BAIS:3200

College Majors Final Report

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Introduction:

Everyone who decides to attend college faces the difficult, yet exciting decision of choosing a major. In doing so, students can explore their own interests and pursue a degree that fulfils these desires. For some, the goal of going to college is to finish a degree that will result in higher wages. For others it may be because they enjoy the elements associated with that major. The goal of this report is to create a web-based database application to guide people of all ages who are looking to earn a degree but have not yet decided what they would like to study. Future college students can easily access a wide range of information about their post-graduate employment rates as well as the expected salary for 173 commonly offered majors by using our web-based application. We hope to aid future college students with picking their major, and eventually, their ideal career path that best suits their needs.

Data:

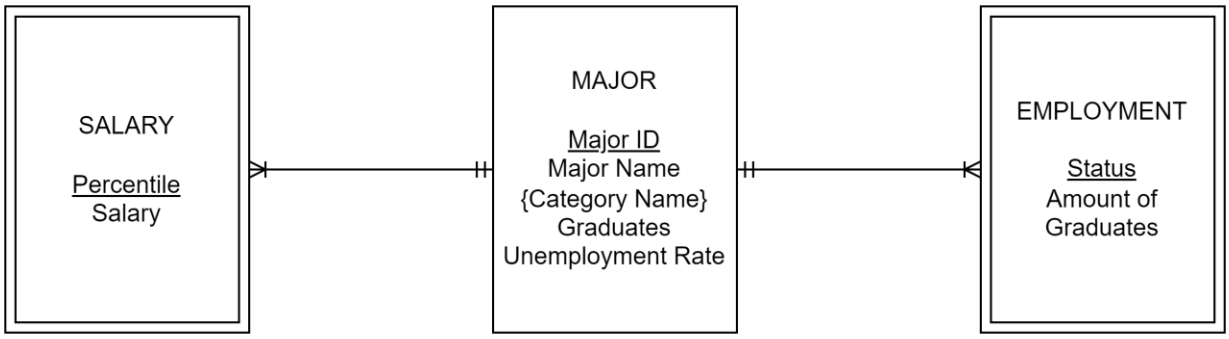
Our data is from the 2014 ABC News story "The Economic Guide to Picking a College Major." We retrieved the data from here, which is updated annually. The dataset has the following information on 173 different majors: category, total number of people surveyed for each major, employed, employed year-round, unemployed, unemployment rate for the specific major, median salary, 25th percentile salary, and 75th percentile salary. We will call the "Major Code" the "MajorID" to display that it is a unique identifier. We renamed "Total" to "Graduates" to clarify what is totaled, and we renamed "Median Salary" to "50th Percentile" to follow the format of the other percentiles. The following table shows a description of the data we uploaded into our database.

Table 1 Data dictionary

Field	Type	Description
MajorID	Text	Unique ID for each major
Major Name	Text	Name of major
Major Category	Text	General category that majors fall under
Total (Graduates)	Numeric	Number of graduates
Employed	Numeric	Number of employed out of all graduates
Employed Full-Time	Numeric	Number of employed full-time out of graduates
Unemployed	Numeric	Number of unemployed out of graduates
Unemployment Rate	Numeric	Unemployment rate of each major
Median Salary	Numeric	Median earnings of full-time employees
25th Percentile Salary	Numeric	25th percentile of earnings
75th Percentile Salary	Numeric	75th percentile of earnings

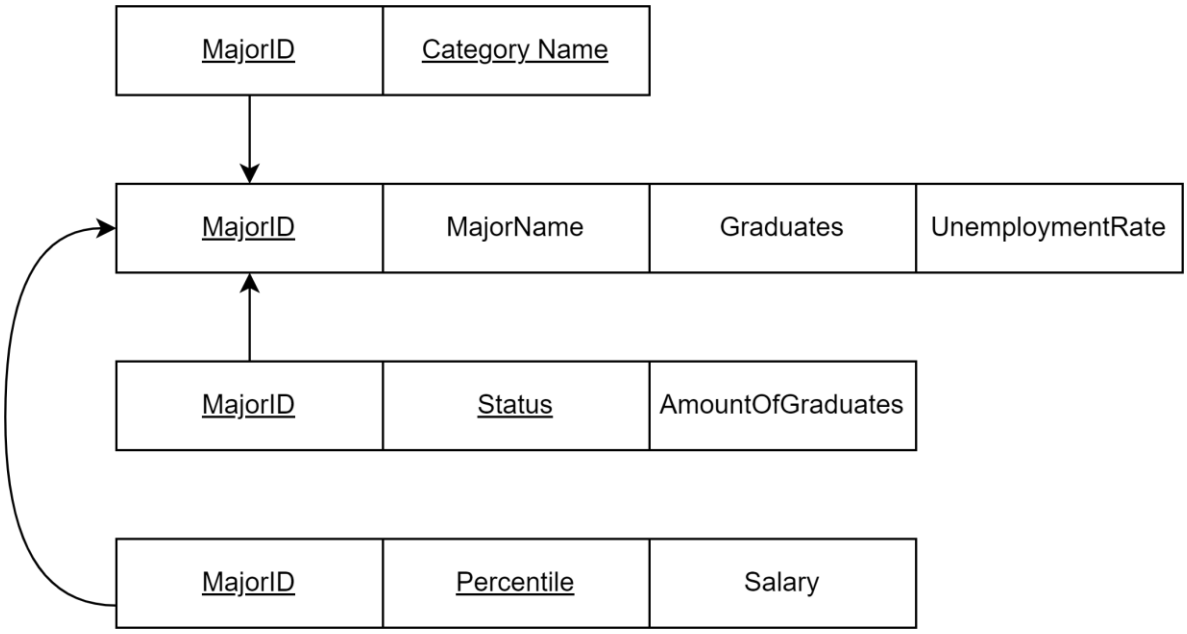
The only strong entity in our database is MAJOR, which has the unique identifier, Major ID. This entity (MAJOR) holds the unique identifier, the name of the major, the category the major belongs to, the total number of graduates for each major, and the unemployment rate for that major. There are two other weak entities in our ER (Entity Relationship) diagram: SALARY and EMPLOYMENT. The SALARY entity records the salary for each major, and what percentile that value corelates too (25^{th}, 50^{th}, or 75th percentile). EMPLOYMENT records the total number of graduates for a specific major that are either unemployed, employed, or full-time employed. The relationship between MAJOR and EMPLOYEMENT is a mandatory one-to-many relationship because each major must have graduates employed, full-time, and unemployed. The relationship between MAJOR and SALARY is also a mandatory one-to-many relationship because each individual major must have a 25^{th} percentile salary, a 50^{th} percentile salary, and a 75^{th} percentile salary.

Table 2 ER diagram



Next, we created our relational schema in 3NF (3^{rd} normal form) which is shown in *table 3*. Because our database had a multivalued attribute (Category Name) which stores at most two distinct categories that each major can belong to, we created its own table in our database named CATEGORIES. Since Major ID is the only unique identifier (and thus the only strong entity), it is both part of the composite key and the foreign key for the remaining three tables.

Table 3 Relational schema in 3NF



Database Implementation:

After we had outlined the general structure of our database using our ER diagram and relational schema, we then wrote four CREATE TABLE commands to create each of the four tables used in our database: MAJOR, EMPLOYMENT, SALARY, and CATEGORIES. Then, we manually uploaded the data into each individual table by copying and pasting each tables' columns from the cleaned and normalized excel spreadsheet. Because our method did not use the INSERT command, we supplied an example of the insert command for each table in *Figure 5* below. Also shown below are screenshots of our CREATE TABLE commands (*figure 1-4).*

Figure 1 Major table

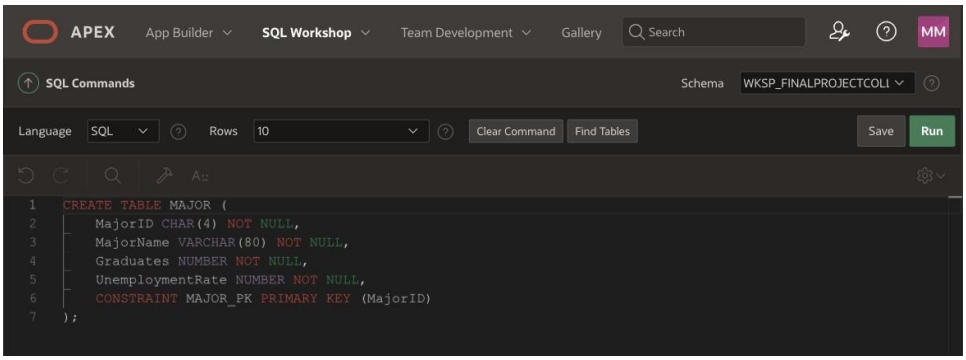


Figure 1 shows the commands we used to create our first table MAJOR with four stored values each not null. We store the MajorID as the unique identifier (which are all stored as 4-length characters). MajorName is a variable character ranging up to 80 characters in length to accommodate lengthy major names. Graduates and UnemploymentRate are both stored as a number. Graduates shows the total number of graduates for each major and UnemploymentRate shows the unemployment rate for that major.

