

Workforce Intelligence Database

This Access 2007 application was built from the ground up using VBA and SQL. I worked closely with the human resource western regional manager and human resource associates to gather requirements for the intensive reporting application. Several data extracts from various data sources were given to me in excel sheets. That data was then imported into Access where I designed and created a normalized database.

The purpose of this application was to generate useful human resource work planning reports. It allowed the Vice President, Staff Vice President, Directors, HR Managers, and Lead Recruiters to identify their staffing needs for the future.

These reports showed such information as the historical turnover rate, anticipated growth rate, internal transfer rate, probability of retirement rate, and estimated head count for the following year. These formula requirements were attained through meetings with the HR representatives. From there it was up to me to create VBA and SQL code that would run these calculations on various reports grouped by different company hierarchy levels (Company, Business Unit, Division, and Department).

Also, a user-friendly reporting form was created so that users could filter all the reports with certain conditions such as report type, date, and organizational code. Training and documentation was created so that users would be able to easily use the Workforce Intelligence database.

The following pages will show screen shots of the reports and of the reporting forms built for ARINC (<http://www.arinc.com/>). Also important descriptions on how to use the reports and the forms will be noted in the documentation below.

Any notes below **highlighted in red bolded font** are important notes to remember when using the Workforce Intelligence database.

Work Force Intelligence Main Menu

| | |
|-------------------------------------|--|
| Reporting | User will be able to generate reports based on various search criteria |
| Org Code Management | User will be able to update old org codes with newly updated org codes |
| Prepare Imported Data | Appends & overwrites various tables so the latest data is shown in the reports |
| Number of Users Connected to the DB | Counts the number of users that currently have the database open |

Figure 1.0: The navigation menu that allows users to navigate to certain forms within the Workforce Intelligence database.

Work Force Plan Report/Succession Plan Report

Report Level

Org Code

Years Back

As of Date

* Direct labor not included on the Work Force Plan report

* ARINC Workforce Plan and Business Unit Workforce Plan automatically generate Succession Plans

Snapshot Report

Report Level

Org Code

* Department Snapshot may not report Direct Labor Data

Figure 1.1: The Reporting form.

1. Description of the Workforce Plan Report/Succession Plan Report section in **Figure 1.1** which is located on the top of the Reporting form.
 - a. The user can view the report grouped by “Company”, “Business Unit”, “Division”, or by “Department.”
 - i. **If user chooses to view the report level by “Company” or by “Business Unit” then the system will generate 2 reports named the Succession Plan Report and the Workforce Planning Report. All other reports levels will only generate the Workforce Plan Report.**
 - b. User can choose to just view a certain org code. Each digit defines the organization. The first digit starting from the left represents the company. The second digit is the business unit. The third digit is the division, and the fourth digit is the department.
 - c. User can choose how many calendar years back from the current date they want to see data for. For example, if the current year is 2010 and the user chooses 3 years back, it means that the report will view data between 2007 and 2009. That’s 3 years worth of data to be shown in the report.
 - d. **User does not have to pick an “as of date.” If the user chooses an “as of date”, then the years of service for an employee and the employees birth date formulas will be calculated based on the chosen “as of date” instead of today’s date. These values are important for calculating the formula for high probability of retirement rate. Also, this “as of date” search filter was added because the HR managers and reps wanted to create what if conditions to see the high probability of retirement rate based on a different dates other than today’s date.**
 - e. Below are screen shots (**Figure 1.2** and **Figure 1.3**) of reports that are generated by the Workforce Plan Report/Succession Plan Report section:

Business Unit Succession Plan

As of Status: 10/26/2010
As of Status: 10/26/2010

| Org Code | Org Name | Current | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|----------|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| 4.3 | Customer Support | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 4.3.1 | Customer Support | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.3.2 | Customer Support | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 4.3.3 | Customer Support | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Figure 1.2: This is just the first page of the Succession Plan report grouped by the Business Unit. The 11 fields starting from the right are all the formulas calculated using VBA and SQL. The purpose of this report is to show the current number of employee grouped by technical employees, management, and directors. The report will then show how many of each employee is needed for the following year. **Screen shot above has been reduced to a smaller size because this is corporate information that is private to ARINC Inc.**

