

ASSIGNMENT 10

Consider the following tables:

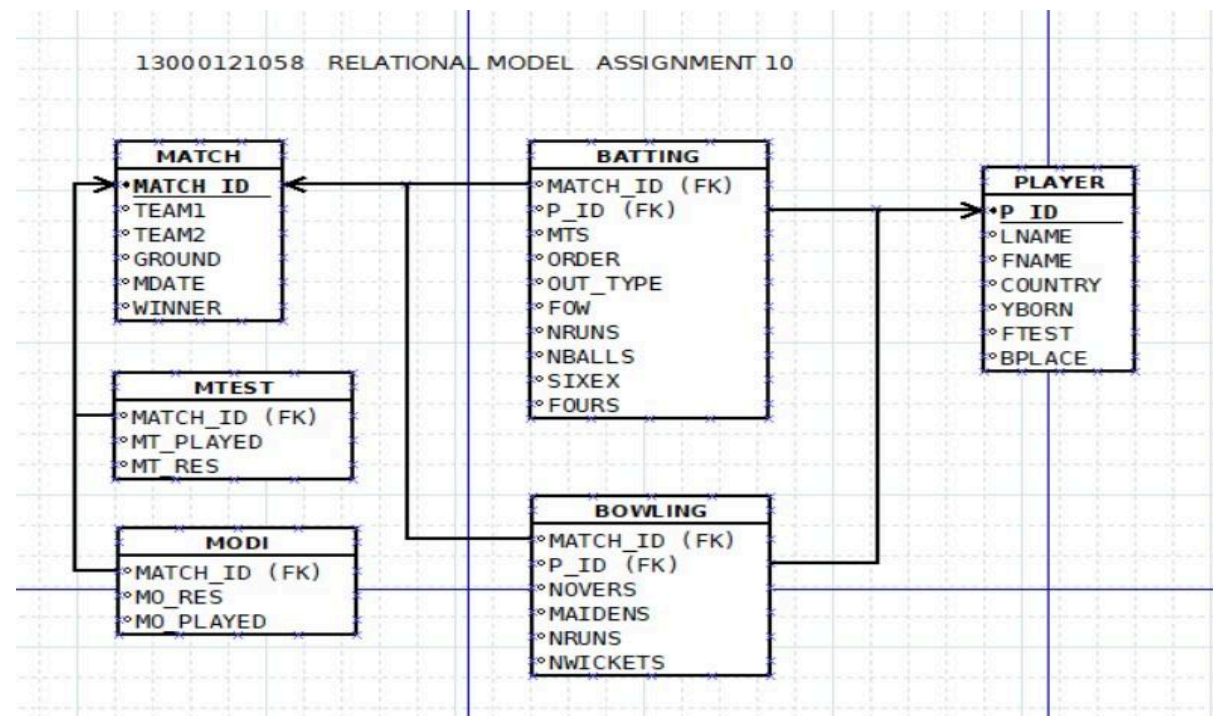
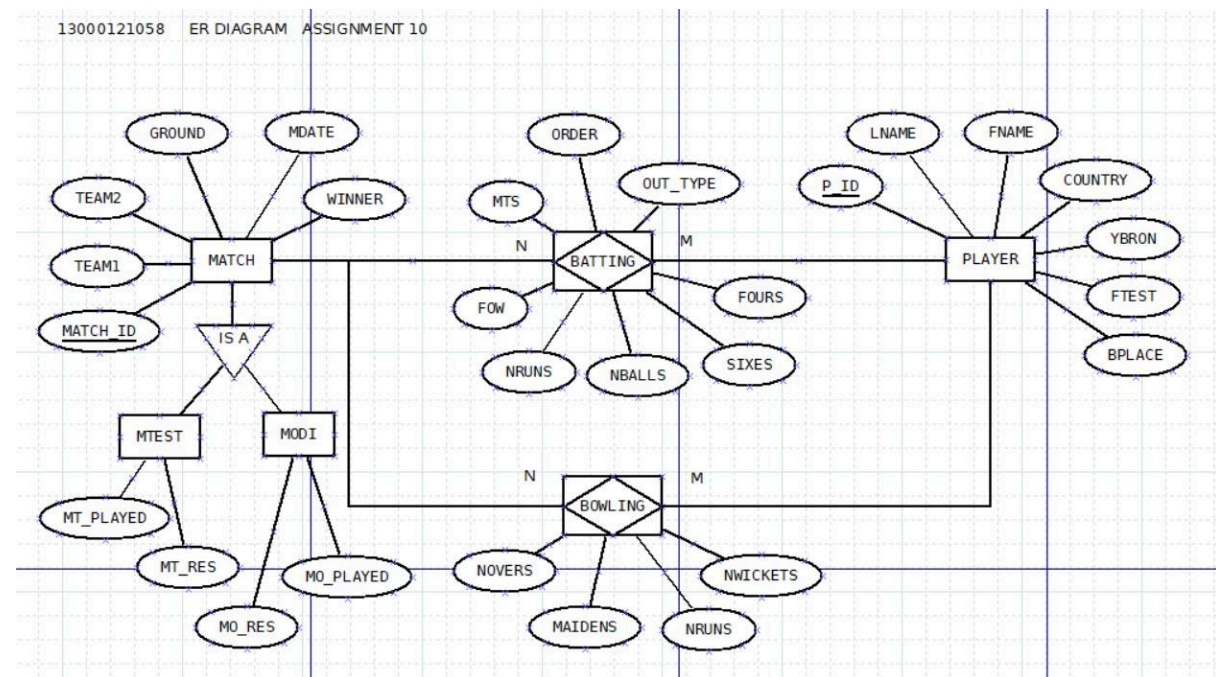
MATCH (match_id, team1, team2, ground, mdate, winner)