Figure 2 Employment table

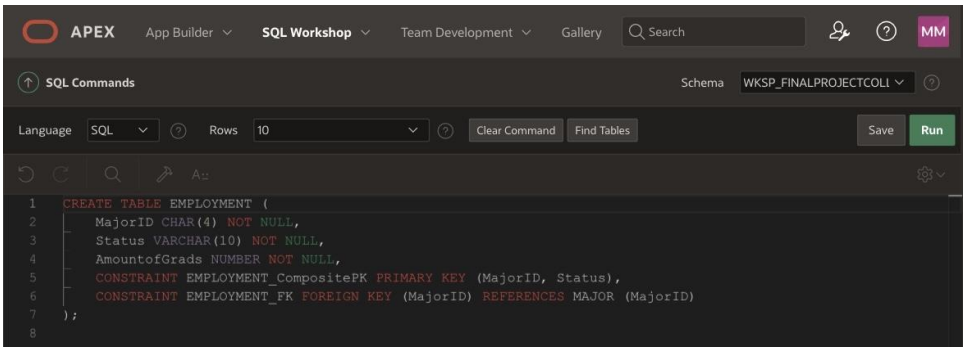


Figure 2 shows the commands we used to create the EMPLOYMENT table which has three stored values that each are not null. We store MajorID as the composite key along with Status, which is stored as a 10-length variable character. AmountofGrads is stored as a number and illustrates the total number of graduates for each major.

Figure 3 Salary table

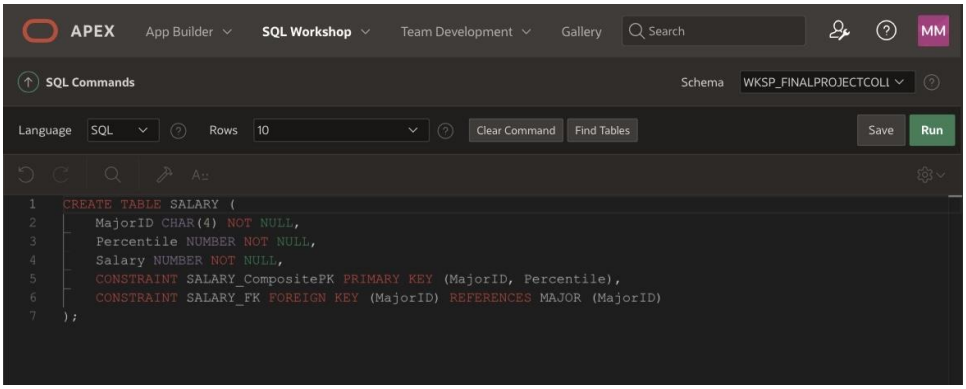


Figure 3 shows our third command that creates the SALARY table. This table, like the others, has a composite key formed by MajorID and Percentile. All values stored in the table are constrained as NOT NULL. Percentile is recorded as the numbers 25, 50, or 75 to show the 25^{th}, 50^{th}, and 75^{th}, percentiles of salaries. Salary is stored as a number and shows the salary of that major.

Figure 4 Categories table

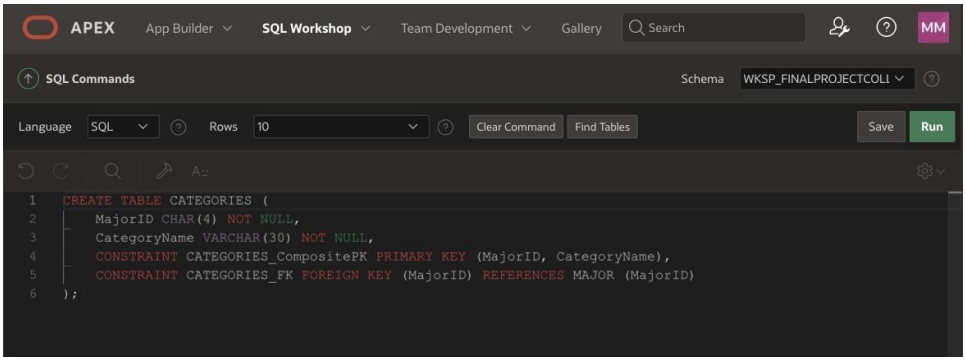


Figure 4 shows the last table in our database named CATEGORIES. This table stores two values which both make up the composite key: MajorID and CategoryName. In this table the

CategoryName is a variable character with length of up to 30. It holds the data to show which category a specific major belongs to such as marketing belongs to business. This table is formed from the multivalued attribute {Category Name}.

Figure 5 Insert commands

```
--Figure 5--
INSERT INTO Major VALUES ('6500' 'Business Analytics and Information Systems', '0','0');

INSERT INTO EMPLOYMENT VALUES ('6500', 'Employed','0');

INSERT INTO SALARY VALUES ('6500','25','0');

INSERT INTO CATEGORIES VALUES ('6500', 'Business')
```

Figure 5 shows an example of an INSERT command for each table. Since we uploaded our data into each table by copying and pasting the columns from the cleaned datasheet, the commands were not run. We created a new row for the MajorName 'Business Analytics and Information Systems' with the MajorID '6500'.

Analysis:

This analysis is intended to inform future college students by finding the highest/lowest earning majors, popular/unpopular majors, high paying majors with high unemployment, and the high/low salaries for each major. Our analyses will give users an overview of 173 different majors and guide them to decide which major will align with their interests and goals.

Question 1: What are the ten highest earning majors and the ten lowest earning majors?

Which majors earn the highest salaries after graduation? Specifically, from highest to lowest based on salary, what are the highest earning majors? To address this question, we composed a simple query that returns the top ten majors from highest to lowest by joining the MAJOR and SALARY tables and then sorting in descending order which is shown in *Figure 6.*

Figure 6 Highest earning major's query

```
SELECT MAJOR.MajorID, MajorName, TO_CHAR(Salary, '$999,999') AS Salary
FROM MAJOR JOIN SALARY
ON MAJOR.MajorID = SALARY.MajorID
ORDER BY SALARY DESC
FETCH FIRST 10 ROWS ONLY;
```

The results of this query are shown below (*Output 1)* and out of the 173 majors included in our data, Petroleum Engineering had the highest salary of $210,000, followed by Mathematics/Computer Science and Nuclear Engineering, both being around $130,000. These results are consistent with what we would expect as these majors are particularly challenging and in high demand according to this.

Output 1 Ten highest earning majors

MAJORID	MAJORNAME	SALARY
2419	PETROLEUM ENGINEERING	$210,000
4005	MATHEMATICS AND COMPUTER SCIENCE	$136,000
2418	NUCLEAR ENGINEERING	$128,000
2411	GEOLOGICAL AND GEOPHYSICAL ENGINEERING	$125,000
6108	PHARMACY PHARMACEUTICAL SCIENCES AND ADMINISTRATION	$125,000
2417	NAVAL ARCHITECTURE AND MARINE ENGINEERING	$125,000
2419	PETROLEUM ENGINEERING	$125,000
2416	MINING AND MINERAL ENGINEERING	$124,000
2415	METALLURGICAL ENGINEERING	$123,000
2405	CHEMICAL ENGINEERING	$120,000

We wanted to further investigate our first question and find which majors had the lowest salaries, specifically, from lowest to highest based on salary. To address this question, we sorted our query in ascending order which can be seen in *Figure 7* below.

Figure 7 Lowest earning major's query

```
SELECT MAJOR.MajorID, MajorName, TO_CHAR(Salary, '$999,999') AS Salary
FROM MAJOR JOIN SALARY
ON MAJOR.MajorID = SALARY.MajorID
ORDER BY SALARY ASC
FETCH FIRST 10 ROWS ONLY;
```

The result of this query *(Output 2)* shows the ten lowest earning majors from our data. We can see from the output that studio arts had the lowest salary of just $24,900 followed by counselling psychology and clinical psychology at around $26,000. The most shocking result is that neuroscience is on the list with a low salary of $28,000. We find this shocking because the previous query (F*igure 6*) shows that math and science majors are generally top earners, this may seem incorrect. However, users should consider that graduate, law, or medical school may be an integral step for success in certain majors.

Output 2 Ten Lowest Earning Majors

MAJORID	MAJORNAME	SALARY
6007	STUDIO ARTS	$24,900
5203	COUNSELING PSYCHOLOGY	$25,000
5202	CLINICAL PSYCHOLOGY	$26,100
2201	COSMETOLOGY SERVICES AND CULINARY ARTS	$26,200
2307	EARLY CHILDHOOD EDUCATION	$27,000
4901	THEOLOGY AND RELIGIOUS VOCATIONS	$27,000
6003	VISUAL AND PERFORMING ARTS	$27,000
3611	NEUROSCIENCE	$28,000
3302	COMPOSITION AND RHETORIC	$28,800
5403	HUMAN SERVICES AND COMMUNITY ORGANIZATION	$29,000

We can draw a couple of conclusions from the two above queries. 1.) If you want a degree that may lead to a high salary, you will have to pursue a degree that is more difficult than the others. We recommend that these people explore degrees in engineering, pharmaceutical, or logistical thinking. They will yield the highest paying careers. 2.) Just because a degree is challenging, it does not guarantee high pay. We can clearly see this with our second query. A degree such as

neuroscience only has a pay of $28,000. We would recommend people to only pursue these types of majors in instances where you have a strong passion or interest in that field.

Question 2: Popular/unpopular majors

Which majors are the most popular? Specifically, which majors have the highest number of graduates? This question can help users who do not already have an idea of what they want to study. The results will show them what popular choices are, and what majors are generally avoided. To address this question, we composed a basic query that returns the top ten most popular majors (by number of graduates) ascending in order the total number of graduates for each major and fetching the first ten. *Figure 8* is shown below for clarity.

Figure 8 Most popular major's query

```
SELECT MajorName, TO_CHAR(Graduates, '999,999,999') AS Graduates
FROM MAJOR
ORDER BY Graduates DESC
FETCH FIRST 10 ROWS ONLY;
```

The results of this query are provided below (*Output 3)* and return ten rows with two columns. Out of the 173 majors included in our data, Business Management and Administration was the most popular with 3,123,510 graduates. Next is General Business with 2,148,712 graduates followed by Accounting and Nursing, both being around 1.7 million. The results are consistent with business and health being among the most popular degree categories according to this.

