# **BTD210- Lab 3**

Please work in **groups** to complete this lab. This lab is worth 2% of the total course grade and will be evaluated through your written submission, as well as the lab demo. During the lab demo, group members are randomly selected to present the answers to each of the lab questions. Group members not present during the lab demo will lose the demo mark.

Please submit the following files through Blackboard. Only one person must submit for the team.

* Lab3.docx

1. Add this declaration on the top of your Lab3.docx file.

We, Priya, Monica, Muskan , declare that the attached assignment is our own work in accordance with the Seneca Academic Policy. No part of this assignment has been copied manually or electronically from any other source (including web sites) **or distributed to other students.**

1. Specify what each member has done towards the completion of this work:

|  |  |  |
| --- | --- | --- |
|  | Name | Task(s) |
| 1 | Priya | answers, typing, submission |
| 2 | Monica | answers |
| 3 | Muskan | answers |

1. [Adapted from Coronel and Russel- Chapter 3 Problems] Use the database shown in Figure P3.1 to answer the following questions:
2. List ALL super keys for the EMPLOYEE table. (*something that can uniquely identify any row in the table. e.g. emp\_code is a super key because without any other attribute you can still find the record.)*
   1. EMP\_CODE, and EMP\_CODE with any other attribute other than EMP\_INITIAL
   2. EMP\_LNAME and EMP\_FNAME, EMP\_LNAME and EMP\_FNAME with any other attribute other than EMP\_INITIAL
   3. EMP\_DOB, and EMP\_DOB with any other attribute other than EMP\_INITIAL
   4. EMP\_FNAME, EMP\_FNAME with any other attribute other than EMP\_INITIAL
3. List ALL candidate keys for the EMPLOYEE table. (*something that is dependent on another. e.g. emp\_code is candidate but also is emp\_lname, emp\_fname, emp\_dob. but emp\_fname and emp\_lname is a superkey but NOT a candidate key because emp\_lname could be removed and the key would still be a super key.)* 
   1. EMP\_CODE
   2. EMP DOB
   3. EMP\_FNAME, EMP\_LNAME
   4. EMP\_FNAME
4. For each of the 3 tables, identify the primary key, foreign key(s), and *one* secondary key. If a table does not have a foreign key, write *None*.

|  |  |  |  |
| --- | --- | --- | --- |
| Table | Primary Key | Secondary Key | Foreign Key(s) |
| EMPLOYEE | EMP\_CODE | EMP\_DOB | STORE\_CODE |
| STORE | STORE\_CODE | STORE\_NAME | REGION\_CODE |
| REGION | REGION\_CODE | REGION\_DESCRIPT | NONE |

1. Do the tables exhibit entity integrity? Answer yes or no, and explain your answer.

|  |  |  |
| --- | --- | --- |
| Table | Entity Integrity? | Explanation |
| EMPLOYEE | Yes | the PK is completely unique and can pull up any information needed by the EMP\_CODE |
| STORE | Yes | Each store has a unique code to identify the data by looking at STORE\_CODE |
| REGION | Yes | region code is completely unique when looking at REGION\_CODE |

1. Do the tables exhibit referential integrity? Answer yes or no, and explain your answer. Write N/A if the table does not have a foreign key.

|  |  |  |
| --- | --- | --- |
| Table | Referential Integrity? | Explanation |
| EMPLOYEE | No | the foreign key has null but has to have a value to reference to another key value. in the table employee, the store\_code of one of the employees is 6 )where emp\_code is 20) while a store\_code 6 (primary key value) doesn’t exist in the store value. |
| STORE | Yes | the STORE\_CODE is a valid value and has each location with a unique number that doesn’t equal to a null |
| REGION | N/A | the REGION\_CODE does not have a store\_key |

1. What type of relationship (1:1, 1:M, M:N, or none) exists between the following pairs of entities?

|  |  |  |  |
| --- | --- | --- | --- |
| Pair | Employee - Store | Employee - Region | Store - Region |
| Relationship | 1:M (also 1:1- manager at each store) | None | 1:M |