PLAYER (p_id, lname, fname, country, yborn, bplace, ftest)

BATTING (match_id, p_id, mts, order, out_type, fow, nruns, nballs, fours, sixes)

BOWLING (match_id, p_id, novers, maidens, nruns, nwickets)

1. Draw the appropriate ER, EER and Relational model for the given data.



```
CREATE TABLE MATCH(MATCH_ID VARCHAR2(10) PRIMARY KEY, TEAM1
VARCHAR2(20) NOT NULL, TEAM2 VARCHAR2(20) NOT NULL, GROUND
VARCHAR2(20), MDATE DATE, WINNER NUMBER CONSTRAINT M1
CHECK(WINNER IN (1,2)));
```

```
SQL> CREATE TABLE MATCH(
  2     MATCH_ID VARCHAR2(10) PRIMARY KEY,
  3     TEAM1 VARCHAR2(20) NOT NULL,
  4     TEAM2 VARCHAR2(20) NOT NULL,
  5     GROUND VARCHAR2(20),
  6     MDATE DATE,
  7     WINNER NUMBER CONSTRAINT M1 CHECK(WINNER IN (1,2))
  8 );
```

Table created.

```
SQL> DESC MATCH;
```

Name	Null?	Type
MATCH_ID	NOT NULL	VARCHAR2(10)
TEAM1	NOT NULL	VARCHAR2(20)
TEAM2	NOT NULL	VARCHAR2(20)
GROUND		VARCHAR2(20)
MDATE		DATE
WINNER		NUMBER

```
SQL> █
```

```
CREATE TABLE PLAYER (P_ID VARCHAR2(10) PRIMARY KEY, LNAME
VARCHAR2(20), FNAME VARCHAR2(20), COUNTRY VARCHAR2(20), YBORN
NUMBER, BPLACE VARCHAR2(20), FTEST NUMBER);
```

```
SQL> CREATE TABLE PLAYER (
  2     P_ID VARCHAR2(10) PRIMARY KEY,
  3     LNAME VARCHAR2(20),
  4     FNAME VARCHAR2(20),
  5     COUNTRY VARCHAR2(20),
  6     YBORN NUMBER,
  7     BPLACE VARCHAR2(20),
  8     FTEST NUMBER
  9 );
```