Output 3 Ten most popular majors

MAJORNAME	GRADUATES
BUSINESS MANAGEMENT AND ADMINISTRATION	3,123,510
GENERAL BUSINESS	2,148,712
ACCOUNTING	1,779,219
NURSING	1,769,892
PSYCHOLOGY	1,484,075
ELEMENTARY EDUCATION	1,446,701
GENERAL EDUCATION	1,438,867
MARKETING AND MARKETING RESEARCH	1,114,624
ENGLISH LANGUAGE AND LITERATURE	1,098,647
COMMUNICATIONS	987,676

We wanted to further investigate our second question and find which majors were the least popular. Specifically, from least to most based-on number of graduates, what are the least popular majors? To address this question, we sorted our original query (*Figure 8)* in ascending order which is shown in *Figure 9* below.

Figure 9 Least popular major's query

```
SELECT MajorName, TO_CHAR(Graduates, '999,999,999') AS Graduates
FROM MAJOR
ORDER BY Graduates ASC
FETCH FIRST 10 ROWS ONLY;
```

The result from *Figure 9* is shown in O*utput 4.* This query returns the ten least popular majors in ascending order. We see that School Student counseling had the least number of total graduates at just 2,396 students. We see that Educational Administration Supervision and Military Technologies both have only around 4,000 total graduates. From this query we would expect that the least popular majors would either have a lower pay than other majors or be extremely difficult. They might be very uncommon majors that may become obsolete soon.

Output 4 Ten least popular majors

MAJORNAME	GRADUATES
SCHOOL STUDENT COUNSELING	2,396
EDUCATIONAL ADMINISTRATION AND SUPERVISION	4,037
MILITARY TECHNOLOGIES	4,315
ASTRONOMY AND ASTROPHYSICS	4,700
PHARMACOLOGY	5,015
GEOLOGICAL AND GEOPHYSICAL ENGINEERING	6,264
GENETICS	6,362
SOIL SCIENCE	6,586
COGNITIVE SCIENCE AND BIOPSYCHOLOGY	6,898
MATHEMATICS AND COMPUTER SCIENCE	7,184

Question 3: High Salary Majors with High Unemployment

Which majors have a high salary but also a high unemployment rate? Specifically, which majors have a pay above $50,000 and an unemployment rate of above 10%. This question can help to show majors that might not be a desirable choice for users because of the high unemployment rate associated with that major even though it is a higher paying major.

To address this question, we composed a compound query that uses the INTERSECT command. It returns any majors that fit the requirements of both having a salary above $50,000 and an unemployment rate greater than 10%. To do this we join the MAJOR and SALARY table where the Unemployment Rate is above .1. This command filters out any majors that do not have Unemployment Rates greater than 10%. We next select those majors where the salary is greater than $50,000 and display the remaining majors that fit the criteria. *Figure 10* shows the necessary joins and filtering WHERE commands.

Figure 10 High salary majors with high unemployment query

```
SELECT MAJOR.MajorID, MajorName, ROUND(UnemploymentRate * 100, 1) || '%' AS UnemploymentRate,
Percentile || 'th' AS Percentile, TO_CHAR(Salary, '$999,999') AS Salary

FROM MAJOR JOIN SALARY
ON MAJOR.MajorID = SALARY.MajorID
WHERE UnemploymentRate > 0.1

INTERSECT

SELECT MAJOR.MajorID, MajorName, ROUND(UnemploymentRate * 100, 1) || '%' AS UnemploymentRate,
Percentile || 'th' AS Percentile, TO_CHAR(Salary, '$999,999') AS Salary

FROM MAJOR JOIN SALARY
ON MAJOR.MajorID = SALARY.MajorID
WHERE SALARY > 50000;
```

The result of our query returns four results which are shown in *Output 5*. Military Technologies appears twice because the 50th percentile salary and the 75th percentile salary are both considered "high" (greater than $50,000) and have an unemployment rate of 10.2%. Clinical Psychology is the next result with a 10.3% unemployment rate. Our last result is Miscellaneous Fine Arts with the highest unemployment rate of 15.6% These results can help students avoid majors that they would have possibly pursued due to their high pay, not knowing it would be challenging to find a job with that major.

Output 5 Top Majors with High Salaries and High Unemployment

MAJORID	MAJORNAME	UNEMPLOYMENTRATE	PERCENTILE	SALARY
3801	MILITARY TECHNOLOGIES	10.2%	50th	$64,000
3801	MILITARY TECHNOLOGIES	10.2%	75th	$90,000
5202	CLINICAL PSYCHOLOGY	10.3%	75th	$62,000
6099	MISCELLANEOUS FINE ARTS	15.6%	75th	$60,000

We can conclude that there are not many high paying jobs that have high unemployment rates. Furthermore, we do not recommend students picking majors based on if a major has a high pay expectancy without also checking the unemployment rate. Finally, we would recommend students to avoid the major Miscellaneous Fine Arts because of the extremely high unemployment rate (unless this is of great interest to you).

Question 4: High and Low Salary by Major

What are the lowest and highest salaries for each major? Specifically, what is the minimum salary, what is the maximum salary, and what are the wage gaps between the minimum and maximum salaries. Question 4 shows users below/above average salaries for each major to give a bigger picture of the salaries for that major. This can be due to an entire range of factors such as experience or ability but is likely due to the different jobs that come with the same major.

To address this question, we composed a basic query that returns the minimum salary as MinSalary and the maximum salary as MaxSalary for each major in our data. We then take the difference between these values and name the result as GapSalary. To do this we join the MAJOR and SALARY tables grouping by MajorID and MajorName. We then order these results with the largest wage gaps to display potential majors that have vast pay gaps. *Figure 11* is provided below with the in-depth query.

Figure 11 High and low salary query

```
SELECT MAJOR.MajorID, MajorName, MIN(Salary) AS MinSalary, MAX(Salary) AS MaxSalary,
MAX(Salary) - MIN(Salary) AS GapSalary
FROM MAJOR JOIN SALARY
ON MAJOR.MajorID = SALARY.MajorID
GROUP BY MAJOR.MajorID, MajorName
ORDER BY GapSalary DESC;
```

This query returns 173 results for all 173 different majors within our data—The first 10 results are shown in *Output 5.* The high and low salary query displays minimum salary (MINSALARY), the maximum salary (MAXSALARY), and the GAPSALARY between those percentiles for each major. This query should be examined by users who may know what major(s) they are interested in to see the salary range for their major. The first result, Petroleum Engineering, has

a minimum salary of $75,000. This minimum salary could very well be the starting salary for many first-year engineers starting in this occupation. This result can then be used to help give an insight into what a future graduates' expected earnings may be right out of college. On the other side, petroleum engineers earned a maximum of $210,000 which were likely paid to more experienced engineers. These results can highlight the importance of experience, especially with a gap in salaries of $135,000 such as with the petroleum engineers major.

Output 5 High and Low Salary by Major

MAJORID	MAJORNAME	MINSALARY	MAXSALARY	GAPSALARY
2419	PETROLEUM ENGINEERING	75000	210000	135000
4005	MATHEMATICS AND COMPUTER SCIENCE	53000	136000	83000
2416	MINING AND MINERAL ENGINEERING	52000	124000	72000
5007	PHYSICS	40000	110000	70000
3607	PHARMACOLOGY	35000	105000	70000
2411	GEOLOGICAL AND GEOPHYSICAL ENGINEERING	55000	125000	70000
5501	ECONOMICS	42000	110000	68000
5001	ASTRONOMY AND ASTROPHYSICS	40000	106000	66000
2417	NAVAL ARCHITECTURE AND MARINE ENGINEERING	60000	125000	65000
2418	NUCLEAR ENGINEERING	65000	128000	63000

One important conclusion we noticed from this output is that the majors with the largest gap in salaries between the minimum and maximum are likely majors that have some of the highest salaries. In addition, we notice this to be the case where the majors need very technical skills. In such case careers usually start to drastically increase pay as your experience increases due to increased technical skills learned in that field. This is clearly illustrated with the engineering and computer science degrees that require a great deal of technical ability which can be gained and mastered throughout your career using that major. The results can be used as motivation for students who are thinking about pursuing these difficult majors.

Category list:

We made a query to display categories associated with each major. The list matches a maximum of two categories for each individual major. Shown below in *Figure 12* is the required join to create this query.

Figure 12 Categories query

```
SELECT MAJOR.MajorID, MajorName, CategoryName
FROM MAJOR JOIN CATEGORIES
ON MAJOR.MajorID = CATEGORIES.MajorID;
```

The results of the above join query provide users with a simple list to match broad categories to specific majors such as the major marketing belonging to the business category. Shown below in O*utput 6* is the result of ten out of the 173 majors from our data.

Output 6 List of majors (and Which Category they Belong to)

MAJORID	MAJORNAME	CATEGORYNAME
1100	GENERAL AGRICULTURE	Agriculture
1100	GENERAL AGRICULTURE	Natural Resources
1101	AGRICULTURE PRODUCTION AND MANAGEMENT	Agriculture
1101	AGRICULTURE PRODUCTION AND MANAGEMENT	Natural Resources
1102	AGRICULTURAL ECONOMICS	Agriculture
1102	AGRICULTURAL ECONOMICS	Natural Resources
1103	ANIMAL SCIENCES	Agriculture
1103	ANIMAL SCIENCES	Natural Resources
1104	FOOD SCIENCE	Agriculture
1104	FOOD SCIENCE	Natural Resources

Category Graph:

We implemented a pie chart to create a visualization of the major categories list, specifically how many majors are in each category.