1. Use the tables shown in Figure P3.2 to answer the following questions. Show the result of the relational set operators. Write N/A if the operation is not applicable. THIS IS DIFFERENT FROM AN EMPTY TABLE! Show the column names only if the resulting table is empty (has no rows).
2. From table J, SELECT ALL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Chicken Stew | Rice | Chicken Stock | Chicken | Carrots |
| Veggie Stew | Pasta | Water | Tofu | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |
| Pork Stew | Pasta | Water | Pork | Onions |

1. From table J, SELECT only STARCH = Potatoes (Let’s call the resulting table B)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |

1. From table M, SELECT only STOCK = not Water (Let’s call the resulting table C)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Turkey Stew | Rice | Chicken Stock | Turkey | Carrots |
| Veggie Stew | Pasta | Vegetable Stock | Tofu | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |

1. From table J, PROJECT RECIPE (Let’s call the resulting table D)

|  |
| --- |
| **Recipe** |
| Lamb Stew |
| Chicken Stew |
| Veggie Stew |
| Irish Stew |
| Pork Stew |

1. From table M, PROJECT RECIPE and VEGETABLE (Let’s call the resulting table E)

|  |  |
| --- | --- |
| **Recipe** | **Vegetable** |
| Lamb Stew | Peas |
| Turkey Stew | Carrots |
| Veggie Stew | Snap Peas |
| Irish Stew | Cabbage |
| Pork Stew | Onions |

1. J UNION M

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Chicken Stew | Rice | Chicken Stock | Chicken | Carrots |
| Veggie Stew | Pasta | Water | Tofu | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |
| Pork Stew | Pasta | Water | Pork | Onion |
| Turkey Stew | Rice | Chicken Stock | Turkey | Carrots |
| Veggie Stew | Pasta | Vegetable Stock | Tofu | Snap Peas |
| Pork Stew | Beans | Water | Pork | Onions |

1. J INTERSECT M

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Irish Stew | Potatoes | Beef stock | Beef | Cabbage |

1. J DIFFERENCE M

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Chicken Stew | Rice | Chicken Stock | Chicken | Carrots |
| Veggie Stew | Pasta | Water | Tofu | Snap Peas |
| Pork Stew | Pasta | Water | Pork | Onions |

1. M DIFFERENCE J

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Turkey Stew | Rice | Chicken Stock | Turkey | Peass |
| Veggie Stew | Pasta | Vegetable Stock | Tofu | Snap Peas |
| Pork Stew | Beans | Water | Pork | Onions |

1. B UNION C

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |
| Turkey Stew | Rice | Chicken Stock | Turkey | Carrots |
| Veggie Stew | Pasta | Vegetable Stock | Tofu | Snap Peas |

1. B INTERSECT E

n/a

1. B PRODUCT E

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** | **E.Recipe** | **E. Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas | Lamb Stew | Peas |
| Lamb Stew | Potatoes | Water | Lamb | Peas | Turkey Stew | Carrots |
| Lamb Stew | Potatoes | Water | Lamb | Peas | Veggie Stew | Snap Peas |
| Lamb Stew | Potatoes | Water | Lamb | Peas | Irish Stew | Cabbage |
| Lamb Stew | Potatoes | Water | Lamb | Peas | Pork Stew | Onions |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage | Lamb Stew | Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage | Turkey Stew | Carrots |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage | Veggie Stew | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage | Irish Stew | Cabbage |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage | Pork Stew | Onions |

1. E DIVIDE D

\*said that the table is just empty and would show the headings

|  |
| --- |
| **Vegetable** |

## **Figure P3.1 The StoreCo Database [Adapted from Coronel and Russel, Figure P3.1]**

The database contains 3 tables:

* EMPLOYEE: Lists the employees working across several stores belonging to StoreCo company. For each employee, the table contains information such as name, date of birth, and the code of the store he/she works in.
* STORE: Lists the company’s stores across different regions. For each store, this table contains information such as name, year-to-date sales, the code of the region it belongs to, and the code of the employee who manages the store.
* REGION: Lists the regions.