Table created.

```
SQL> DESC PLAYER;
```

Name	Null?	Type
P_ID	NOT NULL	VARCHAR2(10)
LNAME		VARCHAR2(20)
FNAME		VARCHAR2(20)
COUNTRY		VARCHAR2(20)
YBORN		NUMBER
BPLACE		VARCHAR2(20)
FTEST		NUMBER

```
SQL> █
```

```
CREATE TABLE BATTING (MATCH_ID VARCHAR2(10), P_ID VARCHAR2(10),
MTS NUMBER, BATTING_ORDER NUMBER, OUT_TYPE VARCHAR2(20), FOW
VARCHAR2(20), NRUNS NUMBER, NBALLS NUMBER, FOURS NUMBER, SIXES
NUMBER, CONSTRAINT BFK1 FOREIGN KEY (P_ID) REFERENCES
PLAYER(P_ID) ON DELETE CASCADE, CONSTRAINT BFK2 FOREIGN KEY
(MATCH_ID) REFERENCES MATCH(MATCH_ID) ON DELETE CASCADE);
```

```
SQL> CREATE TABLE BATTING (
2     MATCH_ID VARCHAR2(10) PRIMARY KEY,
3     P_ID VARCHAR2(10),
4     MTS NUMBER,
5     BATTING_ORDER NUMBER,
6     OUT_TYPE VARCHAR2(20),
7     FOW VARCHAR2(20),
8     NRUNS NUMBER,
9     NBALLS NUMBER,
10    FOURS NUMBER,
11    SIXES NUMBER,
12    CONSTRAINT BFK1 FOREIGN KEY (P_ID) REFERENCES PLAYER(P_ID)
13 );
```

Table created.

```
SQL> DESC BATTING;
```

Name	Null?	Type
MATCH_ID	NOT NULL	VARCHAR2(10)
P_ID		VARCHAR2(10)
MTS		NUMBER
BATTING_ORDER		NUMBER
OUT_TYPE		VARCHAR2(20)
FOW		VARCHAR2(20)
NRUNS		NUMBER
NBALLS		NUMBER
FOURS		NUMBER
SIZES		NUMBER

```
SQL> █
```

```
CREATE TABLE BOWLING (MATCH_ID VARCHAR2(10), P_ID VARCHAR2(10),
NOVERS NUMBER, MAIDENS NUMBER, NRUNS NUMBER, NWICKETS
NUMBER, CONSTRAINT BWFK1 FOREIGN KEY (MATCH_ID) REFERENCES
MATCH(MATCH_ID) ON DELETE CASCADE, CONSTRAINT BWFK2 FOREIGN
KEY (P_ID) REFERENCES PLAYER(P_ID) ON DELETE CASCADE);
```

```
SQL> CREATE TABLE BOWLING (
2     MATCH_ID VARCHAR2(10),
3     P_ID VARCHAR2(10),
4     NOVERS NUMBER,
5     MAIDENS NUMBER,
6     NRUNS NUMBER,
7     NWICKETS NUMBER,
8     CONSTRAINT BWFK1 FOREIGN KEY (MATCH_ID) REFERENCES MATCH(MATCH_ID) ON DELETE CASCADE,
9     CONSTRAINT BWFK2 FOREIGN KEY (P_ID) REFERENCES PLAYER(P_ID) ON DELETE CASCADE
10 );
```

Table created.

```
SQL> DESC BOWLING;
```

Name	Null?	Type
MATCH_ID		VARCHAR2(10)
P_ID		VARCHAR2(10)
NOVERS		NUMBER
MAIDENS		NUMBER
NRUNS		NUMBER
NWICKETS		NUMBER

```
SQL> █
```

INSERT ALL

```
    INTO MATCH VALUES ('M1', 'Australia', 'India', 'Sydney', TO_DATE('01-01-2023', 'DD-MM-YYYY'), 1)
```

```
    INTO MATCH VALUES ('M2', 'India', 'Australia', 'Sydney', TO_DATE('05-01-2023', 'DD-MM-YYYY'), 2)
```

```
    INTO MATCH VALUES ('M3', 'Australia', 'England', 'Melbourne', TO_DATE('10-01-2023', 'DD-MM-YYYY'), 1)
```

```
    INTO MATCH VALUES ('M4', 'England', 'Australia', 'Sydney', TO_DATE('15-01-2023', 'DD-MM-YYYY'), 2)
```

```
    INTO MATCH VALUES ('M5', 'Australia', 'India', 'Sydney', TO_DATE('20-01-2023', 'DD-MM-YYYY'), 1)
```

```
SELECT * FROM DUAL;
```

```
SQL> INSERT ALL
2     INTO MATCH VALUES ('M1', 'Australia', 'India', 'Sydney', TO_DATE('01-01-2023', 'DD-MM-YYYY'), 1)
3     INTO MATCH VALUES ('M2', 'India', 'Australia', 'Sydney', TO_DATE('05-01-2023', 'DD-MM-YYYY'), 2)
4     INTO MATCH VALUES ('M3', 'Australia', 'England', 'Melbourne', TO_DATE('10-01-2023', 'DD-MM-YYYY'), 1)
5     INTO MATCH VALUES ('M4', 'England', 'Australia', 'Sydney', TO_DATE('15-01-2023', 'DD-MM-YYYY'), 2)
6     INTO MATCH VALUES ('M5', 'Australia', 'India', 'Sydney', TO_DATE('20-01-2023', 'DD-MM-YYYY'), 1)
7  SELECT * FROM DUAL;
```