Business Unit Work Force Plan

As of Status: 10/26/2010

| Org Code | Org Name | Current | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|----------|------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| 4.3 | Customer Support | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 4.3.1 | Customer Support | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.3.2 | Customer Support | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 4.3.3 | Customer Support | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Figure 1.3: This is just the first page of the Workforce Plan report grouped by the Business Unit. The 7 fields starting from the right are all the formulas calculated using VBA and SQL. **Screen shot above has been reduced to a smaller size because this is corporate information that is private to ARINC Inc.**

2. Description of the Snapshot report in **Figure 1.1** is located at the bottom half of the Reporting form.
 - a. There are 2 reporting filters for the Snapshot report.
 - i. The first report filter is called the report level. The user will be able to view the Snapshot report by Department or by Division
 - ii. The second report filter allows the user to choose a specific of org code.
 - b. **Figure 1.4** and **Figure 1.5** are sample screen shots of the Snapshot Report

Division Snapshot for Org Code 4.3.B

As of Status: 10/26/2010

| Category | Current | Current Year Forecast | Approved Change |
|------------------|-------------|-----------------------|-----------------|
| Total Count | 448 | 448 | 0 |
| DL Revenue | 11,811,821* | 11,712,137 | 2,381,056 |
| Technical Count | 384 | 418 | 34 |
| Management Count | 34 | 30 | 4 |
| Director Count | 30 | 30 | 0 |

*Current DL Revenue represents the total DL Revenue for the prior calendar year.

Backlog Listing - 4.3.B

| Department | Project | Start Date | Back Log Amount | Staffing Projections |
|------------|--------------------------------|------------|-----------------|----------------------|
| 4.3.B.3 | 201420 SPYCH40 - Custom Year 4 | 9/12/2010 | \$1,804,472 | |

Backlog Listing - 4.3.B

| Department | Project | Start Date | Back Log Amount | Staffing Projections |
|------------|--------------------------------|------------|-----------------|----------------------|
| 4.3.B.6 | 201442 DO 1208 MPT Engn On-Die | 4/9/2010 | \$814,411 | |
| 4.3.B.8 | 201448 DO 1279 Algma V547 Onlg | 4/13/2010 | \$1,244,448 | |
| 4.3.B.8 | 201453 DO 1281 N4448 COM S4 | 4/13/2010 | \$614,493 | |

Figure 1.4: Snapshot report showing the Backlog listings. **Screen shot above has been reduced to a smaller size because this is corporate information that is private to ARINC Inc.**

Division Snapshot for Org Code 4.4.0

As of Status: 10/26/2010

| Category | Current | Current Year Forecast | Approved Change |
|------------------|---------|-----------------------|-----------------|
| Total Count | 1 | 1 | 0 |
| DL Revenue | 0 | 0 | 0 |
| Technical Count | 0 | 0 | 0 |
| Management Count | 0 | 0 | 0 |
| Director Count | 0 | 0 | 0 |

*Current DL Revenue represents the total DL Revenue for the prior calendar year.

Proposals - 4.4.0

| Department | Department Name | Project Name | Amount | Probability | Staffing Projections |
|------------|-----------------|--------------|--------|-------------|----------------------|
| 4.4.0.0 | 4.4.0.0 | 4.4.0.0 | 0 | 0% | |

Figure 1.5: Snapshot report showing the Proposals. **Screen shot above has been reduced to a smaller size because this is corporate information that is private to ARINC Inc.**

