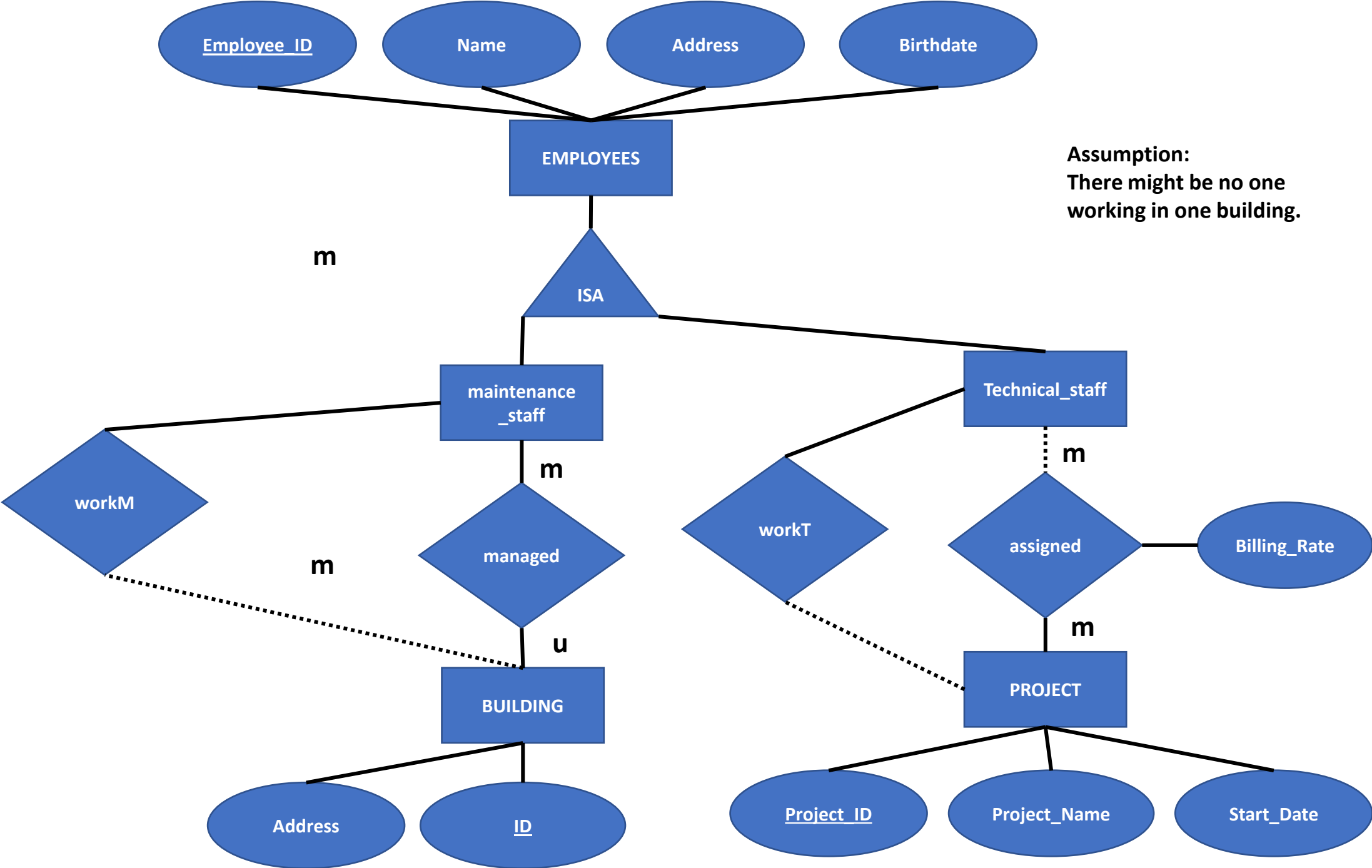


Q1



# Q1: Relations

```
CREATE TABLE technical_staff (Employee_ID INTEGER, Name CHAR (20), Address CHAR(150), Birthdate DATE,  
PRIMARY KEY (Employee_ID ) )
```

```
CREATE TABLE PROJECT (Project_ID INTEGER, Project_Name CHAR (50), Start_Date DATE, PRIMARY KEY  
(Project_ID ) )
```

```
CREATE TABLE assigned (eid INTEGER, pid INTEGER, Billing_Rate DECIMAL(10,2), PRIMARY KEY (eid,pid), foreign  
key (eid) references technical_staff(Employee_ID), foreign key (pid) references PROJECT (Project_ID))
```