Figure 13 Categories graph

```
SELECT CategoryName, COUNT(MajorID) AS Majors
FROM CATEGORIES
GROUP BY CategoryName;
```

The simple query returns the Category and uses the COUNT function to count the number of majors in each category. The results are then put into a pie chart using colors and labels for visualization.

Output 7 Total Number of Majors in Each Category

CATEGORYNAME	MAJORS
Mathematics	11
Engineering	29
Consumer Services	7
Health	12
Social Work	9
Business	13
Communications	4
Education	16
Biology	14
Physical Sciences	10

Most Employed Graph:

We created a horizontal bar graph to display the ten majors with the most employed graduates.

```
SELECT MAJOR.MajorID, MajorName, TO_CHAR(AmountofGrads, '999,999,999') AS Graduates
FROM MAJOR JOIN EMPLOYMENT
ON MAJOR.MajorID = EMPLOYMENT.MajorID
WHERE Status = 'Employed'
ORDER BY AmountofGrads DESC
FETCH FIRST 20 ROWS ONLY;
```

The query returns a horizontal bar graph that depicts the majors on the y-axis and the number of graduates on the x-axis. This screenshot states that the first 20 rows with the highest number of graduates were returned in the graph. In our application, the number of rows returned is reduced to 10 for clarity.

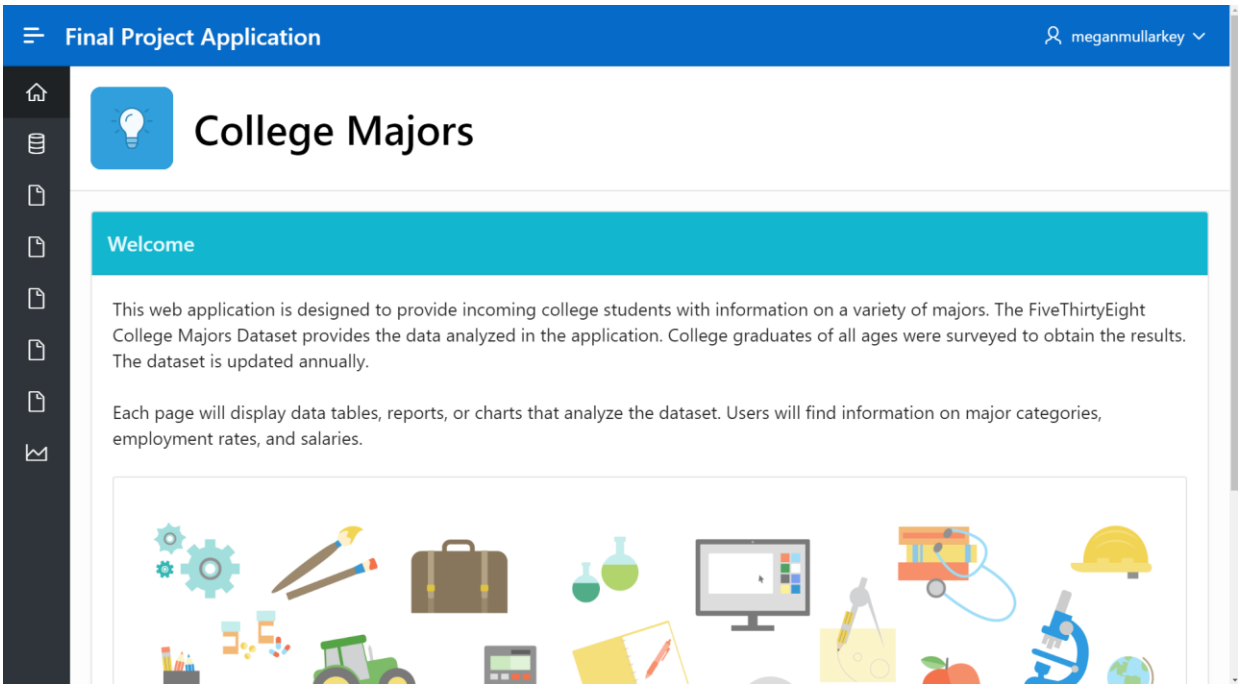
Output 8 Highest number of Graduates by Major

MAJORID	MAJORNAME	GRADUATES
6203	BUSINESS MANAGEMENT AND ADMINISTRATION	2,354,398
6200	GENERAL BUSINESS	1,580,978
6201	ACCOUNTING	1,336,825
6107	NURSING	1,325,711
5200	PSYCHOLOGY	1,055,854
6206	MARKETING AND MARKETING RESEARCH	890,125
2300	GENERAL EDUCATION	843,693
2304	ELEMENTARY EDUCATION	819,393
1901	COMMUNICATIONS	790,696
3301	ENGLISH LANGUAGE AND LITERATURE	708,882

Web Application:

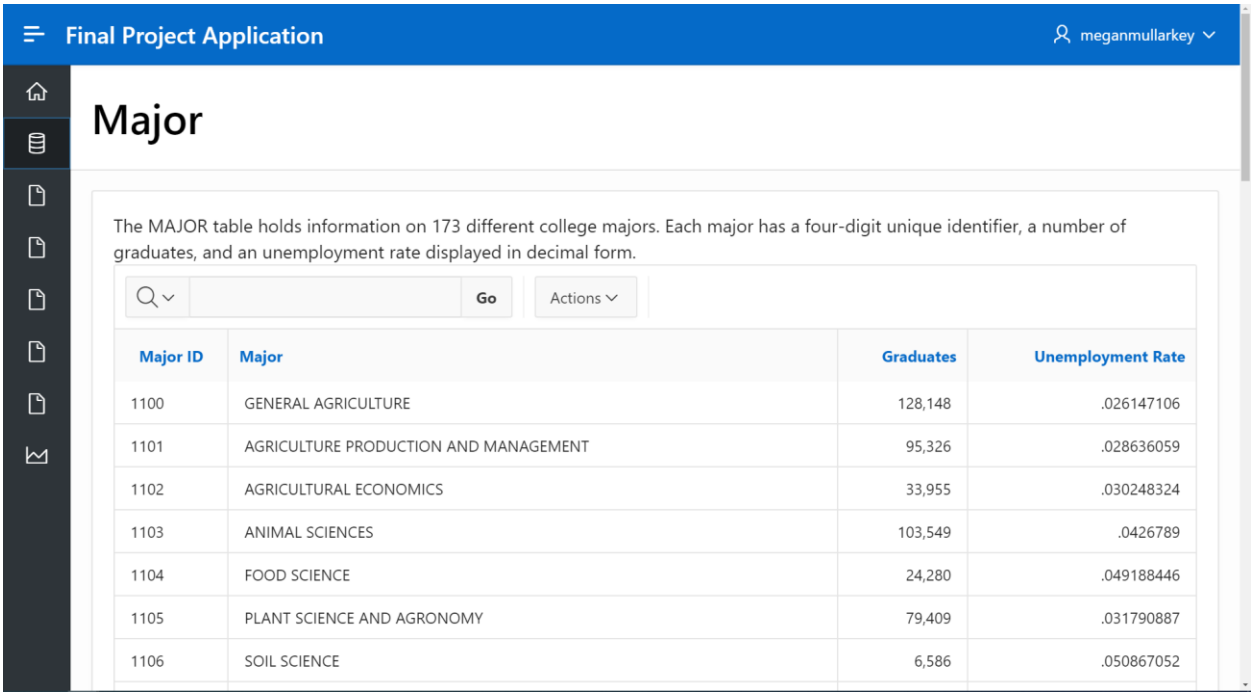
Our Web application can be accessed here. Each page presents the user with a different chart or analysis of the College Majors Dataset. Our application includes the four tables from the database, the answers to our questions from the Project Proposal, and three different graphs. To add more information, we included a specific section for majors and categories and a graph to supplement employment statistics.