3. Below are important requirements to take note of when using the reporting form.

- a. The very first report viewed on the reporting form in a user session will take approximately 23 minutes to generate as there are many formulas in the background to be calculated. All the calculations are being written to a table called "WorkForcePlanningRpt."
 - b. If you leave the reporting form open and run any report on the form for a second time, then the report will be generated faster because the formulas in the background are not being re-calculated. The report values are simply being read from the "WorkForcePlanningRpt" table.
 - i. Please take note that if certain reporting conditions are changed, the "WorkForcePlanningRpt" table with all the stored calculated values will be deleted so that new calculations can be written into the table. The following search criteria in the bullet points below will initiate a deletion of stored values in the table "WorkForcePlanningRpt" and therefore spark re-calculations to be written into the table "WorkForcePlanningRpt." Remember the system will take some time (approx. 23 minutes) to re-calculate and then generate the report to the user.
 1. If the report filter "Years Back" is changed then a re-calculation will take place.
 2. If the report filter "As of Date" is changed then a re-calculation will take place.
4. There are many formula calculations for the reports generated in the Workforce Intelligence Database. Below is a description of how the the high probability of retirement rate is calculated:
- a. First the average retirement age for each year is calculated. The "from year" and "to year" will determine what years the average retirement age will be calculated for. The average of all the average retirement ages each year is calculated.
 - b. Next is to calculate the rule of 70. The rule of 70 formula is the years of service plus the person's birthday. The employee is counted if the sum of their age and years of service is equal to or more than 70 and if their current age is more than the average of all the retirement ages (in bullet point "a"). This is referred to as "High Probability of Retirement Employees"
 - c. Next the code below will also count the number of employees in a specified org code. This is referred to as "Head Count."
 - d. All the calculations in bullet points "a" through "c" is figured out in order to get the desired probability of retirement rate. The final formula to calculate the probability of retirement rate is the count of "High Probability of Retirement Employees" divided by "Head Count."

5. Description of the Org Code Management form

- a. This form allows the user to be able to update old org codes that no longer exist in the following database tables of Employees, InternalTransfers, Retirements, and Terminations. The user will then be able to view the list of outdated org codes and select which record he or she would like to update the org code to.
- b. Below are 2 screen shots of the Org Code Management form:

The screenshot displays the 'Org Code Management' application interface. It features a navigation bar at the top with 'Main Menu', 'Reporting', and 'Org Code Management' tabs. Below the navigation bar, the main title 'Org Code Management' is shown with a 'Main Menu' button. The interface is divided into two main sections, each with a title and an 'Export' button.

Update Org Code For Employees Table
Org Code Discrepancies: (Org Codes that don't exist in the Master Org Code table.)

| Emp No | Org Code | Name | MasterOrgCode |
|--------|---------------|----------------|---------------|
| 19536 | 4.3.8.6.55.11 | Bradley Horton | |

Change Selected Org Code(s) Above To:

Recent Changes: (A list of all the org code changes with the latest changes listed at the top.)

| Date Updated | Emp No | New Org Code | Name | Old Org Code |
|--------------|--------|--------------|------|--------------|
|--------------|--------|--------------|------|--------------|

Change Selected Org Code(s) Above To:

Update Org Code For InternalTransfers Table
Org Code Discrepancies: (Org Codes that don't exist in the Master Org Code table.)

| Emp No | Org Code | Name | MasterOrgCode |
|--------|----------|------|---------------|
|--------|----------|------|---------------|

Change Selected Org Code(s) Above To:

Recent Changes: (A list of all the org code changes with the latest changes listed at the top.)

| Date Updated | Emp No | New Org Code | Name | Old Org Code |
|--------------|--------|--------------|------|--------------|
|--------------|--------|--------------|------|--------------|

Change Selected Org Code(s) Above To:

Figure 1.6: This is the first part of the Org Management form. This screen shot shows org codes in the Employee table that don't exist anymore. In this case there is only 1 employee with an outdated org code. The user has the ability to change to org code if needed. The next part of this screen shot in purple text shows the old org codes in the InternalTransfers table. In this case there are no outdated org codes in the InternalTransfers table.

Update Org Code For Retirements Table

Org Code Discrepancies: (Org Codes that don't exist in the Master Org Code table.) Export

| Emp No | Org Code | Name | MasterOrgCode |
|--------|-------------|---------------------|---------------|
| 11616 | 1.8.8.8.8.8 | Bartell Jr, Charles | |
| 11577 | 1.8.8.8.8.8 | Jordan, Alfonso | |

Change Selected Org Code(s) Above To: Clear Update

Recent Changes: (A list of all the org code changes with the latest changes listed at the top.) Export

| Date Updated | Emp No | New Org Code | Name | Old Org Code |
|--------------|--------|--------------|------|--------------|
| | | | | |