Need database triggers to enforce the total participation of PROJECT in assigned relationship set.

```
CREATE TABLE maintenance_staff (Employee_ID INTEGER, Name CHAR (20), Address CHAR(150), Birthdate DATE,  
PRIMARY KEY (Employee_ID ) )
```

```
CREATE TABLE BUILDING (ID integer, Address CHAR(150), mgrID INTEGER NOT NULL, PRIMARY KEY (ID), foreign  
key (mgrID) references maintenance_staff (Employee_ID ))
```

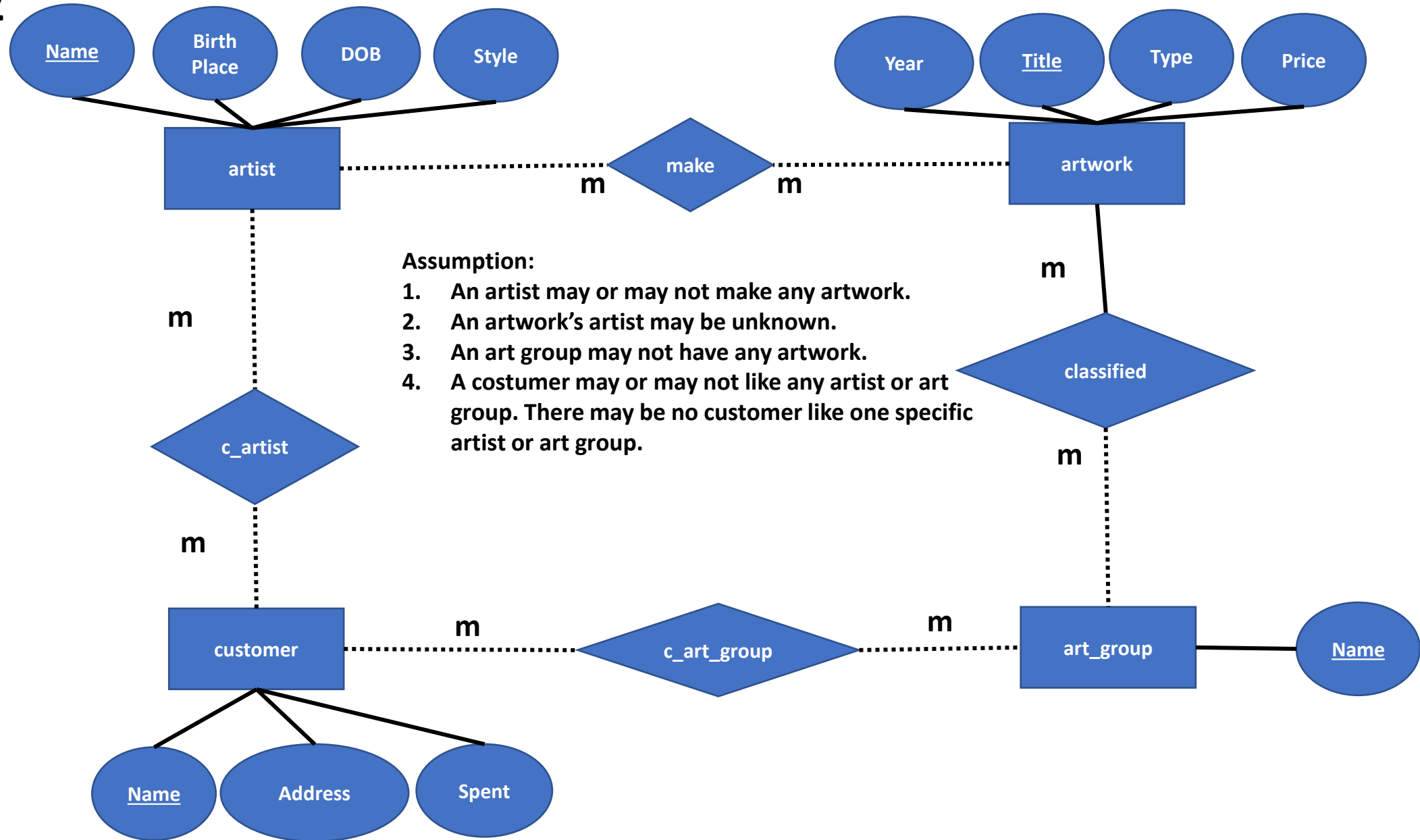
```
CREATE TABLE workM (mid INTEGER, bid INTEGER, PRIMARY KEY (mid,bid), foreign key (mid) references  
maintenance _staff(Employee_ID))
```

