CS F212 – DATABASE SYSTEMS

Centralized College Database

TEAM MEMBERS ID	NAMES
1. 2021AAPS2121H	Ananya Jain (25 %)
2. 2021AAPS2974H	Pratham Tikkisetty (25 %)
3. 2021AAPS20691H	Harshavardhan Gali (25 %)
4. 2021AAPS0628H	Krittika Paul (25 %)

GROUP ID - 45

Creating Tables

1) Students

```sql

CREATE TABLE Students (
    StudentID VARCHAR(50) PRIMARY KEY,
    FirstName VARCHAR(50),
    LastName VARCHAR(50),
    Branch VARCHAR(50),
    Age INT
);

INSERT INTO Students (StudentID, FirstName, LastName, Branch,Age)
VALUES
    ('2021AAPS2974H', 'Pratham', 'Tikkisetty', 'Electronics and Communications',20),
    ('2021AAPS0691H', 'Harshavardhan', 'Gali',  'Electronics and Communications',19),
    ('2021AAPS2121H', 'Ananya', 'Jain','Electronics and Communications',21),
    ('2021AAPS0628H', 'Krittika', 'Paul','Electronics and Communications',21),
    ('2021B3A7PS3039H', 'Vibhanshu', 'Bhagat','Computer Science',20);
```

StudentID	FirstName	LastName	Branch	Age
2021AAPS0628H	Krittika	Paul	Electronics and Communications	21
2021AAPS0691H	Harshavardhan	Gali	Electronics and Communications	19
2021AAPS2121H	Ananya	Jain	Electronics and Communications	21
2021AAPS2974H	Pratham	Tikkisetty	Electronics and Communications	20
2021B3A7PS3039H	Vibhanshu	Bhagat	Computer Science	20
NULL	NULL	NULL	NULL	NULL

2) Courses

```sql
CREATE TABLE Courses (
    CourseID VARCHAR(10) PRIMARY KEY,
    CourseName VARCHAR(100),
    Department VARCHAR(50),
    InstructorInCharge VARCHAR(100)
);


INSERT INTO Courses (CourseID, CourseName, Department, InstructorInCharge)
VALUES
    ('CS F212', 'Database Management', 'Computer Science', 'Jayalakshmi N'),
    ('MATH F111', 'Calculus', 'Mathematics', 'PK Sahoo'),
    ('PHY F111', 'Mechanics', 'Physics', 'Kanan Ramaswamy'),
    ('CS F232', 'Foundations of Data Structures and Algorithms', 'Computer Science', 'Chittaranjan Hota'),
    ('BIO F111', 'General Biology', 'Biology', 'Vivek Sharma');
```

CourseID	CourseName	Department	InstructorInCharge
BIO F111	General Biology	Biology	Vivek Sharma
CS F212	Database Management	Computer Science	Jayalakshmi N
CS F232	Foundations of Data Structures and Algorithms	Computer Science	Chittaranjan Hota
MATH F111	Calculus	Mathematics	PK Sahoo
PHY F111	Mechanics	Physics	Kanan Ramaswamy
NULL	NULL	NULL	NULL

3) Enrollments

```sql
CREATE TABLE Enrollments (
    EnrollmentID INT PRIMARY KEY,
    StudentID VARCHAR(50) ,
    CourseID VARCHAR(50)
);


INSERT INTO Enrollments (EnrollmentID, StudentID, CourseID)
VALUES
    (1, '2021AAPS2974H', 'CS F212'),
    (2, '2021AAPS0691H', 'MATH F111'),
    (3, '2021AAPS2121H', 'PHY F111'),
    (4, '2021AAPS0628H', 'CS F232'),
    (5, '2021B3A7PS3039H', 'BIO F111');
```

EnrollmentID	StudentID	CourseID
1	2021AAPS2974H	CS F212
2	2021AAPS0691H	MATH F111
3	2021AAPS2121H	PHY F111
4	2021AAPS0628H	CS F232
5	2021B3A7PS3039H	BIO F111
NULL	NULL	NULL

Queries

1. Query for updating the tuples values based on StudentID

```
1  UPDATE Students
2  SET Branch = 'Economics'
3  WHERE StudentID = '2021B3A7PS3039H';
4
5  SELECT * from Students;
6
```

100% 24:5

Result Grid Filter Rows: Search Edit: Expor

StudentID	FirstName	LastName	Branch	Age
2021AAPS0628H	Krittika	Paul	Electronics and Communications	21
2021AAPS0691H	Harshavardhan	Gali	Electronics and Communications	19
2021AAPS2121H	Ananya	Jain	Electronics and Communications	21
2021AAPS2974H	Pratham	Tikkisetty	Electronics and Communications	20
2021B3A7PS3039H	Vibhanshu	Bhagat	Economics	20
NULL	NULL	NULL	NULL	NULL

2. Query to retrieve the tuples based on Group by, Order by and Having clauses.

```
1  SELECT Branch, AVG(Age) AS AverageAge FROM Students
2  GROUP BY Branch
3  HAVING AVG(Age) > 19
4  ORDER BY AverageAge DESC;
5
```

100% 26:4

Result Grid Filter Rows: Search Export:

Branch	AverageAge
Electronics and Communications	20.0000
Economics	20.0000

3. Queries to retrieve the tuples based on any two joins present in SQL.

```
1  SELECT Students.FirstName, Students.LastName, Courses.CourseName
2  FROM Students
3  INNER JOIN Enrollments ON Students.StudentID = Enrollments.StudentID
4  INNER JOIN Courses ON Enrollments.CourseID = Courses.CourseID;
5
```

100% 1:5

Result Grid Filter Rows: Search Export:

FirstName	LastName	CourseName
Pratham	Tikkisetty	Database Management
Harshavardhan	Gali	Calculus
Ananya	Jain	Mechanics
Krittika	Paul	Foundations of Data Structures and Algorithms
Vibhanshu	Bhagat	General Biology

4. Queries to retrieve the tuples based on two aggregate functions.

```
1  SELECT COUNT(*) AS TotalStudents, AVG(Age) AS AverageAge
2  FROM Students;
3
```

100% 1:1

Result Grid Filter Rows: Search Export:

TotalStuden...	AverageAge
5	20.2000

5. Subqueries to retrieve the tuples.