Home Page



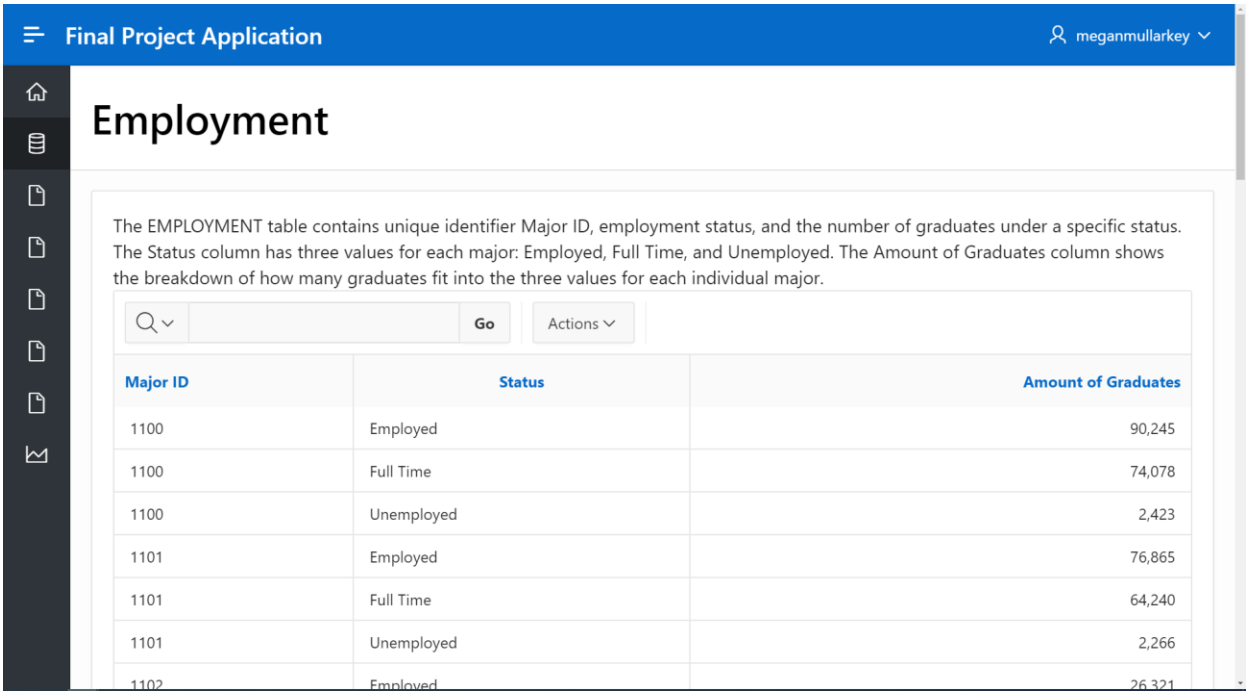
The home page features the title, “College Majors,” next to a customized icon of a blue lightbulb. Below the breadcrumb bar we added static content to the body of the page to display a “Welcome” header that was also customized to be a different shade of blue. The description of our Web application and the cover photo both fit into sub regions of the body. The collapsed navigation menu can be interpreted by the customized icons. The house is automatically added as the home page and the stacked cylinder has the pages for each of the four tables. The first four pages each have an answer to our original four proposal questions, the last page has data about majors and categories, and the graph icon has a supplemental bar graph.

Tables: MAJOR



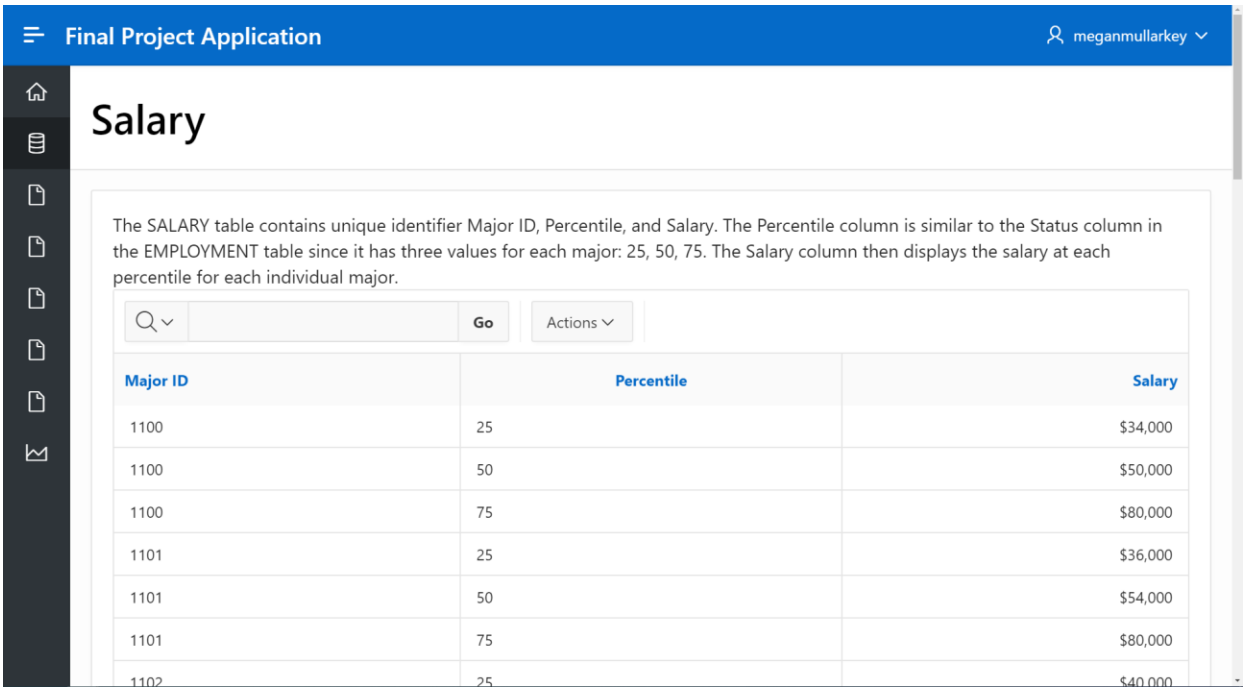
The second page displays the MAJOR table. A brief descriptive text box gives an overview of the table.

Tables: EMPLOYMENT



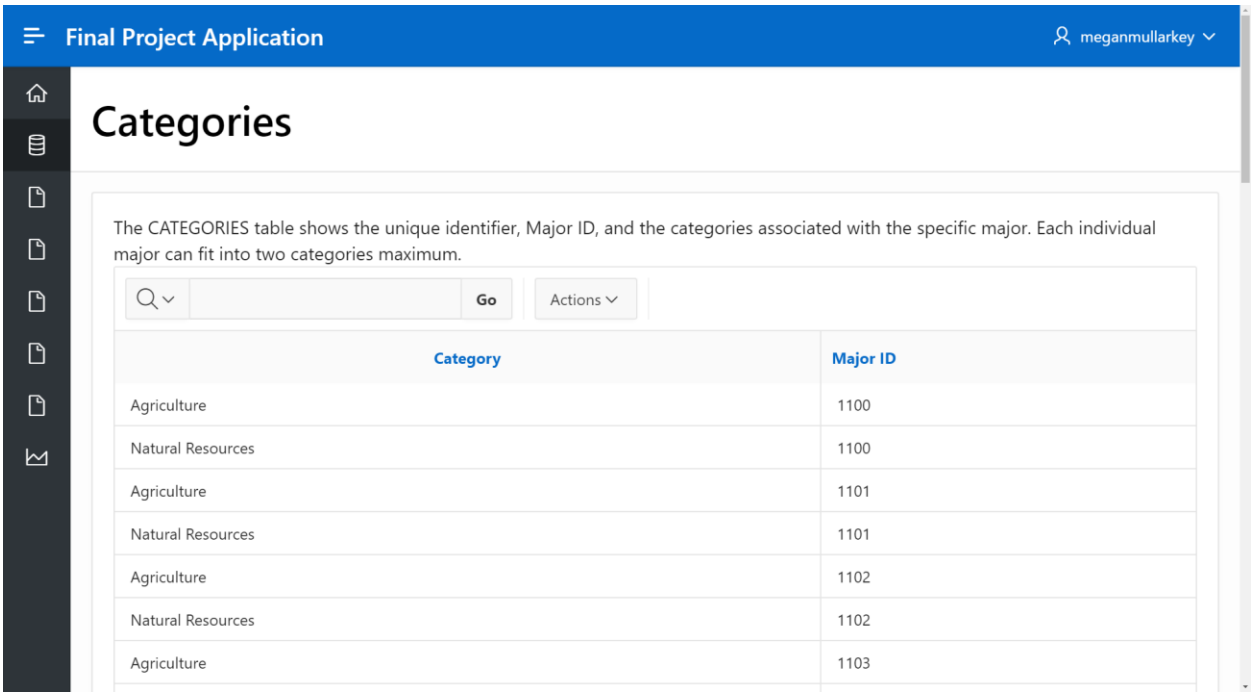
The third page features the EMPLOYMENT table. The text box above describes the table, specifically the repeated values in the Major ID and Status columns.

Tables: SALARY



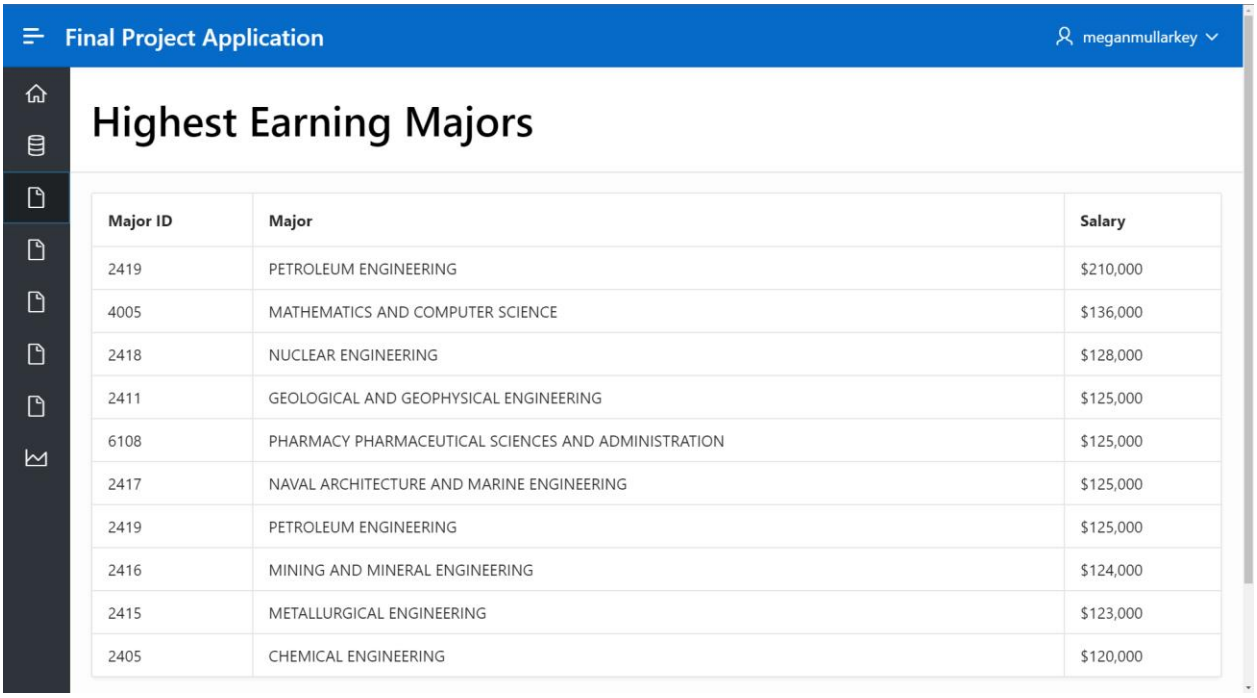
The fourth page shows the SALARY table. Like the EMPLOYMENT table, the text box holds a description of the Major ID and Percentile columns.

Tables: CATEGORIES



The fifth page features the CATEGORIES table. This table holds the multivalued attribute, Category Name. We shortened the column name to just Category for clarity.

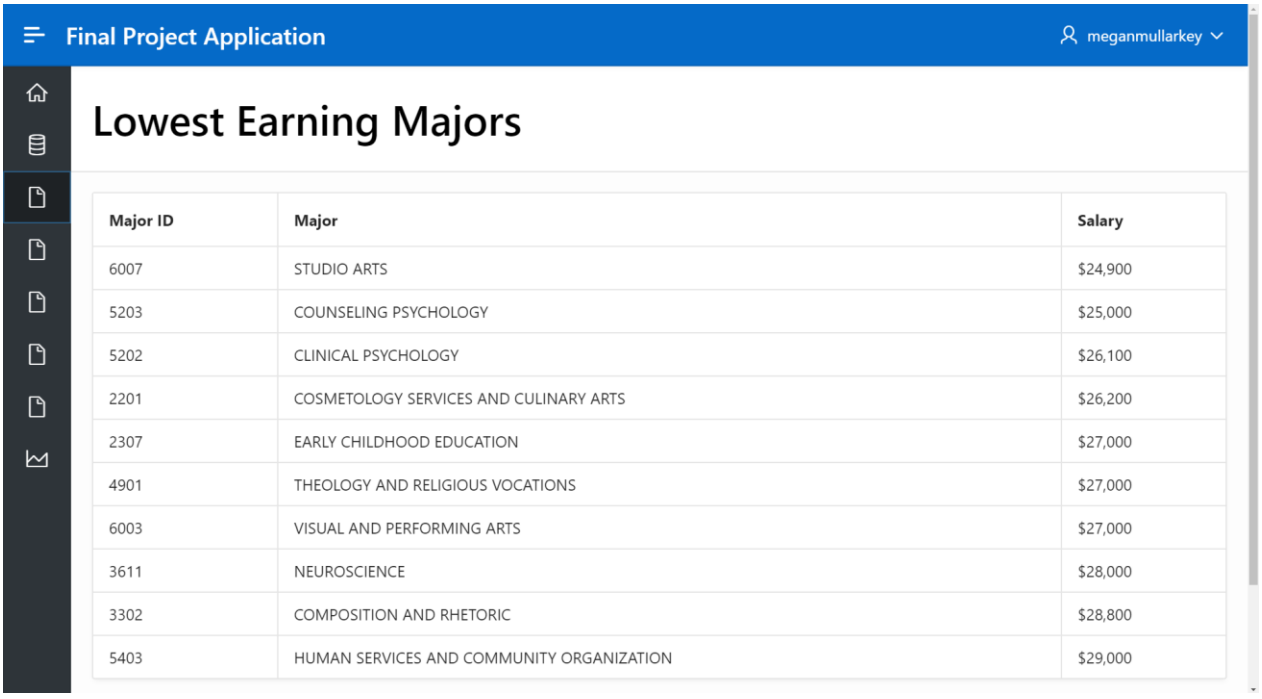
Q1a: What are the ten highest earning majors?



Major ID	Major	Salary
2419	PETROLEUM ENGINEERING	$210,000
4005	MATHEMATICS AND COMPUTER SCIENCE	$136,000
2418	NUCLEAR ENGINEERING	$128,000
2411	GEOLOGICAL AND GEOPHYSICAL ENGINEERING	$125,000
6108	PHARMACY PHARMACEUTICAL SCIENCES AND ADMINISTRATION	$125,000
2417	NAVAL ARCHITECTURE AND MARINE ENGINEERING	$125,000
2419	PETROLEUM ENGINEERING	$125,000
2416	MINING AND MINERAL ENGINEERING	$124,000
2415	METALLURGICAL ENGINEERING	$123,000
2405	CHEMICAL ENGINEERING	$120,000

The answer to the first question is on page 6. The query returned the ten majors with the highest salary.

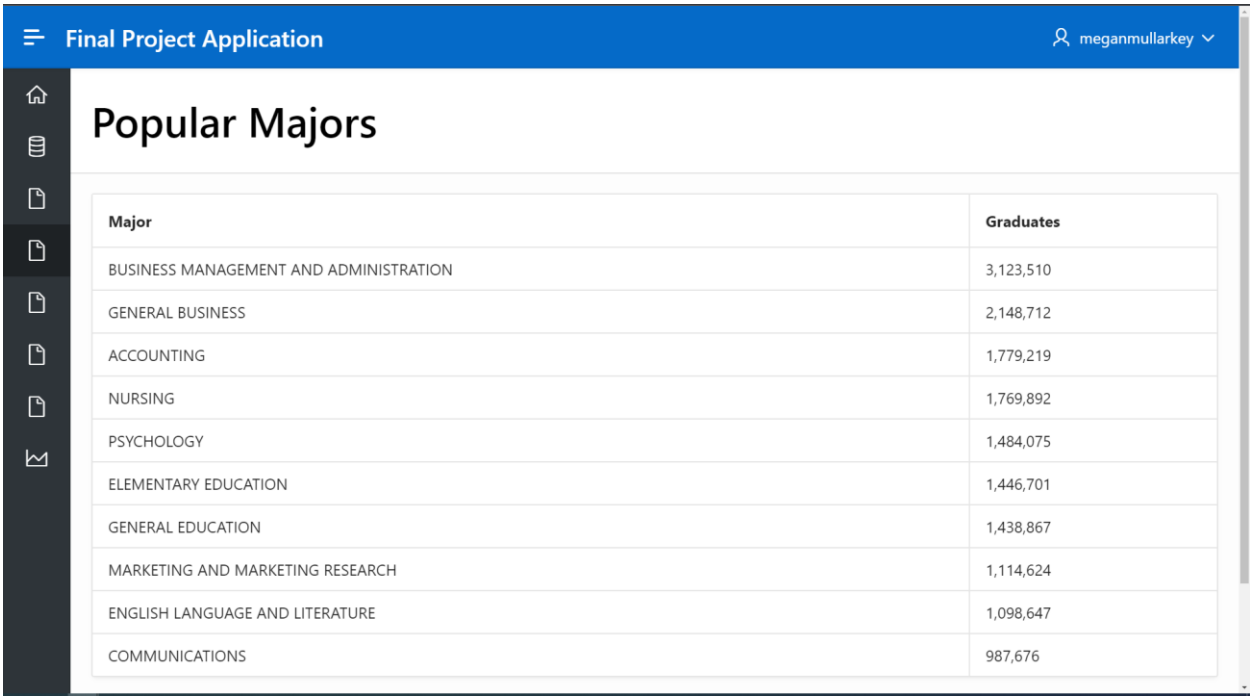
Q1b: What are the ten lowest earning majors?



Major ID	Major	Salary
6007	STUDIO ARTS	$24,900
5203	COUNSELING PSYCHOLOGY	$25,000
5202	CLINICAL PSYCHOLOGY	$26,100
2201	COSMETOLOGY SERVICES AND CULINARY ARTS	$26,200
2307	EARLY CHILDHOOD EDUCATION	$27,000
4901	THEOLOGY AND RELIGIOUS VOCATIONS	$27,000
6003	VISUAL AND PERFORMING ARTS	$27,000
3611	NEUROSCIENCE	$28,000
3302	COMPOSITION AND RHETORIC	$28,800
5403	HUMAN SERVICES AND COMMUNITY ORGANIZATION	$29,000

The answer to the second half of the first question is on page 7. The query returned the ten majors with the lowest salaries.

