**Group Members**: Alec Lewis, Aimee Valladares, Martin Butcher, Zack Retamozo. Aimee will be responsible to for uploading all assignments to Canvas:

**Contributions:**

* Aimee Valladares - Primarily created the Data Dictionary in Excel and subsequently updated it. Primarily wrote the 3-End User sample queries. Compiled the labor statistics data that would be inserted into our database. Wrote the high level description of what the data information means as well as the purpose of what our database is for.
* Alec Lewis - Helped create the Data Dictionary and the ER Diagram as well as establish the business rules for reference. Helped researching the data.
* Martin Butcher - Created the database in SQL and began to run sample queries. Is responsible for the screen snapshots of our database running and test queries. Documented known issues and problems with our database.
* Zack Retamozo - Helped create the Data Dictionary and 3-End User sample queries. Primarily Drew the ER Diagram in the Dia Diagram software.

**Project Topic**: Helping students determine the best career options based on their education (or major).

**Description:** This database is meant to help a student determine what career options are available to them and figure out what is the best option. This database will take into account information corresponding to the student specifically having three tables for their student information, their major, and their concentration. The database will contain information pertinent for job analysis.

The database will contain three tables to store career information: a profession table, a location table, and a wage table. In the profession table, students will be able to view the name of a profession, what is the typical entry-level education, whether previous work experience is needed, and the forecast of the change in the number of people employed (aka the job outlook). In the location table, students will be able to view which state in the United States has the highest possibility of employment, the employment level, the hourly mean wage, and the annual mean wage. Finally, in the wage table, students will be able to view the hourly median wage, annual median wage, and what industry with the highest levels of employment.

**Data**: Labor statistics data for 2018 will be compiled from information collected from the Bureau of Labor Statistics and ONET Online. The excel spreadsheets containing all the information for our database is currently available.

**3-End UserQuestions/Insights/Views**:

1. The student would like to view the top 3 professions in there respective major, displaying major information (major name and related concentration), student information (student’s first name and student’s last name), concentration information (concentration name), and profession information (profession name, typical entry-level information, needs entry work experience (yes or no), and job outlook). This view needs to be ordered by the student name, major, related concentration, profession name, and job outlook. **Validity Check**: Check that the major and related concentration corresponds to the correct profession. Randomly select a major 3 different times and evaluate if the information match what it displays in the major, student, concentration, and profession tables.
2. The student would like to calculate how many professions a student may apply for given their major. This insight would require that the view display student information (student first name, student last name), major information, (major name, major ID), and profession information (profession name, total number of professions). This view needs to be ordered by the student name, major name, and total number of professions. **Validity Check**: Randomly select a few students with different majors and check to see if the queries accurately count the number of professions as displayed by the data.
3. The student would like to find professions with the highest level of employment in the United States and the corresponding wages. This insight would require that the view display profession information (profession name and profession ID), location information (state, employment level, hourly mean wage, and annual mean wage), and wage information (top industry, hourly median wage, and annual median wage). This view needs to be ordered by the profession name, state name, corresponding employment level, hourly mean wage, annual mean wage, hourly median wage, and annual median wage. **Validity Check:** Randomly select a few states and check that the numbers for the employment levels and wages correctly correspond with the location and wage data sets.

**Conceptual Design**:

1. **Data Analysis**: The design must permit the end-users to answer the 3 questions above.
2. **Entity Relationship Modeling**:
   1. **Data Dictionary**:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table Name: | Attribute Name: | Contents: | Type: | Format: | Range: | Required: | PK or FK | FK Referenced Table | Number of Rows/Records |
| Major | MAJOR\_NUM | Major ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 9 |
|  | MAJOR\_NAME | Name | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | ABET\_ACCR | ABET Accreditation | VarChar(3) | XXXXXXXXXX | XXX | Yes |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Profession | PROF\_NUM | Profession ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 96 |
|  | PROF\_NAME | Projession Name | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | PROF\_DEG | Typical entry-level education | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | PROF\_EWE | Is Previous Work Experience Needed? | VarChar(3) | XXX | Xxx | No |  |  |  |
|  | PROF\_JOB | Job Outlook | Integer | 99 | 1 - 99 | Yes |  |  |  |
|  | MAJOR\_NUM | Major ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | MAJOR |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Location | LOC\_NUM | Location ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 96 |
|  | LOC\_STATE | Location in the US (What state?) | VarChar(15) | XXXXXXXXXX | Xxxxxxxxxxxxxxx | Yes |  |  |  |
|  | LOC\_EMP | Employment Level | Integer | 999999999 | 999999999 - 100000000 | Yes |  |  |  |
|  | LOC\_HMW | Hourly Mean Wage | Double | 99.99 | 00.00 - 99.99 | No |  |  |  |
|  | LOC\_AMW | Annual Mean Wage | Integer | 999999999 | 999999999 - 100000000 | No |  |  |  |
|  | PROF\_NUM | Profession ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | PROFESSION |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Location | LOC\_NUM | Location ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 96 |
|  | LOC\_STATE | Location in the US (What state?) | VarChar(15) | XXXXXXXXXX | Xxxxxxxxxxxxxxx | Yes |  |  |  |
|  | LOC\_EMP | Employment Level | Integer | 999999999 | 999999999 - 100000000 | Yes |  |  |  |
|  | LOC\_HMW | Hourly Mean Wage | Double | 99.99 | 00.00 - 99.99 | No |  |  |  |
|  | LOC\_AMW | Annual Mean Wage | Integer | 999999999 | 999999999 - 100000000 | No |  |  |  |
|  | PROF\_NUM | Profession ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | PROFESSION |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Concentration | CON\_NUM | Concentration ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 35 |
|  | CON\_NAME | Concentration Name | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | MAJOR\_NUM | Major ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | MAJOR |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Student | STU\_NUM | Student ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 96 |
|  | STU\_FNAME | Student's First Name | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | STU\_LNAME | Student's Last Name | VarChar(30) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | MAJOR\_NUM | Major ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | MAJOR |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Wage | WAGE\_NUM | Wage ID | Integer | 999999999 | 999999999 - 100000000 | Yes | PK |  | 96 |
|  | WAGE\_MEDH | Hourly Median Wage (50th percentile) | Double | 99.99 | 00.00 - 99.99 | No |  |  |  |
|  | WAGE\_MEDA | Annual Median Wage (50th percentile) | Integer | 999999999 | 999999999 - 100000000 | No |  |  |  |
|  | WAGE\_IND | Top Industry | VarChar(60) | XXXXXXXXXX | Xxxxxxxxxxxxxxxxxxxxx | Yes |  |  |  |
|  | PROF\_NUM | Profession ID | Integer | 999999999 | 999999999 - 100000000 | Yes | FK | PROFESSION |  |

* 1. **ER Diagram**:

