# CSE 414 Homework 1 Solutions

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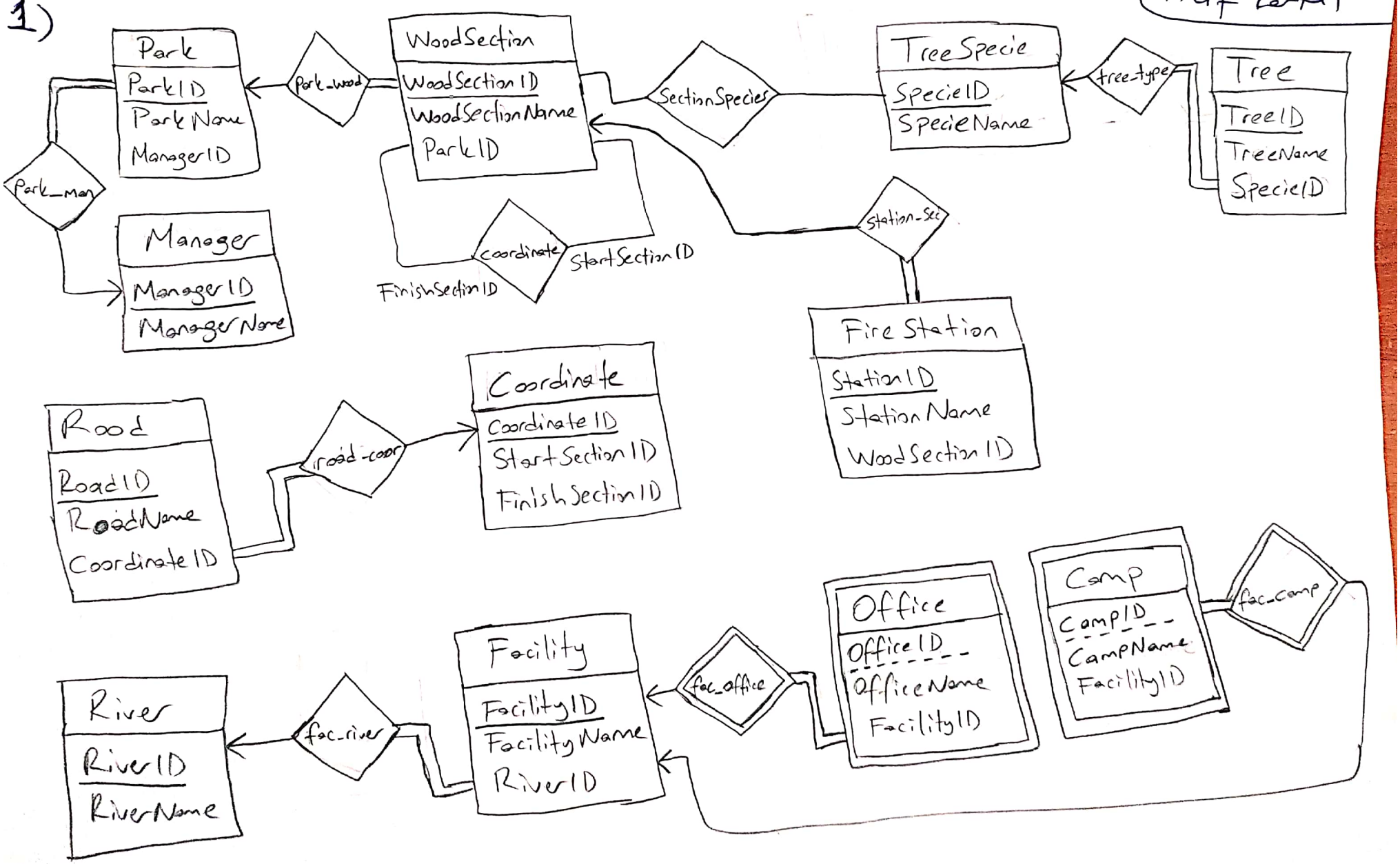
1)



## 2) Functional Dependencies

### Park

ParkID → ParkName, ManagerID

### WoodSection

WoodSectionID → WoodSectionName, ParkID

### TreeSpecie

SpecieID → SpecieName

### Tree

TreeID → TreeName, SpecieID

### Road

RoadID → RoadName, CoordinateID

### Coordinate

CoordinateID → StartSectionID, FinishSectionID

### FireStation

StationID → StationName, WoodSectionID

### Facility

FacilityID → FacilityName, RiverID

### River

RiverID → RiverName

### Camp

CampID → CampName, FacilityID

### Office

OfficeID → OfficeName, FacilityID

3) In my E-R diagram Camp and Office entities are weak entity. They are weak entity because they depends on facility entity. Facility entity is identifying entity for camp and office entinty. Camp and Office entities have partial key (discriminator) called CampID and OfficeID to distinguish them.

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4) Tables are following


Total we have 13 tables.

5) In my E-R diagram all relations satisfy and hold the both 3NF and BCNF. Because in my desing, I seperated the tables such that there is no repeating data and also there are no partial and transitive dependency Also, since my primary keys also candidate key all my relations satisfy and hold 3NF and BCNF.

Examples

1) ParkID → ParkName, ManagerID

2) FacilityID → FacilityName, RiverID

As a result there aren't any relations that does not hold 3NF and BCNF.

# 6) Database Schema