**Table name: EMPLOYEE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EMP\_CODE** | **EMP\_TITLE** | **EMP\_LNAME** | **EMP\_FNAME** | **EMP\_INITIAL** | **EMP\_DOB** | **STORE\_CODE** |
| 1 | Mr. | Williamson | John | W | 21-May-64 | 3 |
| 2 | Ms. | Ratula | Nancy |  | 09-Feb-69 | 2 |
| 3 | Ms. | Greenboro | Lottie | R | 02-Oct-61 | 4 |
| 4 | Mrs. | Rumpersfro | Jennie | S | 01-Jun-71 | 5 |
| 5 | Mr. | Smith | Robert | L | 23-Nov-59 | 3 |
| 6 | Mr. | Renselaer | Cary | A | 25-Dec-65 | 1 |
| 7 | Mr. | Ogallo | Roberto | S | 31-Jul-62 | 3 |
| 8 | Ms. | Johnsson | Elizabeth | I | 10-Sep-68 | 1 |
| 9 | Mr. | Eindsmar | Jack | W | 19-Apr-55 | 2 |
| 10 | Mrs. | Jones | Rose | R | 06-Mar-66 | 4 |
| 11 | Mr. | Broderick | Tom |  | 21-Oct-72 | 3 |
| 12 | Mr. | Washington | Alan | Y | 08-Sep-74 | 2 |
| 13 | Mr. | Smith | Peter | N | 25-Aug-64 | 3 |
| 14 | Ms. | Smith | Sherry | H | 25-May-66 | 4 |
| 15 | Mr. | Olenko | Howard | U | 24-May-64 | 5 |
| 16 | Mr. | Archialo | Barry | V | 03-Sep-60 | 5 |
| 17 | Ms. | Grimaldo | Jeanine | K | 12-Nov-70 | 4 |
| 18 | Mr. | Rosenberg | Andrew | D | 24-Jan-71 | 4 |
| 19 | Mr. | Rosten | Peter | F | 03-Oct-68 | 4 |
| 20 | Mr. | Mckee | Robert | S | 06-Mar-70 | 6 |
| 21 | Ms. | Baumann | Jennifer | A | 11-Dec-74 | 3 |

**Table name: STORE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **STORE\_CODE** | **STORE\_NAME** | **STORE\_YTD\_SALES** | **REGION\_CODE** | **EMP\_CODE** |
| 1 | Access Junction | 1003455.76 | 2 | 8 |
| 2 | Database Corner | 1421987.39 | 2 | 12 |
| 3 | Tuple Charge | 986783.22 | 1 | 7 |
| 4 | Attribute Alley | 944568.56 | 2 | 3 |
| 5 | Primary Key Point | 2930098.45 | 1 | 15 |

**Table name: REGION**

|  |  |
| --- | --- |
| **REGION\_CODE** | **REGION\_DESCRIPT** |
| 1 | East |
| 2 | West |

## **Figure P3.2 The Recipe Tables**

[Adapted from Viescas and Hernandez, SQL Queries for Mere Mortals, Chapter 7]

**Table name: J** (from John’s cookbook)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Chicken Stew | Rice | Chicken Stock | Chicken | Carrots |
| Veggie Stew | Pasta | Water | Tofu | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |
| Pork Stew | Pasta | Water | Pork | Onions |

**Table name: M** (from Mike’s cookbook)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recipe** | **Starch** | **Stock** | **Meat** | **Vegetable** |
| Lamb Stew | Potatoes | Water | Lamb | Peas |
| Turkey Stew | Rice | Chicken Stock | Turkey | Carrots |
| Veggie Stew | Pasta | Vegetable Stock | Tofu | Snap Peas |
| Irish Stew | Potatoes | Beef Stock | Beef | Cabbage |
| Pork Stew | Beans | Water | Pork | Onions |