Change Selected Org Code(s) Above To: Clear Update

Update Org Code For Terminations Table

Org Code Discrepancies: (Org Codes that don't exist in the Master Org Code table.) Export

| Emp No | Org Code | Name | MasterOrgCode |
|--------|----------|------|---------------|
| | | | |

Change Selected Org Code(s) Above To: Clear Update

Recent Changes: (A list of all the org code changes with the latest changes listed at the top.) Export

| Date Updated | Emp No | New Org Code | Name | Old Org Code |
|--------------|--------|--------------|------|--------------|
| | | | | |

Change Selected Org Code(s) Above To: Clear Update

Figure 1.7: This is the second part of the Org Management form. This screen shot shows org codes in the Retirements table that don't exist anymore. In this case there are 2 employees with an outdated org code in the Retirements table. The user has the ability to change the org code to a new org code that is in existence. The next part of this screen shot in purple text shows the old org codes in the Terminations table. In this case there are no outdated org codes in the Terminations table.

- c. As you can see there is a mix of blue and purple font within the Org Code Management form. This was done so that the user can easily differentiate the org code discrepancy sections for each of the 4 tables.

6. Description of the Prepare Imported Data form.

- a. This form is used to append and overwrite tables within the Workforce Intelligence database. First you must import the tables then you can click on the buttons on the Prepare Imported Data form to overwrite and append data. **The steps on how to perform this process is located in the file named "WorkForceIntelligence_TableDetails.docx."**
- b. Below is a screen shot of the Prepare Imported Data form:

Prepare Imported Data Main Menu

Please create a back up copy of this database before performing steps 1 to 9.

Before Executing Any Functions Make Sure To Import Tables Below:

| | |
|--|--|
| 1. Import "BackLogImported" table. | 1. Function Overwrite BackLog table |
| 2. Import "DLRevenueImported" table. | 2. Function Overwrite DLRevenue table |
| 3. Import "EmployeesImported" table. | 3. Function Append Employees table |
| 4. Import "InternalTransfersImported" table. | 4. Function Append InternalTransfers table |
| 5. Import "OrgCodeImported" table. | 5. Function Overwrite OrgCode table |
| 6. Import "ProposalsImported" table. | 6. Function Overwrite Proposals table |
| 7. Import "RetirementsImported" table. | 7. Function Append Retirements table |
| 8. Import "TerminationsImported" table. | 8. Function Append Terminations table |
| 9. Delete all imported tables. | 9. Function Delete All Imported tables |

Latest Employee Info Year & Quarter: 2010, Q1

Table Last Updated (Read Only):

| Table Name | Date Last Updated |
|-------------------|----------------------|
| BackLog | 5/6/2010 1:47:41 PM |
| DLRevenue | 5/14/2010 8:50:49 AM |
| Employees | 5/10/2010 5:33:29 PM |
| InternalTransfers | 5/6/2010 1:49:56 PM |
| OrgCode | 5/7/2010 7:25:16 AM |