5 rows created.

```
SQL> SELECT * FROM MATCH;
```

MATCH_ID	TEAM1	TEAM2	GROUND	MDATE	WINNER
M1	Australia	India	Sydney	01-JAN-23	1
M2	India	Australia	Sydney	05-JAN-23	2
M3	Australia	England	Melbourne	10-JAN-23	1
M4	England	Australia	Sydney	15-JAN-23	2
M5	Australia	India	Sydney	20-JAN-23	1

```
SQL> █
```

INSERT ALL

```
    INTO PLAYER VALUES ('27001', 'Smith', 'Steven', 'Australia', 1988, 'Sydney', 40)
```

```
    INTO PLAYER VALUES ('27002', 'Kohli', 'Virat', 'India', 1988, 'Delhi', 55)
```

```
    INTO PLAYER VALUES ('27003', 'Root', 'Joe', 'England', 1990, 'Sheffield', 50)
```

```
    INTO PLAYER VALUES ('27004', 'Warner', 'David', 'Australia', 1986, 'Sydney', 45)
```

```
    INTO PLAYER VALUES ('27005', 'Stokes', 'Ben', 'England', 1991, 'London', 60)
```

```
SELECT * FROM DUAL;
```

```
SQL> INSERT ALL
2     INTO PLAYER VALUES ('27001', 'Smith', 'Steven', 'Australia', 1988, 'Sydney', 40)
3     INTO PLAYER VALUES ('27002', 'Kohli', 'Virat', 'India', 1988, 'Delhi', 55)
4     INTO PLAYER VALUES ('27003', 'Root', 'Joe', 'England', 1990, 'Sheffield', 50)
5     INTO PLAYER VALUES ('27004', 'Warner', 'David', 'Australia', 1986, 'Sydney', 45)
6     INTO PLAYER VALUES ('27005', 'Stokes', 'Ben', 'England', 1991, 'London', 60)
7  SELECT * FROM DUAL;
```

5 rows created.

```
SQL> SELECT * FROM PLAYER;
```

P_ID	LNAME	FNAME	COUNTRY	YBORN	BPLACE	FTEST
27001	Smith	Steven	Australia	1988	Sydney	40
27002	Kohli	Virat	India	1988	Delhi	55
27003	Root	Joe	England	1990	Sheffield	50
27004	Warner	David	Australia	1986	Sydney	45
27005	Stokes	Ben	England	1991	London	60

```
SQL> █
```

INSERT ALL

```
    INTO BATTING VALUES ('M1', '27001', 1, 1, 'Not out', NULL, 80, 100, 8, 1)
```

```
    INTO BATTING VALUES ('M1', '27002', 1, 2, 'Caught', '20/1', 30, 40, 4, 0)
```



```

    INTO BATTING VALUES ('M2', '27003', 1, 3, 'LBW', '30/2', 25, 35, 3, 0)
    INTO BATTING VALUES ('M2', '27004', 1, 4, 'Not out', NULL, 90, 110, 10, 2)
    INTO BATTING VALUES ('M3', '27005', 1, 5, 'Run out', '50/3', 45, 55, 6, 0)
SELECT * FROM DUAL;

```

```

SQL> INSERT ALL
2   INTO BATTING VALUES ('M1', '27001', 1, 1, 'Not out', NULL, 80, 100, 8, 1)
3   INTO BATTING VALUES ('M1', '27002', 1, 2, 'Caught', '20/1', 30, 40, 4, 0)
4   INTO BATTING VALUES ('M2', '27003', 1, 3, 'LBW', '30/2', 25, 35, 3, 0)
5   INTO BATTING VALUES ('M2', '27004', 1, 4, 'Not out', NULL, 90, 110, 10, 2)
6   INTO BATTING VALUES ('M3', '27005', 1, 5, 'Run out', '50/3', 45, 55, 6, 0)
7   SELECT * FROM DUAL;

```

5 rows created.

