

# Homework 4 Solution

CS482 – Fall 2006

October 1, 2006

**Problem 1.** [Exercise 4.9a] There are many different solutions to this problem. A possible solution is shown in Figure 1.

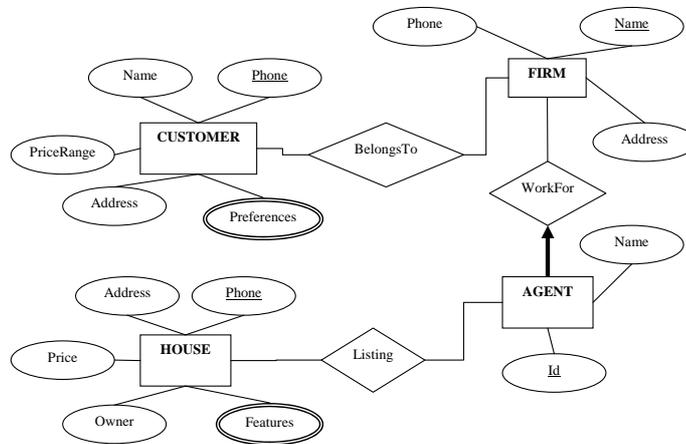


Figure 1: The E-R Diagram

A possible translation of the E-R diagram into a relational database schema is as follows. Note that the entity type AGENT and the relationship type WorksFor have been combined into the relation AGENT.

```
HOUSE(Phone: INTEGER, Owner: STRING, Address: STRING,  
      Price: FLOAT)
```

```
  Primary Key: {Phone}
```

```
HOUSE_FEATURES(HousePhone : INTEGER, Feature: STRING)
```

```
  Primary Key: {HousePhone,Feature}
```

```
  Foreign Keys:
```

```
    HousePhone References HOUSE(Phone)
```

```
FIRM(Name: STRING, Address: STRING, Phone: INTEGER)
```

```
  Primary Key: {Name}
```

```
CUSTOMER(Phone: Number, Name: STRING, Address: STRING,  
         PriceRange: STRING)
```

```
  Primary Key: {Phone}
```

```
CUSTOMER_PREFERENCES(CustPhone : INTEGER, Preference: STRING)
```

Primary Key: {CustPhone,Preference}  
Foreign Keys:  
    CustPhone References CUSTOMER(Phone)  
AGENT(Id: INTEGER, Phone: INTEGER, FirmName: STRING)  
Primary Key: {Id}  
Foreign Keys:  
    FirmName References FIRM(Name)  
LISTING(HousePhone: INTEGER, AgentId: INTEGER)  
Primary Key: {HousePhone,AgentId}  
Foreign Keys:  
    HousePhone References HOUSE(Phone)  
    AgentId References Agent(Id)