**CS443-Lab 3**

**Question 1:**

Suppose that our database has the following table.

Person

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Con  ID | Con  Name | Con  Pop | Con  Size | State  code | State  Name | State  Rgn | State  Size | State  Pop | Cty  Code | Cty  Name | Cty  Size | Per  SSN | Per  Name | Per  Age | Per  DofB | Per  Add |

**Field Explanation:**

Con: Stands for Country

Pop: Stands for population

Rgn: Stands for region (like west, east, central, etc.)

Cty: Stands for City

Per: Stands for Person

DofB: Stands for date of birth

Add: Stands for Address

**It is assumed that**

* Every country in the world has a different country ID
* Every city in the world has a different city code
* Every state in the world has a different state code, and
* Every person in the world has a different SSN
* Every person in the world has only one citizenship and has only one address

**Other Assumptions:**

* All relationships are total participation
* There is no village, county, area, etc. A country consists of several states and each state has several cities

1. **Based on the above assumptions, what do you choose to be the primary key of Person table? Why?**
2. **Explain the anomalies exist in the Person table. Choose only one example of insert anomaly, one example of delete anomaly and one example of update anomaly. Note that update does not mean adding or deleting records. It only refers to modifications of values in some rows of the table.**
3. **Normalize the table; create as many as tables necessary such that all new tables are in third normal form. All the transitive and derived dependencies must be removed. You may add more assumptions as you wish; however, your assumptions must be realistic.**
4. **Draw your ERD based on fully normalized table (Reverse Engineering)**