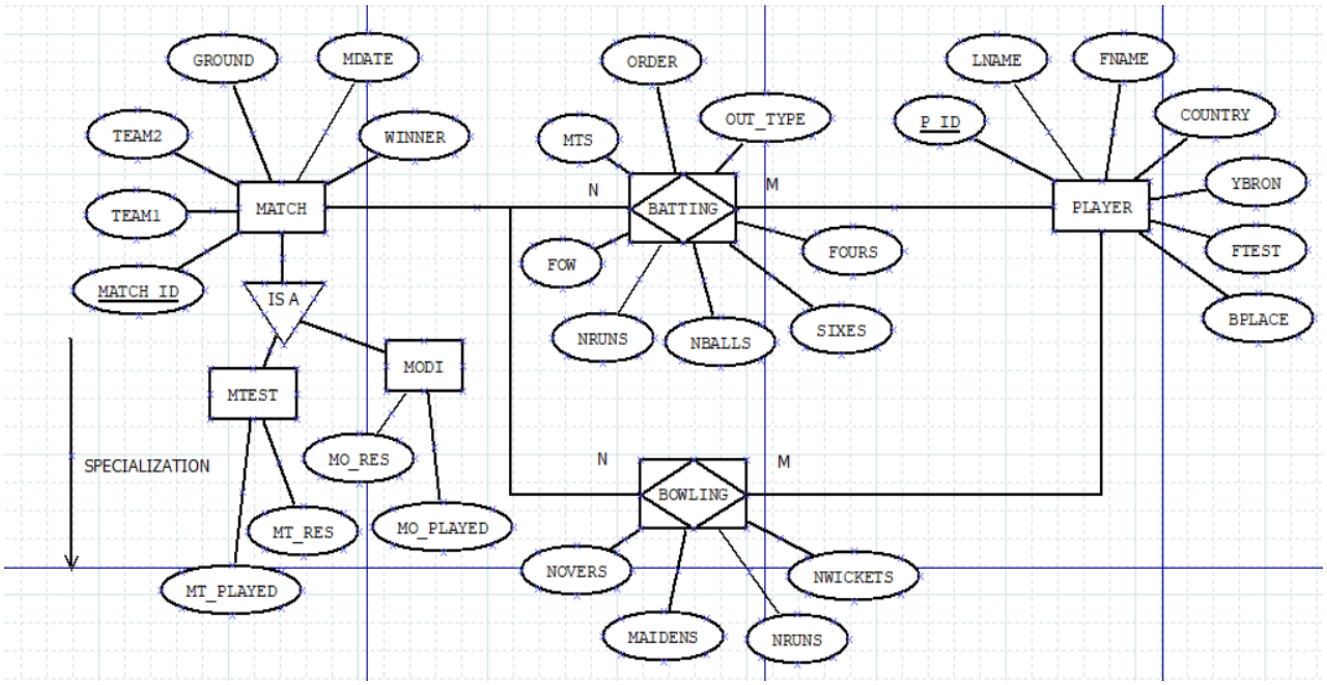
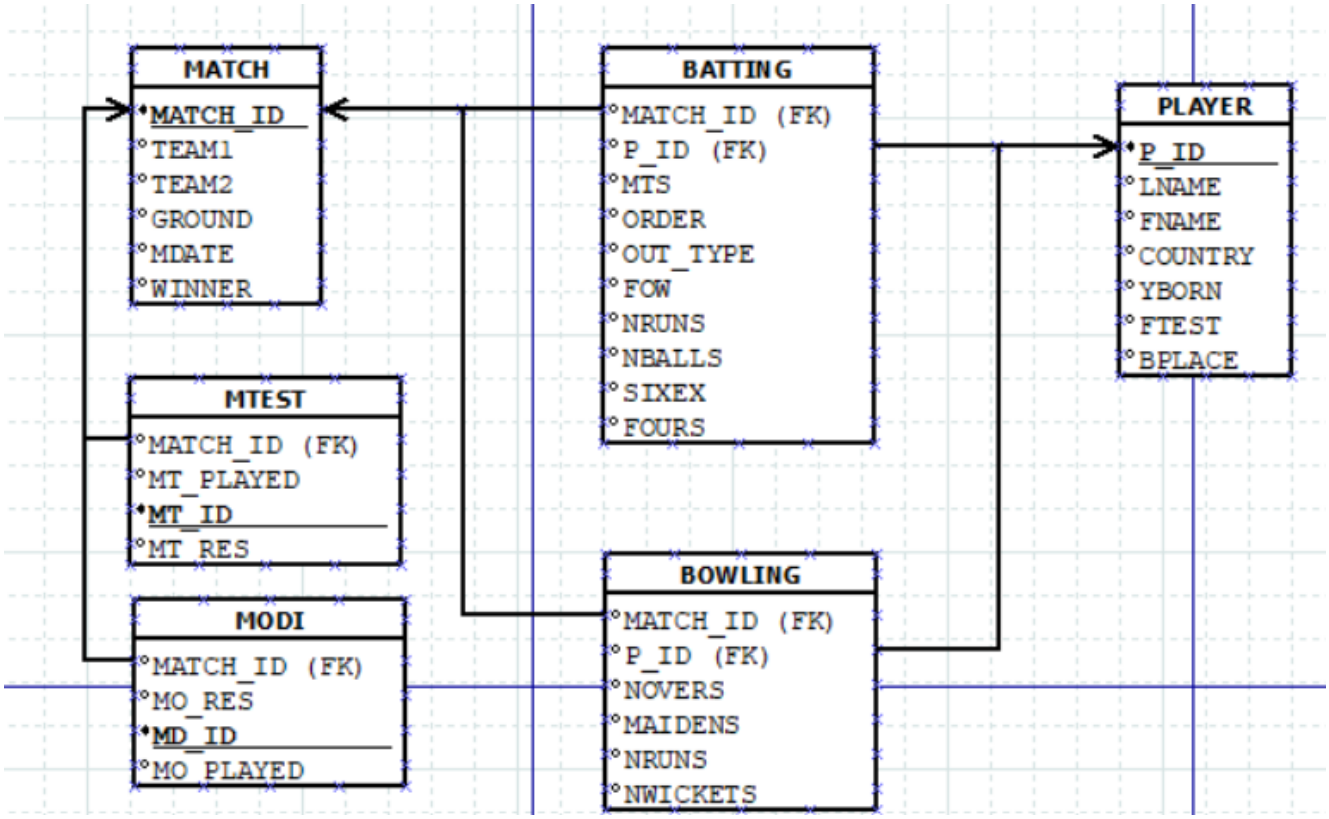
ASSIGNMENT 10

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     SIZES 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      SIXES
---------- ---------- ---------- ------------- -------------------- -------------------- ---------- ---------- ---------- ----------
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 = 'Srilanka');

P_ID
----------
27004
27001

SQL>
```