1. ER Diagram Bank (Fig 1)
    a. Non-Weak Entities – BANK, ACCOUNT, LOAN, CUSTOMER

    b. Weak Entities – BANK BRANCH (Identifying Relationship – Branches to Bank Entity)

    c. Constraints of the partial key and identifying relationship of weak entity
        i. LOANS – Loans are linked to the bank branch (weak entity)
        ii. Accounts (ACCTS) – Accounts created in that bank branch

    d. Relationship Types, (Min, Max) constraint on each.
        i. Identifying Relationship (BRANCHES) One to Many 1:N
        ii. Relationship (ACCTS) Many to One N:1
        iii. Relationship (LOANS) Many to One N:1
        iv. Relationship (A_C) Many to Many N:M
        v. Relationship (L_C) Many to Many N:M

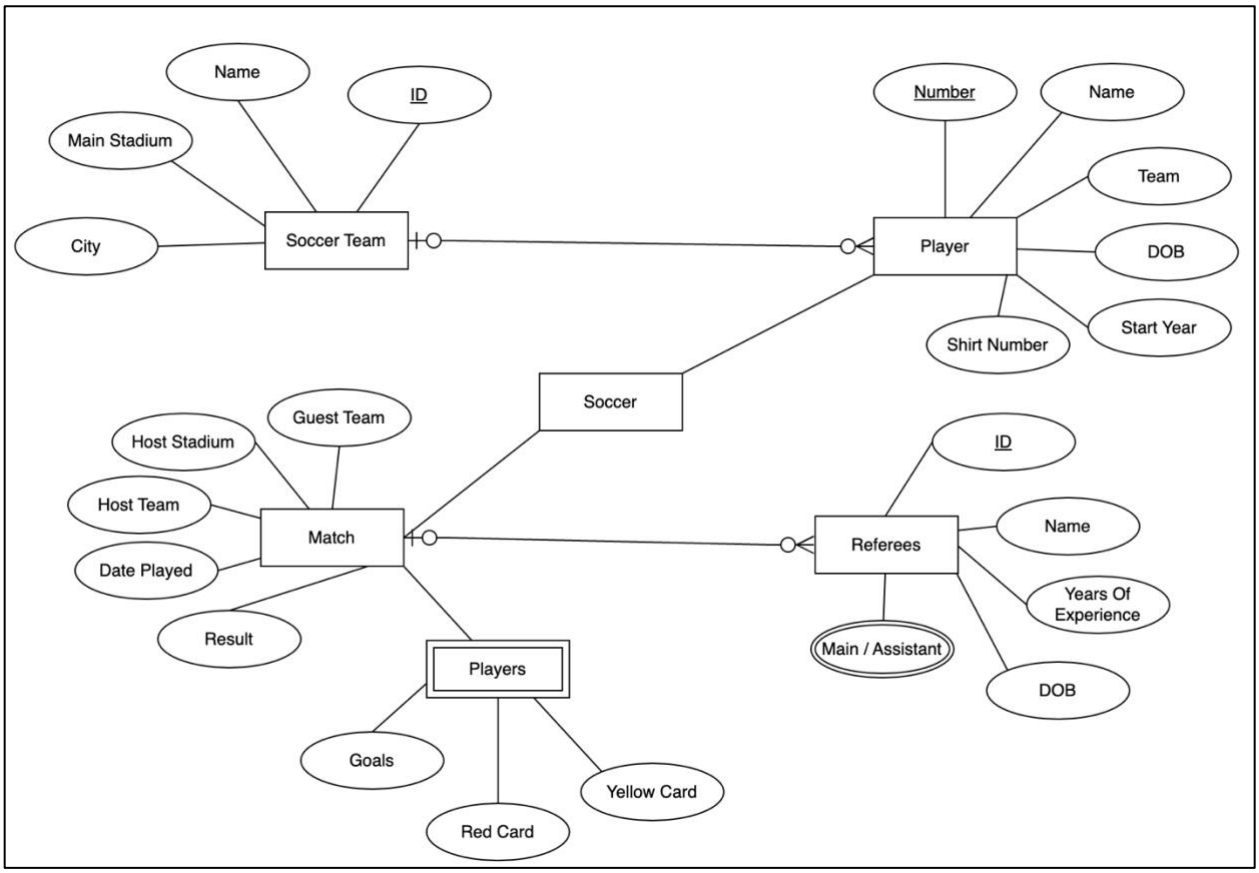
    e. User Requirements that led to the ER Diagram
        i. The loan amount they have and what kind of loan it is.
        ii. The user account number, their bank balance and account type.
        iii. Customer information – SSN, Phone, Name, Address
        iv. Which bank branch is the account or loan coming from.
        v. Identifying the bank information – Code, Name, Address

    f. 2 Loans Max per acc, 1000 max per branch, 1 acc per customer minimum.
        i. The min max will become 1 to 1 for Customer to Account, 1 to 1 for Customer to Loan but the constraints will come in place as there are limits defined and is NOT NULL.

