Project Part 1

Question 1

Part A)
Main Entity Types

1. Clinic
2. Staff Member
3. Pet
4. Owner
5. Examination

Part B & C)

Main Entity 1	Relationship Name	Main Entity 2	Multiplicity	Relationship Type
Clinic	Employs	StaffMember	1..*	One to Many
StaffMember	worksAt	Clinic	1..1	
StaffMember	Manages	Clinic	0..1	One to One
Clinic	managedBy	StaffMember	1..1	
Owner	Owns	Pet	1..*	One to Many
Pet	isOwnedBy	Owner	1..1	
Pet	registeredTo	Clinic	1..1	One to Many
Clinic	Has	Pet	1..*	
StaffMember	Performs	Examination	1..*	One to Many
Examination	performedBy	StaffMember	1..1	
Pet	getsExamined	Examination	1..*	One to Many
Examination	isDoneTo	Pet	1..*	

Part D)
Main Entity Attributes

1. Clinic
    a. ClinicNo (Primary Key)
    b. C_Name
    c. Address

    d. PhoneNo
2. StaffMember
    a. StaffNo (Primary Key)
    b. S_Name
    c. Address
    d. PhoneNo
    e. DOB
    f. S_Position
    g. Salary
3. Pet
    a. PetNo (Primary Key)
    b. P_Name
    c. DOB
    d. Species
    e. Breed
    f. Color
4. Owner
    a. OwnerNo (Primary Key)
    b. O_Name
    c. Address
    d. PhoneNo
5. Examination
    a. ExamNo (Primary Key)
    b. ChiefComplaint
    c. Description
    d. DateSeen
    e. ActionTaken

Part E)

Primary & Candidate Keys

Noted next to attributes in section D above. There are no other alternative keys.

Part F)

Uploaded in separate file called ConceptualER

Project Part 2

Question 2

Part A)

StaffMember (StaffNo, S_Name, Address, PhoneNo, DOB, S_Position, Salary, ClinicNo) **Primary Key:** (StaffNo) **Foreign Key:** ClinicNo **references** Clinic(ClinicNo)	**Owner** (OwnerNo, O_Name, Address, PhoneNo) **Primary Key:** (OwnerNo)
Pet (PetNo,P_ Name, DOB, Species, Breed, Color, OwnerNo, ClinicNo) **Primary Key:** (PetNo) **Foreign Keys:** OwnerNo **references** Owner(OwnerNo) ClinicNo **references** Clinic(ClinicNO)	**Examination** (ExamNo, ChiefComplaint, Description, DateSeen, ActionTaken, StaffNo, PetNo) **Primary Key:** (ExamNo) **Foreign Keys:** StaffNo **references** StaffMember(StaffNo) PetNo **references** Pet(PetNo)
Clinic (ClinicNo, C_Name, Address ,PhoneNo) **Primary Key:** (ClinicNo)	

Part B)

Each relation is in 3NF form since there are no transitive dependencies within them. Since all relations are in 3NF, the logical model is valid. The model also fulfills 2NF since there are no partial dependencies left in the schema.

Part C)

User Transaction Examples (Assuming Tables Contain Some Data):

1. List the managers of each clinic and which clinic they manage
    a. Would find all StaffMembers with "Clinic Manager" as the S_Position. It would then use the foreign key of ClinicNo to join with the Clinic table and return the S_Name, ClinicNo, and C_Name of each manager
2. List each Owner's OwnerNo & O_Name and all of their pets information
    a. Would match pets to their owner and display the selected columns of information from both tables
3. List all Examinations conducted by StaffMembers from a specific Clinic

    a. Joins Clinic, StaffMember, and Examination tables to identify which Examinations were conducted by StaffMembers from a specific clinic
4. List the Pets that are registered at each clinic
    a. Would find join the Clinic and Pet tables on ClinicNo and then list the data
5. List all StaffMembers with a Salary over 50,000
    a. Uses a where clause to select only the StaffMembers with a Salary over 50,000

Part D)

Required Data and Attribute Domain Constraints
StaffMember: StaffNo **PRIMARY KEY, INT, NOT NULL, UNIQUE, CHECK > 0** S_Name **VARCHAR(255)** Address **VARCHAR(255)** PhoneNo **INT** DOB **VARCHAR(255)** S_Position **VARCHAR(255)** Salary **INT** ClinicNo **FOREIGN KEY, INT, NOT NULL, CHECK > 0**
Clinic ClinicNo **PRIMARY KEY, INT, NOT NULL, UNIQUE, CHECK > 0** C_Name **VARCHAR(255)** Address **VARCHAR(255)** PhoneNo **INT**
Owner OwnerNo **PRIMARY KEY, INT, NOT NULL, UNIQUE, CHECK > 0** O_Name **VARCHAR(255)** Address **VARCHAR(255)** PhoneNo **INT**
Pet PetNo **PRIMARY KEY, INT, NOT NULL, UNIQUE, CHECK > 0** P_Name **VARCHAR(255)** DOB **VARCHAR(255)** Species **VARCHAR(255)** Breed **VARCHAR(255)** Color **VARCHAR(255)** OwnerNo **FOREIGN KEY, INT, NOT NULL, CHECK > 0** ClinicNo **FOREIGN KEY, INT, NOT NULL, CHECK > 0**
Examination ExamNo **PRIMARY KEY, INT, NOT NULL, UNIQUE, CHECK > 0** ChiefComplaint **VARCHAR(255)** Description **VARCHAR(255)** DateSeen **VARCHAR(255)**

ActionTaken **VARCHAR(255)**
StaffNo **FOREIGN KEY, INT, NOT NULL, CHECK > 0**
PetNo **FOREIGN KEY, INT, NOT NULL, CHECK > 0**

Primary Key, Referential/Foreign Key
StaffMember (StaffNo, S_Name, Address, PhoneNo, DOB, S_Position, Salary, ClinicNo) **Primary Key:** (StaffNo) **INT NOT NULL UNIQUE** **Foreign Key:** ClinicNo **references** Clinic(ClinicNo) **ON DELETE CASCADE**
Clinic (ClinicNo, C_Name, Address ,PhoneNo) **Primary Key:** (ClinicNo) **INT NOT NULL UNIQUE**
Owner (OwnerNo, O_Name, Address, PhoneNo) **Primary Key:** (OwnerNo) **INT NOT NULL UNIQUE**
Pet (PetNo, P_Name, DOB, Species, Breed, Color, OwnerNo, ClinicNo) **Primary Key:** (PetNo) **INT NOT NULL UNIQUE** **Foreign Keys:** OwnerNo **references** Owner(OwnerNo) **ON DELETE CASCADE** ClinicNo **references** Clinic(ClinicNO) **ON DELETE CASCADE**
Examination (ExamNo, ChiefComplaint, Description, DateSeen, ActionTaken, StaffNo, PetNo) **Primary Key:** (ExamNo) **INT NOT NULL UNIQUE** **Foreign Keys:** StaffNo **references** StaffMember(StaffNo) **ON DELETE SET NULL** PetNo **references** Pet(PetNo) **ON DELETE CASCADE**

Part E)

The Logical Model ER diagram is in a separate file under the name LogicalER.

Project Part 3

Part A & B)

In separate file called “CreateSchema_PopulateDB.py”

Part C)

In separate file called “DBProjectQueries.py”

Part D)

GitHub Link: https://github.com/RoryPeters4/CSC423_Project