**Course Number: AIT 524**

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**Homework Assignment 2**

**Description of Company**

“HomeInspections” develops third party software solutions small and large home inspections. Their primary solution is “EasyInspections”, software that allows home inspectors to quickly, efficiently, and easily create home inspection reports for residential and commercial properties. EasyInspections is being developed with small businesses in mind. It is our wish to enable small business home inspectors to be able to inspect a home and send a well-documented and professional PDF home inspection report by close of business that workday. It does this by letting a home inspector use a cell phone application or by printing out an inspection checklist and inputting the recorded data into the desktop application. The home inspector can customize their home inspection checklists and reports to match the property that is being inspected.

**Reasons for Database**

EasyInspections uses a relational database to store: inspection criteria, client data, and inputs from the home inspection. Home inspection reports are auto generated from the stored data and take advantage of redundant information to reduce the time it takes for the inspector to populate the report.

**Business Rules**

1. Every inspection report will be associated with an inspector, contract, client, and inspection
   1. Each inspector will be associated with a name and a company
      1. Each company will be associated with a name, phone number, logo, and address
   2. Each contract will be associated with an inspection date, client, inspection type, witnesses, property address, and a property type
   3. Each client will be associated with a name, address, phone number, and email
   4. Each inspection will be associated with an inspection template
      1. Each inspection template will be associated with subsystems
         1. Each subsystem will be associated with an introduction, inspection items, and a subsystem summary
            1. Each inspection item will be associated with an inspection status, material, flag status, inspection photo, and inspection item comment

Each material will be associated with a name and a subsystem

1. An inspection report initializes with null fields
2. An inspector may not have any null fields
3. A company’s name, phone number, and address may not be null
4. A company’s logo may be null or stored in the following image formats: JPEG, BMP, PNG, or SVG
5. A contract may not have any null fields
6. A client may not have any null fields
7. An inspection must have at least one inspection template
8. An inspection template must have at least one subsystem
9. A subsystem may be null
10. An introduction may be null
11. An inspection item may not be null
12. An inspection status may not be null
    1. It must be either inspected, not inspected, not applicable, failed inspection
    2. Inspection statuses are initialized as not inspected until a different data value is chosen
13. Material may not be null
14. The flag status may not been null, initializes as false
15. A item inspection comment may be null

