**Course Number: AIT 524**

**Shane Armstrong**

**Week 5 Homework Assignment**

“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.

Tables

1. **INSPECTION\_REPORT** [*REPORT\_ID (PK)*, INSPECTOR\_ID(FK), CONTRACT\_ID (FK), CLIENT\_ID (FK), and INSPECTION\_ID(FK) ]
2. **INSPECTOR** [ *INSPECTOR\_ID (PK)*, INSPECTOR\_NAME, INSPECTOR\_PHONE, INSPECTOR\_EMAIL, INSPECTION\_COMPANY\_ID (FK) ]
3. **INSPECTION\_COMPANY** [INSPECTION\_COMPANY\_ID (PK), COMPANY\_NAME , COMPANY\_PHONE, COMPANY\_LOGO, COMPANY\_ADDRESS ]
4. **CONTRACT** [*CONTRACT\_ID (PK),* INSPECTION\_DATE, CLIENT\_ID (FK), INSPECTION\_TYPE\_ID (FK), WITNESSES, PROPERTY\_ADDRESS\_ID (FK), PROPERTY\_TYPE ]
5. **INSPECTION\_TYPE** [*INSPECTION\_TYPE\_ID (PK),* INSPECTION\_TYPE ]
6. **CLIENT** [*CLIENT\_ID (PK),* CLIENT\_NAME, CLIENT\_ADDRESS\_ID (FK), CLIENT\_PHONE, CLIENT\_EMAIL ]
7. **ADDRESS** [ *ADDRESS\_ID (PK),* ADDRESS\_STREET\_ADDRESS\_1, ADDRESS\_STREET\_ADDRESS\_2, ADDRESS\_CITY, ADDRESS\_STATE\_ID (FK), ADDRESS\_ZIP]
8. **ADDRESS\_STATE** [ *ADDRESS\_STATE\_ID (PK),* ADDRESS\_STATE\_NAME, ADDRESS\_STATE-ACRONYM ]
9. **INSPECTION** [ *INSPECTION\_ID (PK),* INSPECTION\_TEMPLATE\_ID (FK) ]
10. **INSPECTION\_TEMPLATE** [ *INSPECTION\_TEMPLATE\_ID (PK),* SUBSYSTEM\_ID (FK) ]
11. **SUBSYSTEM** [*SUBSYSTEM\_ID (PK),* SUBSYSTEM\_INTRODUCTION, INSPECTION\_ITEM\_ID (FK), SUMMARY]
12. **INSPECTION\_ITEM** [*INSPECTION\_ITEM\_ID (PK),* INSPECTION\_ITEM\_STATUS\_ID (FK), MATERIAL\_ID (FK), FLAG\_STATUS, INSPECTION\_PHOTO, INSPECTION\_ITEM\_COMMENT]
13. **INSPECTION\_ITEM\_STATUS** [ *INSPECTION\_ITEM\_STATUS\_ID (PK),* INSPECTION\_ITEM\_STATUS]
14. **MATERIAL** [ *MATERIAL\_ID (PK),* MATERIAL\_NAME, SUBSYSTEM\_ID (FK)]

Symbols - ∏ σ ∪∩⋈

**Queries 1 - 5 must retrieve at least two attributes and must be based on a single table.**

1. Retrieve all client names and emails

∏ CLIENT\_NAME, CLIENT\_EMAIL (CLIENT)

1. Retrieve inspectors names and phone numbers whose names that start with ‘A’

∏ INSPECTOR\_NAME, INSPECTOR\_PHONE (σ INSPECTOR\_NAME < ‘B’ (INSPECTOR))

1. Retrieve all the inspected items and their flagged status

∏ IINSPECTION\_ITEM\_ID, FLAG\_STATUS (INSPECTION\_ITEM)

1. Retrieve VA inspections addresses

∏ ADDRESS\_STREET\_ADDRESS\_1, ADDRESS\_STREET\_ADDRESS\_2, ADDRESS\_CITY, ADDRESS\_STATE\_ID (FK), ADDRESS\_ZIP (σ PROPERTY\_ADDRESS\_STATE =”Virginia” (ADDRESS))

1. Retrieve all client names and emails

∏ CLIENT\_NAME, CLIENT\_EMAIL(CLIENT)

**Queries 6 - 8 must retrieve at least three attributes in total and must be based on two tables.**

1. Retrieve all client names, emails, and inspection dates in VA that have been inspected in the last month

∏ CLIENT\_NAME, CLIENT\_EMAIL (σ CLIENT\_ADDRESS\_STATE\_ACRONYM = “VA” (CLIENT)) ⋈ ∏ INSPECTION\_DATE, CLIENT\_ID (σ INSPECTION\_DATE > (TODAY -30) (CONTRACT)

1. Retrieve inspection reports that were generated in 2016 performed by Steve

∏ INSPECTOR\_ID, INSPECTOR\_NAME (σ INSPECTOR\_NAME = “Steve” (INSPECTOR)) ⋈∏ INSPECTION\_DATE (σ INSPECTION\_DATE > 2016 (CONTRACT)

1. Retrieve non VA inspections address and the inspector

∏ CONTRACT\_ID, ADDRESS, INSPECTOR\_NAME (INSPECTION\_REPORT - σ PROPOERTY\_ADDRESS\_STATE = “Virginia” (INSPECTION\_REPORT))

**Queries 9 - 10 must retrieve at least three attributes in total and must be based on three tables.**

1. Retrieve inspections performed by Steve in Arlington VA in 2015

∏ INSPECTOR\_ID, INSPECTOR\_NAME (σ INSPECTOR\_NAME = “Steve” (INSPECTOR)) ⋈ σ PROPOERTY\_ADDRESS\_STATE = “Virginia” (INSPECTION\_REPORT) ⋈ ∏ CONSTRACT\_DATE σ INSPECTOIN\_DATE = 2015 (CONTRACT)

1. Retrieve all inspection items that have been flagged today and applicable to be inspected (e.g. does not include items that were not applicable) , who inspected them, and their inspection status

∏ INSPECTION\_ITEM\_ID (σ FLAG\_STATUS = TRUE (INSPECTION\_ITEM\_STATUS)) ⋈ ∏ INSPECTION\_ITEM\_STATUS( σ INSPECTION\_ITEM\_STATUS = “inspected and passed” INSPECTION\_ITEM\_STATUS = “inspected and needs repair” (INSPECTION) ⋈ ∏ INSPECTOR\_NAME(INSPECTOR)