Module 3 Practice and Reflect - Ty Davis

1. Look at the Habitats entity. Every item listed within it describes the Habitats entity. We also refer to entities as tables because each entity represents a table in the database.
    a. Change the background color of each entity to green. Click on the square then use the fill option to change the color.
    CHART
    b. List each attribute in the Habitats entity.
    HabitatID, Name, ClimateType, SizeSqFt, MaxCapacity
    c. What data type is the max_capacity?
    INT
    d. What data type is the climateType attribute?
    VARCHAR(50)
    e. What does the number 50 mean in the data type for climateType?
    Up to 50 characters in the string.

2. In the Habitats entity one attribute is used to designate the primary key. The primary key is a unique identifier for each row of data. A primary key can be a combination of attributes or a single attribute.
    a. Bold the attributes that make up the primary key in the Habitats table.
    CHART
    b. Now bold each entity's primary key.
    CHART

3. A foreign key is used to reference the primary key in another table and create a relationship between the two tables.
    a. What is the foreign key in the Zookeepers table?
    AssignedHabitatID
    **Attributes can be foreign keys and primary keys. The primary keys would be attributes that naturally occur in the data and this is why they are both foreign keys and primary keys. In this database we do not have primary keys that are also foreign keys.

4. A relationship between Habitats and Animals is shown as One to Many in crow's foot notation.
    a. Click on the relationship line between student and enrollment and change the color to purple.
    CHART
    Reading the relationship both ways is one way to help describe how the data is connected.For example: A habitat can have zero to many animals. Animals have exactly one Habitat.

    b. Now it is your turn,
        i. Click on the relationship line between Diets and Animals and change the color to purple.
        CHART
        ii. Describe the relationship between Diets and Animals.Write two sentences, reading the relationship in both directions.
        Make sure to use the specific format from the Learning Activity Video.

(table name – relationship/verb– relationship type – table name)
A diet can belong to zero to many animals.
Animals have exactly one diet.

5. NULL attributes are fields that are not required to have information in them. NOT NULL is the exact opposite of that and is required to have data entered into the field.
    a. What attributes allow NULL values in the Veterinarians entity?
    Specialization, Email
    b. Explain why you think they are not required.
    Maybe there are general practice veterinarians, and having an email is not a prerequisite to being a veterinarian.

6. The **zoo** has decided they would like to track **habitat maintenance**. The zoo will only track an enclosure's **current maintenance tasks**, not past maintenance history.:
    CHART
    a. The entity should be named **Habitat_Maintenance**.
    MaintenanceID will be the primary key with a data type of **INT**.
    Additional attributes to include are:
        - **MaintenanceDate** `DATE NOT NULL`
        - **TaskDescription** `VARCHAR(255) NOT NULL`
        - **CompletedBy** `VARCHAR(100) NOT NULL`
        - **Status** `VARCHAR(50) NOT NULL`
    b. Notice the sentence below that describes the relationship in the direction of Habitat_Maintenance to Habitats:
    Habitat maintenance references exactly one Habitat.
        i. Now, write the sentence that describes the relationship in the direction of Habitat to Habitat_Maintenance. (HINT: Could the Habitat have more than one maintenance performed? Make sure to use: table name – relationship/verb– relationship type – table name)
        Habitat can have many Habitat_Maintenance records
    c. Add the relationship line between Habitat and Habitat_Maintenance. Make sure to include crow's foot notation on both ends of the line.
    CHART - But you said "Habitat_Maintenance references exactly one Habitat"? I'll just assume you meant that there is a many-to-many cardinality here.
    d. Add the foreign key in the correct table. You decide if the foreign key is to be placed in the Habitat or the Habitat_Maintenance table based on the relationship description.
    CHART

7. Now let's work on the sql script for the new Habitat_Maintenance table.
    a. Finish the following CREATE TABLE script for the new table:

```
CREATE TABLE Habitat_Maintenance (
    MaintenanceID INT NOT NULL AUTO_INCREMENT,
    MaintenanceDate DATE NOT NULL,
    TaskDescription VARCHAR(255) NOT NULL,
    CompletedBy VARCHAR(100) NOT NULL,
    Status VARCHAR(50) NOT NULL,
    HabitatID INT NOT NULL,
    PRIMARY KEY (MaintenanceID),
    FOREIGN KEY (HabitatID) REFERENCES Habitats(HabitatID)
);
```

b. Add a constraint using ALTER on the status attribute that ensures the status IN ('Pending', 'Completed', 'In Progress')

```
ALTER TABLE Habitat_Maintenance
ADD CONSTRAINT checkStatus CHECK (Status in ('Pending', 'Completed', 'In Progress'));
```

8. **Insert a picture of the updated ERD. You can download your diagram as a picture and use Insert→ Image to put a copy of it in this document.**