Description of Entities

1. INSPECTION\_REPORT
   1. This entity is represents a report made by the home inspector for the client. This is the deliverable of EasyInspections.
      1. REPORT\_ID
         1. Primary Key (PK) to uniquely identify a report
      2. INSPECTOR\_ID
         1. Foreign Key (FK) to identify the inspector that performed the inspection
      3. CLIENT\_ID
         1. FK to identify the client inspection was performed for
      4. CONTRACT\_ID
         1. FK to identify contract inspection was performed to
      5. INSPECTION\_ID
         1. FK to identify inspection that was performed
2. INSPECTOR
   1. INSPECTOR\_ID
      1. PK to uniquely identify the inspector
   2. INSPECTOR\_NAME
      1. Attribute that stores name of inspector
   3. INSPECTION\_COMPANY\_ID
      1. FK to identify company
3. INSPECTION\_COMPANY
   1. INSPECTION\_COMPANY\_ID
      1. PK to uniquely identify the inspection company
   2. COMPANY\_NAME
      1. Attribute that give the inspection company’s name
      2. String
   3. COMPANY\_PHONE
      1. Attribute that gives the inspection company’s phone number
      2. String, formatted as a phone number
   4. COMPANY\_LOGO
      1. Attribute that stores the inspection company’s logo
      2. Image
   5. COMPANY\_ADDRESS\_ID
      1. FK
      2. Gives the inspection company’s physical address
      3. String, formatted as an address
4. CONTRACT
   1. CONTRACT\_ID
      1. PK to uniquely identify the contract
   2. INSPECTION\_DATE
      1. Attribute that stores date of inspection
      2. String, formatted as a date (might be better as a number)
   3. CLIENT\_ID
      1. FK to identify the client
   4. INSPECTION\_TYPE\_ID
      1. FK
   5. WITNESSES
      1. Attribute that identifies people present during the inspection
      2. String, formatted as a name
   6. PROPERTY\_ADDRESS\_ID
      1. FK
      2. Attribute that defines the address of the property inspected
      3. String, formatted as an address
   7. PROPERTY\_TYPE
      1. Attribute that stores type of property
      2. String
5. INSPECTION\_TYPE
   1. INSPECTION\_TYPE\_ID
      1. PK
   2. INSPECTION\_TYPE
      1. Attribute that identifies the purpose of the inspection (e.g. presale home inspection)
6. CLIENT
   1. CLIENT\_ID
      1. PK to uniquely identify a client
   2. CLIENT\_NAME
      1. Attribute that stores the client’s name
      2. String, formatted as a name
   3. CLIENT\_ADDRESS\_ID
      1. Attribute that stores the client’s biling address
      2. String, formatted as an address
   4. CLIENT\_PHONE
      1. Attribute that stores the client’s phone number
      2. String, formatted as a phone number
   5. CLIENT\_EMAIL
      1. Attribute that stores the client’s email address
      2. String, formatted as an email
7. ADDRESS
   1. ADDRESS\_ID
      1. PK
   2. ADDRESS\_STREET\_ADDRESS\_1
      1. Attribute that stores billing address
      2. String, formatted as an address
   3. ADDRESS\_STREET\_ADDRESS\_2
      1. Attribute stores additional address info (e.g. apt number)
      2. String
   4. ADDRESS\_CITY
      1. Attribute that stores the address’s city
      2. String
   5. ADDRESS\_STATE\_ID
      1. FK
   6. ADDRESS\_ZIP
      1. Attribute that stores the address’s zip code
      2. String (incase hyphens are added for second part of zip)
8. ADDRESS\_STATE
   1. ADDRESS\_STATE\_ID
      1. PK
   2. ADDRESS\_STATE\_NAME
      1. Attribute that stores name of state
      2. String
   3. ADDRESS\_STATE-ACRONYM
      1. Attribute that stores acronym of state
9. INSPECTION
   1. INSPECTION\_ID
      1. PK to uniquely identify an inspection
   2. INSPECTION\_TEMPLATE\_ID
      1. FK to identify the type of inspection template that would be used to represent the inspection and its subsystems
10. INSPECTION\_TEMPLATE
    1. INSPECTION\_TEMPLATE\_ID
       1. PK to uniquely identify an inspection template
    2. SUBSYSTEM\_ID
       1. FK that represents the different subsystems that the house has
11. SUBSYSTEM
    1. SUBSYSTEM\_ID
       1. PK to identify a subsystem
    2. SUBSYSTEM\_INTRODUCTION
       1. Attribute that contains the introduction to the subsystem that was inspected. Gives an introduction to what can and cannot be inspected
       2. String
    3. INSPECTION\_ITEM\_ID
       1. FK to identify the items that can be inspected within the subsystem
    4. SUMMARY
       1. Input from the inspector that sums up any issues or comments that need to be captured regarding the subsystem
       2. String
12. INSPECTION\_ITEM
    1. INSPECTION\_ITEM\_ID
       1. PK to uniquely identify the inspected item
    2. INSPECTION\_ITEM\_STATUS\_ID
       1. FK
    3. MATERIAL\_ID
       1. FK to identify a material to the inspected item
    4. FLAG\_STATUS
       1. Attribute that indicates if an item needs further review for the report
       2. Boolean
    5. INSPECTION\_PHOTO
       1. Attribute that can hold a picture of an inspected item, used for visual evidence of failed inspection
       2. Image
    6. INSPECTION\_ITEM\_COMMENT
       1. Attribute that allows the inspector to leave a customized message for an inspected item
       2. String
13. INSPECTION\_ITEM\_STATUS
    1. INSPECTION\_ITEM\_STATUS\_ID
       1. PK
       2. String
    2. INSPECTION\_ITEM\_STATUS
       1. Field that indicates if the item was inspected and passed, not applicable, or inspected and needs repair
       2. String
14. MATERIAL
    1. MATERIAL\_ID
       1. PK to uniquely identify a material
    2. MATERIAL\_NAME
       1. Attribute that gives further information on the type of item inspected (e.g. brick exterior)
       2. String
    3. SUBSYSTEM\_ID
       1. FK that identifies the subsystem that the material belongs to
       2. String

**Description of relationships**

1. The INSPECTION\_REPORT has a one to many relationship with the INSPECTOR, CONTRACT, CLIENT, and INSPECTION entities
2. The CLIENT entity has a many to many relationship to ADDRESS entities.
3. The ADDRESS entity has a one to many relationships to ADDRESS\_STATE entities.
4. The INSPECTOR entity has a one to many relationship with an INSPECTION\_COMPANY entity
5. The INSPECTION entity has a one to many relationship with an INSPECTION\_TEMPLATE entity
6. The INSPECTION\_TEMPLATE entity has a many to many relationship to SUBSYSTEM entities
7. The SUBSYSTEM entity has a one to many relationship to INSPECTION\_ITEM entities
8. The INSPECTION\_ITEM entity has a one to many relationship to a MATERIAL entity
9. The MATERIAL entities has a one to many relationship with SUBSYSTEM entities