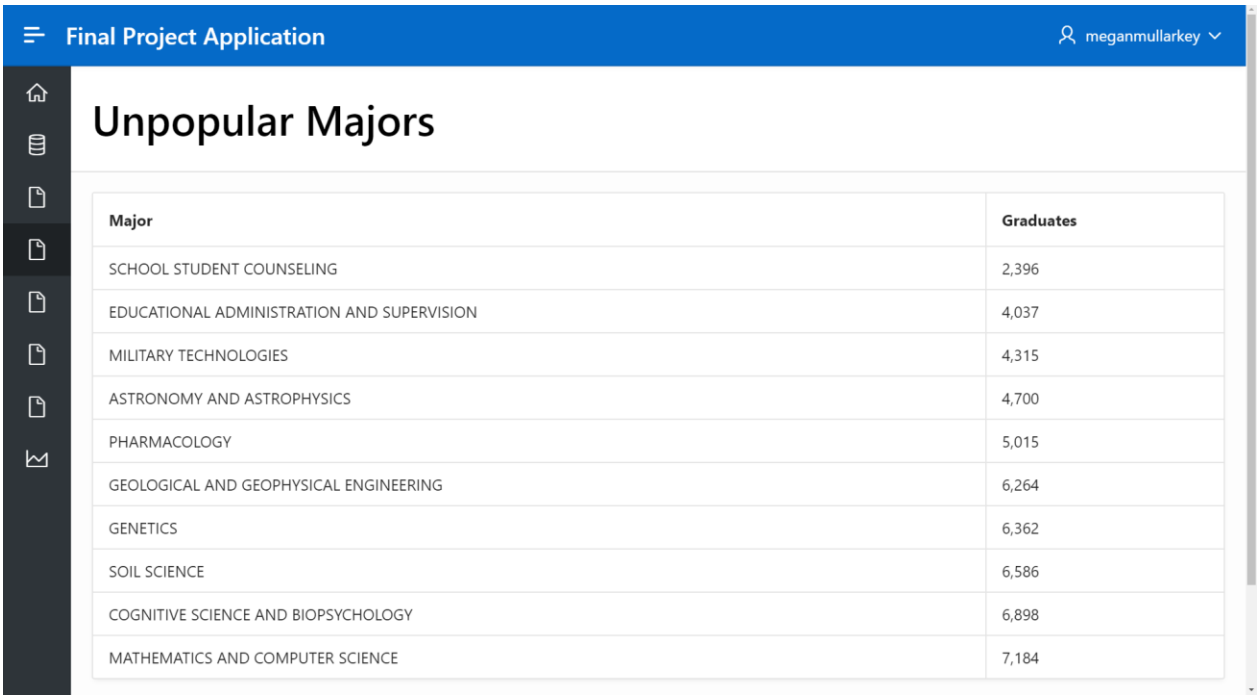
Q2a: What are the ten most popular majors?



Major	Graduates
BUSINESS MANAGEMENT AND ADMINISTRATION	3,123,510
GENERAL BUSINESS	2,148,712
ACCOUNTING	1,779,219
NURSING	1,769,892
PSYCHOLOGY	1,484,075
ELEMENTARY EDUCATION	1,446,701
GENERAL EDUCATION	1,438,867
MARKETING AND MARKETING RESEARCH	1,114,624
ENGLISH LANGUAGE AND LITERATURE	1,098,647
COMMUNICATIONS	987,676

The answer to the first part of the second question is on page 8. The query returned the ten most popular majors. Popularity is measured by the amount of graduates for each major.

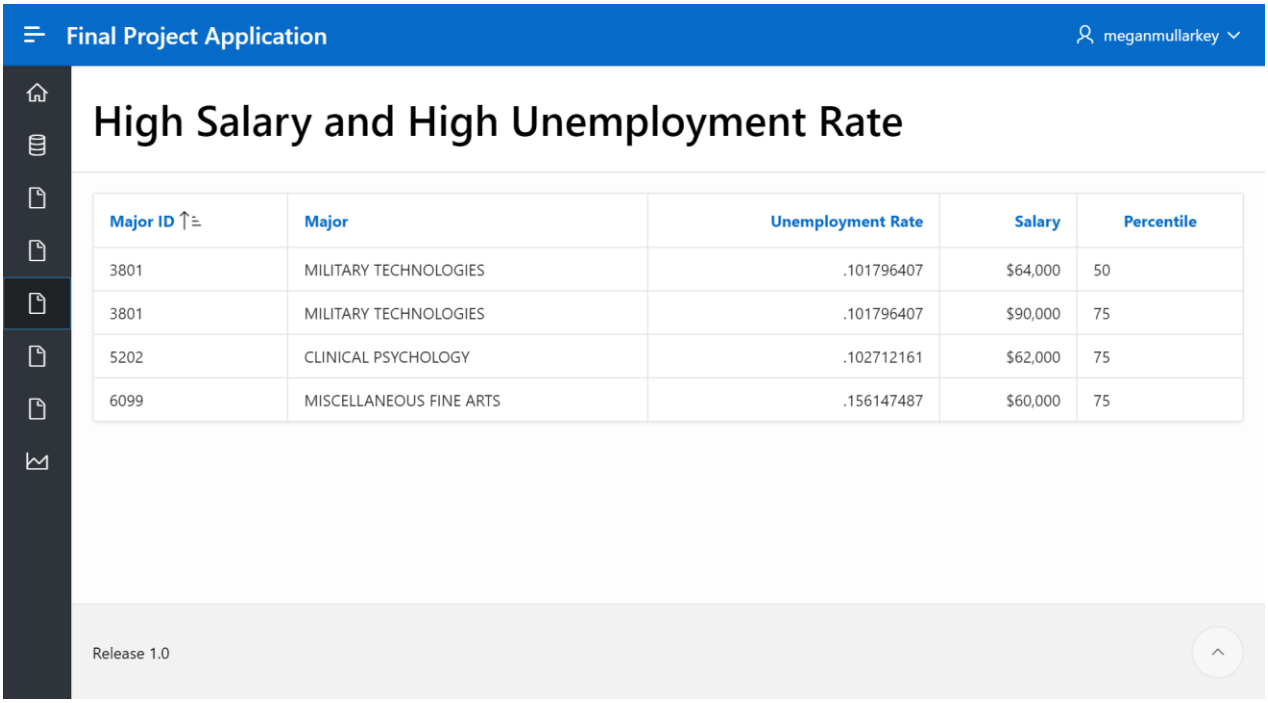
Q2b: What are the ten least popular majors?



Major	Graduates
SCHOOL STUDENT COUNSELING	2,396
EDUCATIONAL ADMINISTRATION AND SUPERVISION	4,037
MILITARY TECHNOLOGIES	4,315
ASTRONOMY AND ASTROPHYSICS	4,700
PHARMACOLOGY	5,015
GEOLOGICAL AND GEOPHYSICAL ENGINEERING	6,264
GENETICS	6,362
SOIL SCIENCE	6,586
COGNITIVE SCIENCE AND BIOPSYCHOLOGY	6,898
MATHEMATICS AND COMPUTER SCIENCE	7,184

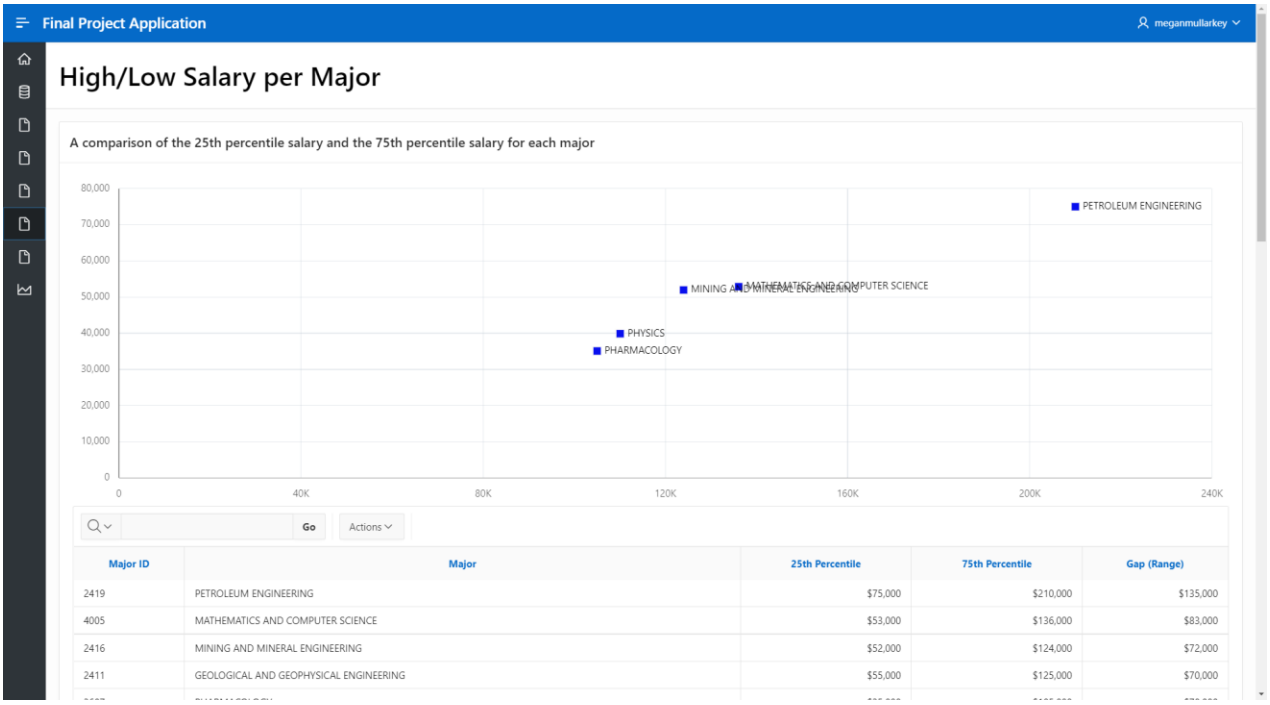
The answer to the latter part of the second question is on page 9. The query returned the ten least popular majors, with popularity determined having the least graduates in a major.

Q3: What majors have both a high salary and high unemployment rate?