Figure 1.8

7. In order for the application to work properly all the object references need to be used as shown below:

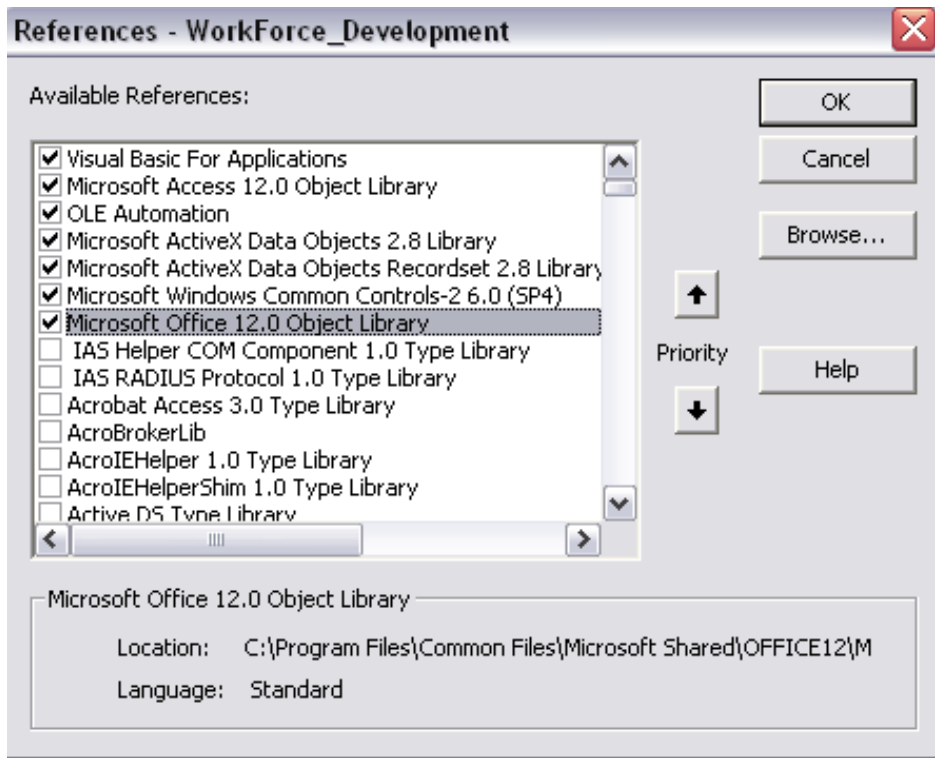


Figure 1.9: Make sure the following references are check marked in the Reference display box above.

- a. To access **Figure 1.9** above you must open the Workforce Intelligence database.
 - i. When the database is open use the short cut of Alt + F11. After you use this short cut, a code window will show up similar to **Figure 2.0:**

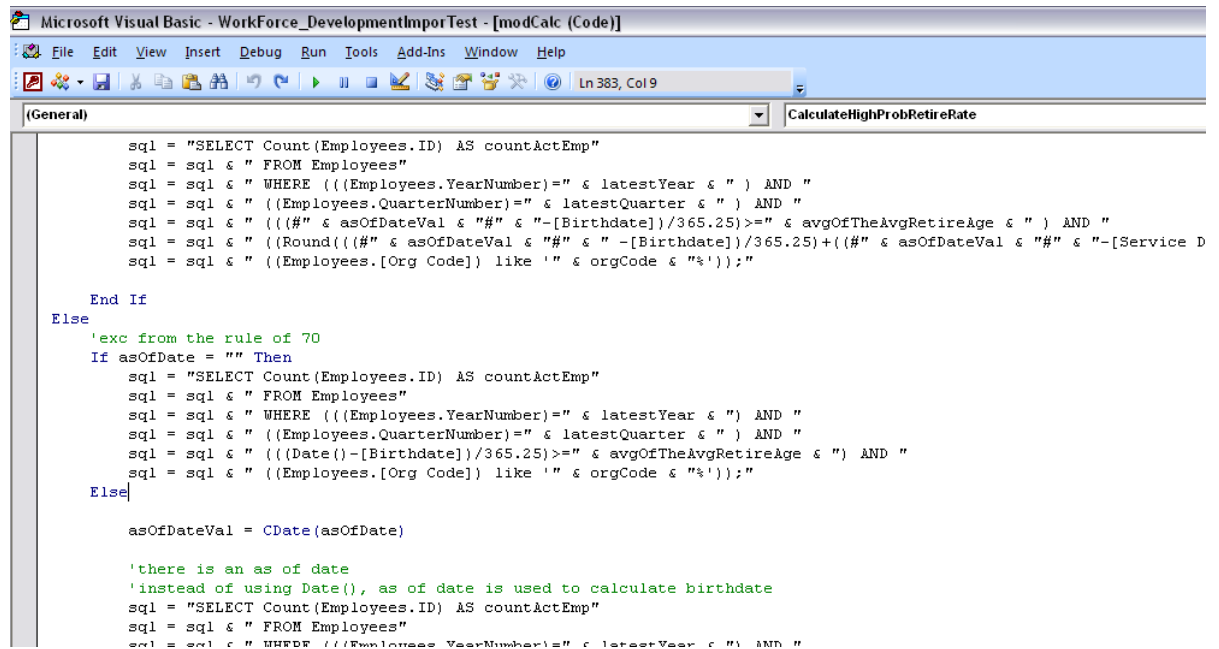


Figure 2.0: The code window.