Need database triggers to enforce the total participation of maintenance staff in workM relationship set.

```
CREATE TABLE workT (tid INTEGER, bid INTEGER, PRIMARY KEY (tid,bid), foreign key (tid) references  
technical_staff(Employee_ID))
```

Need database triggers to enforce the total participation of technical staff in workT relationship set.

Q2



## Q2: Relations

```
CREATE TABLE artist (Name CHAR(20), BirthPlace CHAR (50), DOB DATE, Style CHAR(20), PRIMARY KEY (Name))
```

```
CREATE TABLE artwork (Year INTEGER, Title CHAR (100), Type CHAR(50), Price DECIMAL (15,2), PRIMARY KEY(Title))
```

```
CREATE TABLE customer (Name CHAR(30), Address CHAR(150), Spent DECIMAL (10,2), PRIMARY KEY(Name))
```

```
CREATE TABLE art_group(Name CHAR(50), PRIMARY KEY(Name))
```

```
CREATE TABLE make (aName CHAR (20), aTitle CHAR (100), PRIMARY KEY (aName, aTitle), FOREIGN KEY (aName) REFERENCES artist (Name), FOREIGN KEY (aTitle) REFERENCES artwork (Title))
```

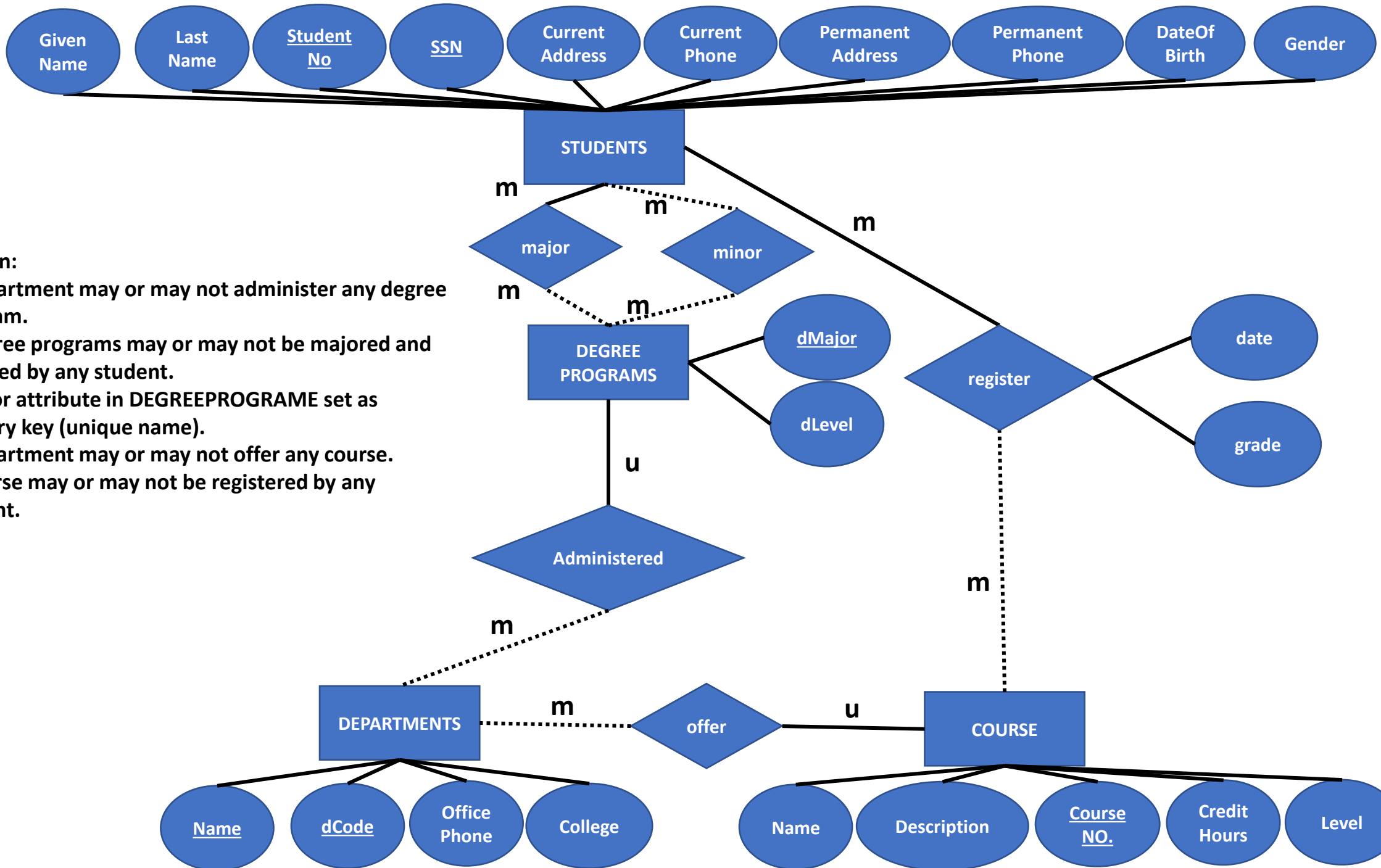
```
CREATE TABLE classified (aName CHAR (50), aTitle CHAR (100), PRIMARY KEY (aName, aTitle), FOREIGN KEY (aName) REFERENCES art_group (Name), FOREIGN KEY (aTitle) REFERENCES artwork (Title))
```