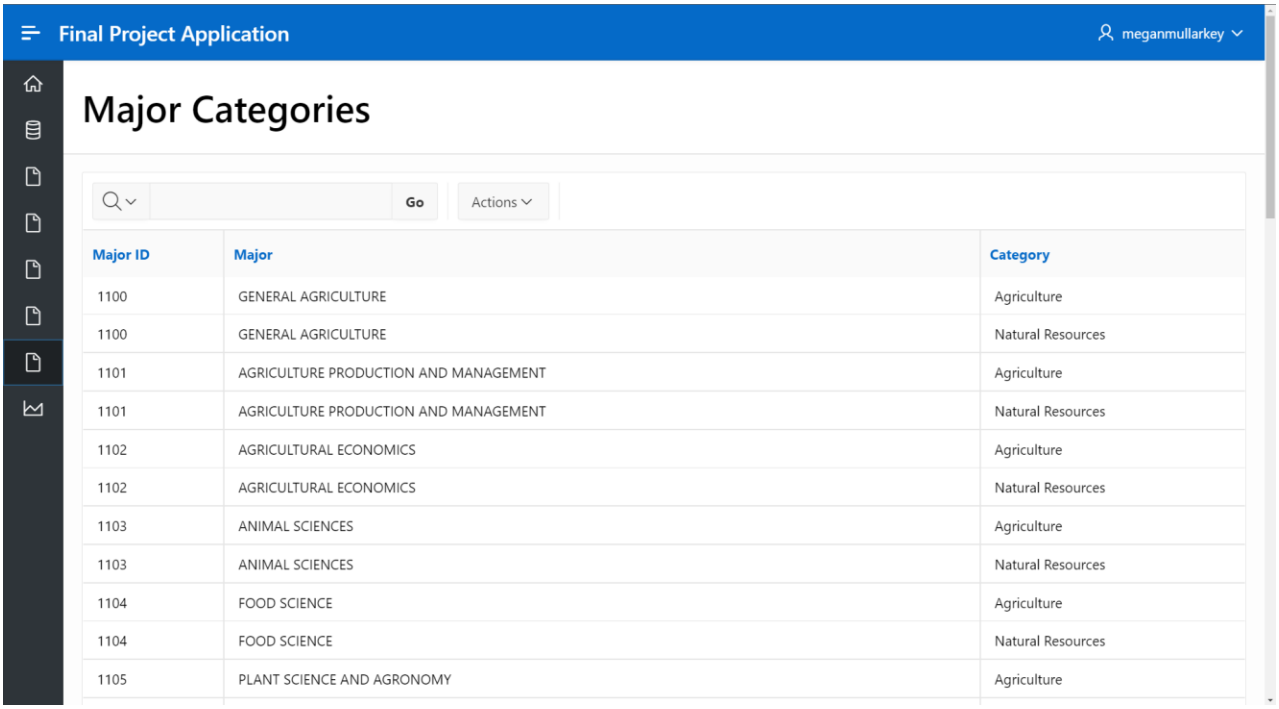
The answer to the third question is on page 10. The query returns the majors that have an unemployment rate greater than 0.1 or 10% and the majors that have a salary greater than $50,000. Only 3 out of the 173 majors fit this criterion. The major, Military Technologies is included twice because both their 50th percentile salary and their 75th percentile salary both exceed $50,000. This tells users that although majoring in Military Technologies may help you get a high paying job, that job may be difficult to get.

Q4: What is the gap between the high salary (75th percentile) and low salary (25th percentile) for each major?



The answer to the fourth question is on page 11. The query returns each major along with their 25th percentile salary, their 75th percentile salary, and the gap (or range) in between those two salaries. The data is organized in descending order by Gap (Range). The scatter plot shows the comparison of the high or 75th percentile salary (x-axis) to the low or 25th percentile salary (y-axis). The plot only shows the five majors with the largest gap to create a visualization of how wide it can be.

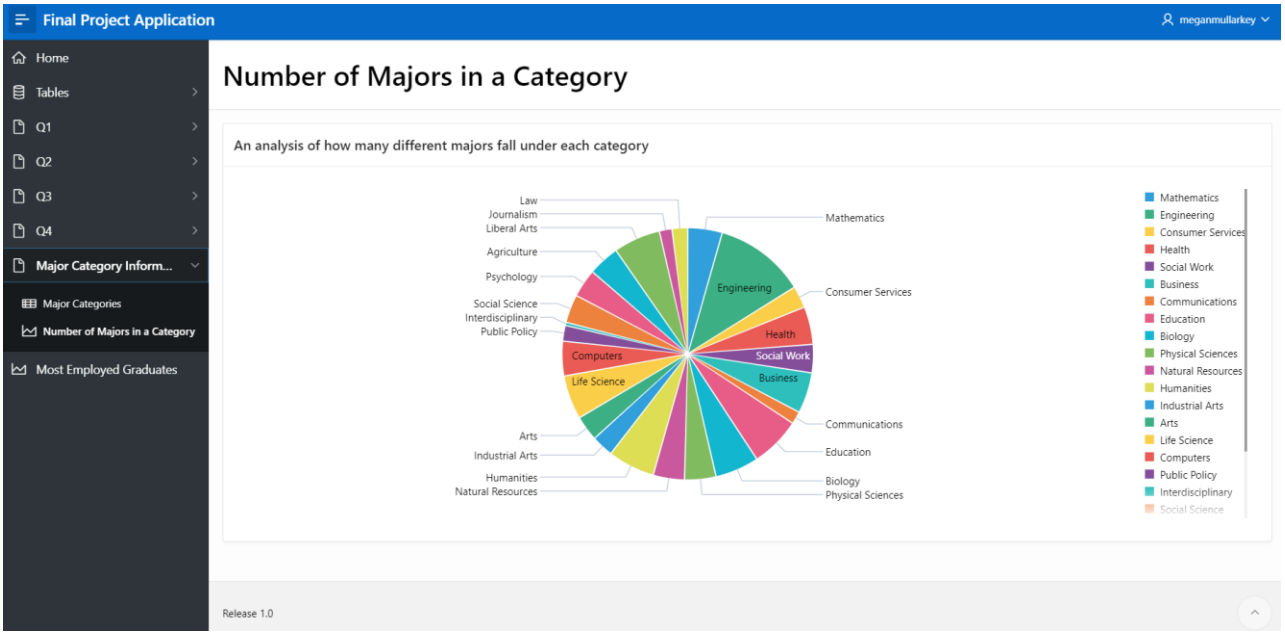
List of Major Categories



Major ID	Major	Category
1100	GENERAL AGRICULTURE	Agriculture
1100	GENERAL AGRICULTURE	Natural Resources
1101	AGRICULTURE PRODUCTION AND MANAGEMENT	Agriculture
1101	AGRICULTURE PRODUCTION AND MANAGEMENT	Natural Resources
1102	AGRICULTURAL ECONOMICS	Agriculture
1102	AGRICULTURAL ECONOMICS	Natural Resources
1103	ANIMAL SCIENCES	Agriculture
1103	ANIMAL SCIENCES	Natural Resources
1104	FOOD SCIENCE	Agriculture
1104	FOOD SCIENCE	Natural Resources
1105	PLANT SCIENCE AND AGRONOMY	Agriculture

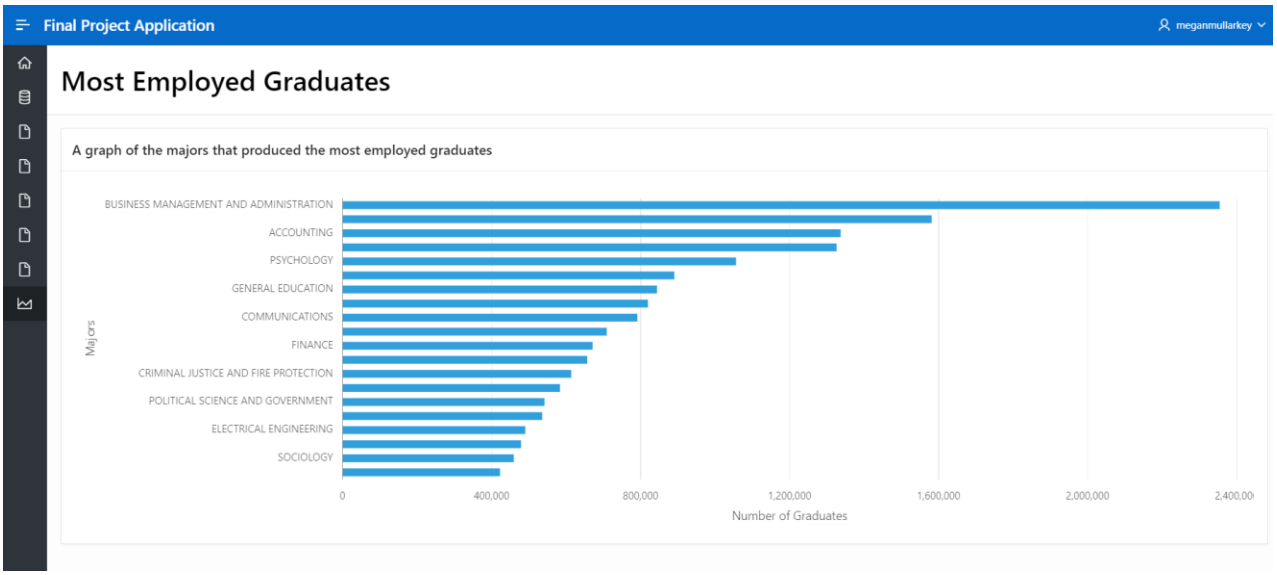
Page 12 shows a list of majors and the categories they fall under. Most majors fit into two categories. This list is useful for people who have multiple interests.

Pie Chart of the Size of each Category



Page 13 features a pie chart that shows the size of each category, measured by the number of majors that fall under that category. This visualization of the categories will be useful to someone looking for multiple options in their field of interest. For example, someone with an interest in math could major in engineering knowing that they will have an abundance of options to specialize in, rather than if they just majored in Mathematics.

Bar Graph of the Majors with the Most Employed Graduates



Page 14, the final page in our application, features a horizontal bar chart. The y-axis lists the ten majors with the most employed graduates and the x-axis shows the number graduates for each of the majors.