- ii. Go to the “Tools” menu then choose “References” as shown in **Figure 2.1** below:

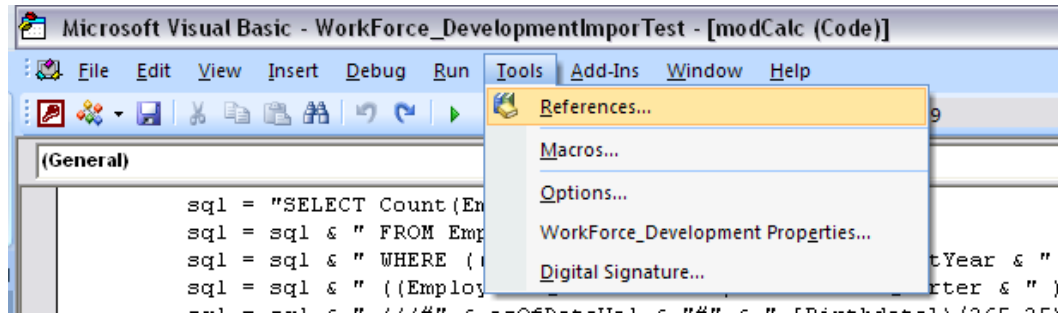


Figure 2.1: Make sure to chooses “References”

- iii. After choosing References, the References display box will show up. Now it is up to you to find the references to check mark. Just scroll down and check mark the references that are needed as shown in **Figure 1.9** above.
- iv. After finding all the references just click on the “OK” button of the References display box. Then just close the code window. You can close the window by simply going to the File menu then choosing the option of “Close and Return to Microsoft Access” as shown in **Figure 2.2** below. Or you can just use the shortcut of Alt+Q.

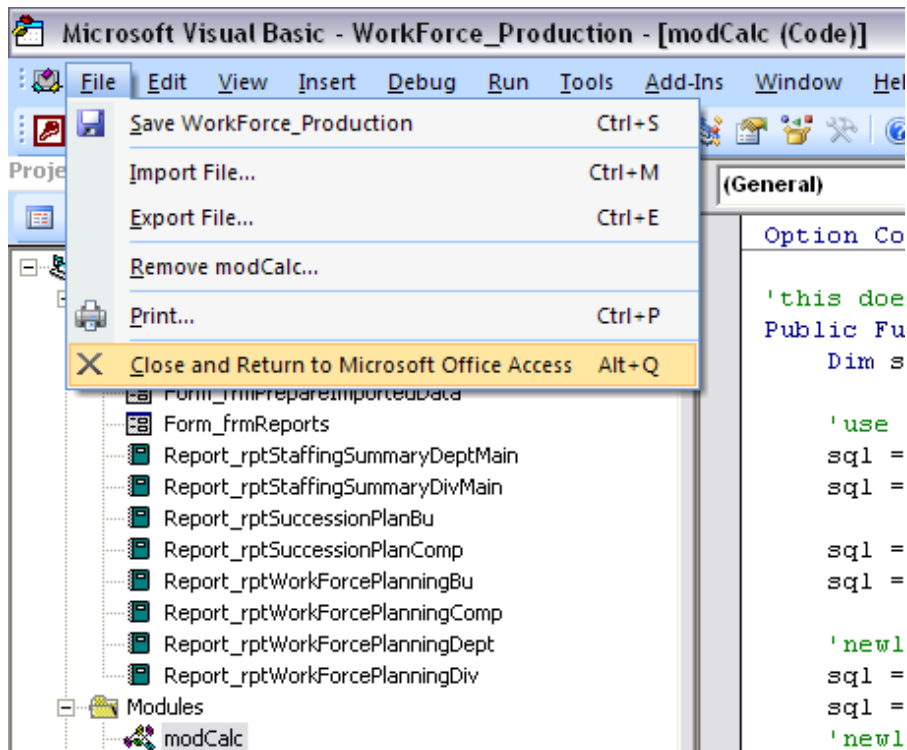


Figure 2.2: Close the code window.