**Assignment: Data Models**

For this week's assignment we will be comparing and contrasting the differences between relational and non-relational database structures.

Relational databases have been a successful technology for over twenty years, providing persistence, concurrency control, and an integration mechanism (Fowler & Sadalage, 2012). Data persistence, as the name suggests, is the process of persisting data to some physical location. The popularity of relational databases derives from its ability to make-sense of complex data structures. Data is categorized into tables, columns, and rows. Tables represent the entities (think JavaScript classes), columns represent the Meta data (think JavaScript properties), and rows are the raw data elements (think values). There are three types of relationships in a relational database system, One-to-Many, Many-to-Many, and One-to-One. Business rules are brief, precise, and unambiguous descriptions of a policy, procedure, or principle within an organization. Diagrams are used to graphically illustrate these business rules and their associated relationships.

One-to-Many Relationship

Business Rule: a PERSON can own many CARs

* Object Relational Diagram A line with black text

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Many-to-Many Relationship

Business Rule: an EMPLOYEE can learn many SKILLs

* Object Relational Diagram A line with black text

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One-to-One Relationship

Business Rule: an EMPLOYEE manages one RESTAURANT

* Object Relational Diagram  A line with words on it

  Description automatically generated

There is a movement away from using databases as integration points towards encapsulating databases within applications and integrating through services (Fowler & Sadalage, 2012). This gravitation has resulted in the adoption and evolution of NoSQL database structures. Web communications and transmissions are unstructured data components that require a mechanism for dealing with their complexities. NoSQL technologies bridge this gap by not forcing developers into specific paradigms, rather allowing them to keep the data generic and language agnostic. In a NoSQL world, the above diagrams data structure may resemble the following:

NoSQL Data Structure:

{

"first\_name": "Martin",

"last\_name": "Fowler",

"cars": [

{

"type": "Ford",

"color": "White"

},

{

"type": "Nissan",

"color": "Black"

}

]

}

The key point here is, CARs is a nested collection under the USER document.

**Instructions:**

1. Create (if you haven't already) a directory in CSD-310 named module-2.
2. Translate the following business rules into one Entity relationship diagram (ERD) using Visual Paradigm.
   * a USER has many ROLES.
   * a USER has one BIRTHDATE.
   * a USER can have many DEPENDENTS.
3. Convert the translated diagram into one NoSQL data structure.
4. Save the ERD and NoSQL data structure as separate image files.
5. Combine the images into a single Word document, add your name and the assignment number at the top of the first page.
6. Save your document as <your-last-name>-<assignment-name> .docx into your CSD-310/module-2 directory.

**GitHub**

* Stage, commit, and push your work to GitHub.
  + Click on the following link for instructions: [GitHub Stage, Commit, and Push.pdf](https://cyberactive.bellevue.edu/bbcswebdav/xid-101703982_4) [Click for more options](https://cyberactive.bellevue.edu/webapps/blackboard/content/listContent.jsp?course_id=_531857_1&content_id=_16186028_1&mode=reset#contextMenu)

**Deliverables**

1. Word document with your name and assignment number on first page, with screenshot or graphic of ERD and one of NoSQL data structure.

**Assignment Requirements and Grading:**

1. This assignment is due by **Sunday, 11:59 p.m., CST**.
2. Submit your assignment by clicking on the **Assignment Link** above, then scroll down to the **Attach Files** section and click on **Browse My Computer**. Select your assignment file, add any links or comments as appropriate, and then click on **Submit**.
3. To view the grading rubric for this assignment, click on the following link: [Diagram Grading Rubric](https://content.bellevue.edu/cst/csd/rubricdiagramsv1.pdf)

**(50 points)**