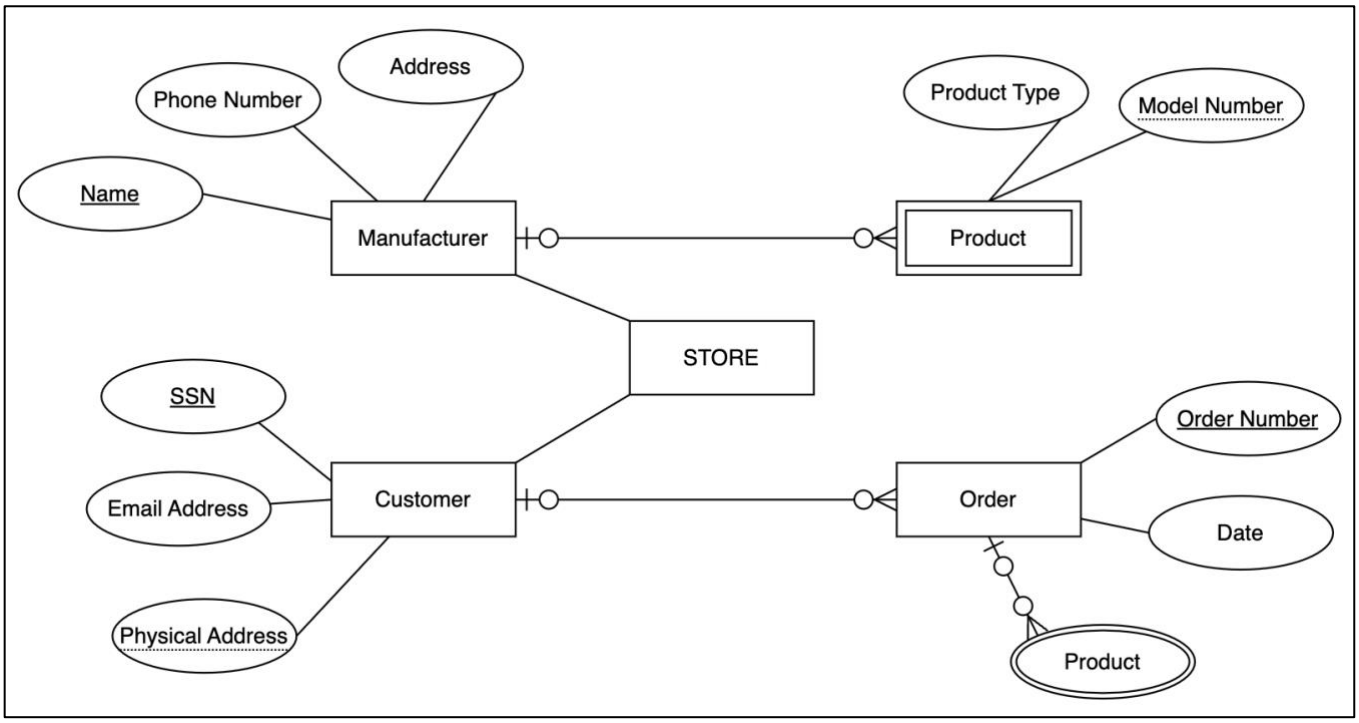
2. 4 Integrity Constraints (Fig 1.2)
    a. A new course may not have an instructor.
    b. When a student is deleted they may be still in the GRADE_REPORT Table.
    c. Student Name, Student_number cannot be NULL
    d. Course_number and instructor cannot be NULL
    e. Student number as Primary Key

3. SQL Commands
    a. INSERT INTO STUDENT (Name, Student_number, Class, Major) VALUES ('Johnson', 25, 1, 'Math);
    b. UPDATE STUDENT SET Class = 2 WHERE Name = 'Smith';
    c. INSERT INTO COURSE (Course_name, Course_number, Credit_hours, Department) VALUES ('Knowledge Engineering', 'CS4390', 3, 'CS');
    d. DELETE FROM STUDENT WHERE Name = 'Smith' AND Student_number = 17;

4. Draw an ER Diagram for SOCCER.



5. Draw an ER diagram for STORE.(Attributes, Keys and Weak Entity)



6. Hockey UML Diagram – Multi count