*Need database triggers to enforce the total participation of artwork in classified relationship set.*

```
CREATE TABLE c_art_group (aName CHAR (50), cName CHAR (30), PRIMARY KEY (aName, cName), FOREIGN KEY (aName) REFERENCES art_group (Name), FOREIGN KEY (cName) REFERENCES customer (Name))
```

```
CREATE TABLE c_artist (aName CHAR (20), cName CHAR (30), PRIMARY KEY (aName, cName), FOREIGN KEY (aName) REFERENCES artist (Name), FOREIGN KEY (cName) REFERENCES customer (Name))
```

# Q3



## Assumption:

1. A department may or may not administer any degree program.
2. A degree programs may or may not be majored and minored by any student.
3. dMajor attribute in DEGREEPROGRAMME set as primary key (unique name).
4. A department may or may not offer any course.
5. A course may or may not be registered by any student.

# Q3: Relations

CREATE TABLE STUDENTS (GivenName CHAR(20), LastName CHAR (20), StudnetNo INTEGER, SSN INTEGER, CurrentAddress CHAR(150), CurrentPhone CHAR(10), PermanentAddress CHAR(150), PermanentPhone CHAR(10), DateOfBirth DATE, Gender CHAR(1) ,PRIMARY KEY (StudnetNo, SSN))

CREATE TABLE DEPARTMENTS (Name CHAR (20), dCode CHAR (10), OfficePhone CHAR (10), College CHAR (10), PRIMARY KEY (Name,dCode))

CREATE TABLE DEGREEPROGRAMS (dMajor CHAR (20), dLevel CHAR (10), dCode CHAR (10) not null, PRIMARY KEY (dMajor), FOREIGN KEY (dCode) REFERENCES DEGREEPROGRAMS (dCode)))

CREATE TABLE COURSE (Name CHAR (20), Description CHAR (100), CourseNo CHAR (10), CreditHours INTEGER, Level CHAR (10), dName CHAR (20) not null, PRIMARY KEY (CourseNo), foreign key (dName) references DEPARTMENTS(Name))

CREATE TABLE major (sid INTEGER, did CHAR (20), PRIMARY KEY (sid,did), foreign key (sid) references STUDENTS (StudnetNo), foreign key (did) references DEGREEPROGRAMS (dMajor))

Need database triggers to enforce the total participation of STUDENTS in major relationship set.

CREATE TABLE minor (sid INTEGER, did CHAR (20), PRIMARY KEY (sid,did), foreign key (sid) references STUDENTS(StudentNo), foreign key (did) references DEGREEPROGRAMS(dMajor))

CREATE TABLE register (date DATE, grade INTEGER, sid INTEGER, cid CHAR (20), PRIMARY KEY (sid,did), foreign key (sid) references STUDENTS, foreign key (did) references DEGREEPROGRAMS(dMajor))

Need database triggers to enforce the total participation of STUDENTS in register relationship set.