the Students table add House\_code column as foreign key references to Sports\_house table House\_code column.

```
ALTER TABLE Students  
ADD House_Code VARCHAR(5)  
REFERENCES Sports_House(House_Code);
```

5. Rename table Student\_Roll\_details to std\_roll\_details

```
RENAME Student_Roll_details TO std_roll_details;
```

## Module 3: Data Manipulation

1. Populate the below data in tables created.

### Sports\_House

Housecode	HouseColour	HouseName
5	Pink	Busybees
6	BGreen	Parrot
1	RED	BUDS
2	GREEN	BLOOM
3	BLUE	RAINDROPS
4	WHITE	SUNSHINE
7	PURPLE	SNOWFALL

```
INSERT INTO Sports_House VALUES(5,'Pink','Busybees');
```

```
INSERT INTO Sports_House VALUES(6,'BGreen','Parrot');
```

```
INSERT INTO Sports_House VALUES(1,'RED','BUDS');
```

```
INSERT INTO Sports_House VALUES(2,'GREEN','BLOOM');
```

```
INSERT INTO Sports_House VALUES(3,'BLUE','RAINDROPS');
```

```
INSERT INTO Sports_House VALUES(4,'WHITE','SUNSHINE');
```

```
INSERT INTO Sports_House VALUES(7,'PURPLE','SNOWFALL');
```

### Students

StudentId	Firstname	Lastname	Gender	DOB	Housecode
1	Amit	Sharma	M	18-Aug-06	1
2	Kens	Dole	M	23-Aug-04	2
3	PRIYA	Raina	F	18-Aug-06	1
4	Mukta	Singh	F	19-Sep-05	2
5	Ana	George	F	23-Jul-06	1
6	Teena	Sharma	F	19-Oct-03	2
7	Anushree	Kale	F	21-Oct-01	3
8	Sanaya	Sathe	F	19-Nov-00	3
9	Kahan	Parekar	M	15-Jul-01	3
10	Aneesh	Acharya	M	6-May-00	4

```
INSERT INTO Students VALUES(1,'Amit','Sharma','M','18-Aug-06',1);
```

```
INSERT INTO Students VALUES(2,'Kens','Dole','M','23-Aug-04',2);
```

```

INSERT INTO Students VALUES(3,'PRIYA','Raina', 'F', '18-Aug-06',1);
INSERT INTO Students VALUES(4,'Mukta','Singh', 'F', '19-Sep-05',2);
INSERT INTO Students VALUES(5,'Ana','George', 'F', '23-Jul-06',1);
INSERT INTO Students VALUES(6,'Teena','Sharma', 'F', '19-Oct-03',2);
INSERT INTO Students VALUES(7,'Anushree','Kale', 'F', '21-Oct-01',3);
INSERT INTO Students VALUES(8,'Sanaya','Sathe', 'F', '19-Nov-00',3);
INSERT INTO Students VALUES(9,'Kahan','Parekar', 'M', '15-Jul-01',3);
INSERT INTO Students VALUES(10,'Aneesh','Acharya', 'M', '6-May-00',4);

```

#### Roll\_class

Rollclasscode	RollclassStandard	RollclassDivision	Rollclassyear
4_A_16	4	A	2016
4_B_16	4	B	2016
10_A_16	10	A	2016
10_B_16	10	B	2016
4_A_09	4	A	2009
4_B_09	4	B	2009
8_A_16	8	A	2016
8_B_16	8	B	2016
10_B_09	10	B	2009
6_C_14	6	C	2014
10_C_14	10	C	2014

```

INSERT INTO Roll_class VALUES('4_A_16', 4, 'A', 2016);
INSERT INTO Roll_class VALUES('4_B_16', 4, 'B', 2016);
INSERT INTO Roll_class VALUES('10_A_16', 10, 'A', 2016);
INSERT INTO Roll_class VALUES('10_B_16', 10, 'B', 2016);
INSERT INTO Roll_class VALUES('4_A_09', 4, 'A', 2009);
INSERT INTO Roll_class VALUES('4_B_09', 4, 'B', 2009);
INSERT INTO Roll_class VALUES('8_A_16', 8, 'A', 2016);
INSERT INTO Roll_class VALUES('8_B_16', 8, 'B', 2016);
INSERT INTO Roll_class VALUES('10_B_09', 10, 'B', 2009);
INSERT INTO Roll_class VALUES('6_C_14', 6, 'C', 2014);
INSERT INTO Roll_class VALUES('10_C_14', 10, 'C', 2014);

```

### Std\_roll\_details

Studentid	RollclassCode
1	4_A_16
2	8_A_16
3	4_A_16
4	10_B_16
6	10_A_16
5	4_A_16
8	10_B_16
7	6_C_14
9	8_A_16
10	10_B_16

```
INSERT INTO Std_roll_details VALUES(1,'4_A_16');  
INSERT INTO Std_roll_details VALUES(2,'8_A_16');  
INSERT INTO Std_roll_details VALUES(3,'4_A_16');  
INSERT INTO Std_roll_details VALUES(4,'10_B_16');  
INSERT INTO Std_roll_details VALUES(5,'10_A_16');  
INSERT INTO Std_roll_details VALUES(6,'4_A_16');  
INSERT INTO Std_roll_details VALUES(7,'10_B_16');  
INSERT INTO Std_roll_details VALUES(8,'6_C_14');  
INSERT INTO Std_roll_details VALUES(9,'8_A_16');  
INSERT INTO Std_roll_details VALUES(10,'10_B_16');
```

2. Modify the House name as 'Rose' and House Colour as 'Orange' for Sports House Code 6

```
UPDATE Sports_House  
SET House_Name='Rose', House_Colour='Orange'  
WHERE House_Code=6;
```

3. Remove the record for Standard 8 Division B from roll class table.

```
DELETE FROM Roll_Class  
WHERE Roll_Class_Standard=8 AND Roll_Class_Division='B';
```

4. Insert the new House code details in Sports\_house table. Accept the values at run time.

```
INSERT INTO Sports_House VALUES(&House_Code,&House_Colour,&House_Name');
```