SQL> SELECT * FROM BATTING;

MATCH_ID	P_ID	MTS	BATTING_ORDER	OUT_TYPE	FOW	NRUNS	NBALLS	FOURS	SIZES
M1	27001	1	1	Not out		80	100	8	1
M1	27002	1	2	Caught	20/1	30	40	4	0
M2	27003	1	3	LBW	30/2	25	35	3	0
M2	27004	1	4	Not out		90	110	10	2
M3	27005	1	5	Run out	50/3	45	55	6	0

SQL> █

```

INSERT ALL
    INTO BOWLING VALUES ('M1', '27001', 10, 2, 60, 2)
    INTO BOWLING VALUES ('M1', '27002', 8, 1, 45, 1)
    INTO BOWLING VALUES ('M2', '27003', 9, 0, 55, 1)
    INTO BOWLING VALUES ('M2', '27004', 10, 3, 40, 2)
    INTO BOWLING VALUES ('M3', '27005', 9, 1, 65, 0)
SELECT * FROM DUAL;

```

```

SQL> INSERT ALL
2   INTO BOWLING VALUES ('M1', '27001', 10, 2, 60, 2)
3   INTO BOWLING VALUES ('M1', '27002', 8, 1, 45, 1)
4   INTO BOWLING VALUES ('M2', '27003', 9, 0, 55, 1)
5   INTO BOWLING VALUES ('M2', '27004', 10, 3, 40, 2)
6   INTO BOWLING VALUES ('M3', '27005', 9, 1, 65, 0)
7   SELECT * FROM DUAL;

```

5 rows created.

SQL> SELECT * FROM BOWLING;

MATCH_ID	P_ID	NOVERS	MAIDENS	NRUNS	NWICKETS
M1	27001	10	2	60	2
M1	27002	8	1	45	1
M2	27003	9	0	55	1
M2	27004	10	3	40	2
M3	27005	9	1	65	0

SQL> █

2. Write SQL expressions for the following:

i) Find match ids of those matches in which player 27001 bats and makes more runs than he made at every match he played at Sydney.

```

SQL> SELECT DISTINCT b.MATCH_ID
  2   FROM BATTING B
  3   WHERE B.P_ID = '27001'
  4   AND B.NRUNS > ALL (
  5       SELECT B2.NRUNS
  6       FROM BATTING B2
  7       JOIN MATCH M ON B2.MATCH_ID = M.MATCH_ID
  8       WHERE B2.P_ID = '27001'
  9       AND M.GROUND = 'Sydney'
 10  );

```

no rows selected

```
SQL> █
```

ii) Find player ids of players who have scored more than 30 in every ODI match that they have batted.

```

SQL> SELECT B.P_ID
  2   FROM BATTING B
  3   JOIN MATCH M ON M.MATCH_ID = B.MATCH_ID
  4   WHERE B.NRUNS > 30;

```

```

P_ID
-----
27001
27004
27005

```

iii) Find the ids of players that had a higher average score than the average score for all players when they played in Sri Lanka.

```
SQL> CREATE TABLE AVGRUNS AS SELECT AVG(NRUNS) AS AVGR , P_ID FROM BATTING GROUP BY P_ID;
```

Table created.

```
SQL> SELECT * FROM AVGRUNS;
```

```

  AVGR P_ID
-----
    30 27002
    45 27005
    25 27003
    90 27004
    80 27001

```

```
SQL> SELECT P_ID FROM AVGRUNS WHERE AVGR > (SELECT AVG(NRUNS) FROM BATTING B JOIN MATCH M ON M.MATCH_ID = B.MATCH_ID WHERE M.GROUND = 'Sri Lanka');
```

```

P_ID
-----
27004
27001

```

```
SQL> █
```