

COMP 3311 Database Management Systems Spring 2015

Lab 9. Assignment Four

Objectives of the Lab

- After this lab, you will
 - know how to build up the database for assignment 4,
 - know how to set up the data source,
 - know how to compile the ODBC/C++ program,
 - Know more about the TODOs.

The assignment Script files 1

- ❑ You need to use the three script files to build the database *before* you can start doing the assignment.
- ❑ As usual, three steps are involved:
 - Download the script files,
 - Log in the Oracle database server using the SQL*Plus client with your Oracle password,
 - Execute the script files at the SQL*Plus prompt.

The assignment Script files 2

□ Step 1: download the script files

1. login to an arbitrary machine
csl2wkxx.cse.ust.hk where xx=01-40

2. at the command prompt type:

```
csl2wk01:lamngok:105> cd ~
```

```
csl2wk01:lamngok:106> wget \
```

```
http://course.cse.ust.hk/comp3311/assignments/drop_tables.sql
```

```
csl2wk01:lamngok:107> wget \
```

```
http://course.cse.ust.hk/comp3311/assignments/create_tables.sql
```

```
csl2wk01:lamngok:108> wget \
```

```
http://course.cse.ust.hk/comp3311/assignments/insert_records.sql
```

The assignment Script files 3

□ Step 2: Log in Oracle

Log in Oracle database server using SQL*Plus. Your username should be comp3311stuxxx, where xxx=001 to 089.

□ Step 3: Execute the script files at the prompt

```
SQL> @drop_tables
```

```
SQL> @create_tables
```

```
SQL> @insert_records
```

```
SQL> commit;
```

Setting up the ODBC environment

1

- ❑ After building the database, the next step is to set up the ODBC environment and the data source that corresponds to the Oracle Server.
- ❑ In the CS Labs, we have already set up the ODBC environment (this includes lab 4210, and the virtual lab6, see slides 21-31 for the details of the virtual lab).
- ❑ But you still need to set up the data source.

Setting up the ODBC environment 2

- 1. You can setup the Oracle ODBC data source under MS windows:
 - Click the “start” button , then key in
“[c:\windows\syswow64\odbcad32.exe](#)”

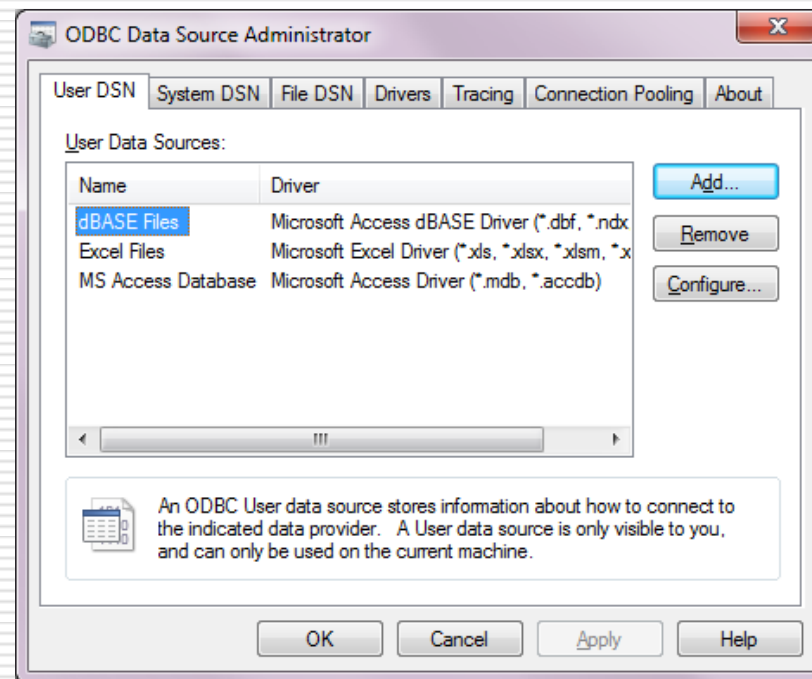


You *MUST* use “[c:\windows\syswow64\odbcad32.exe](#)”

Setting up the ODBC environment

3

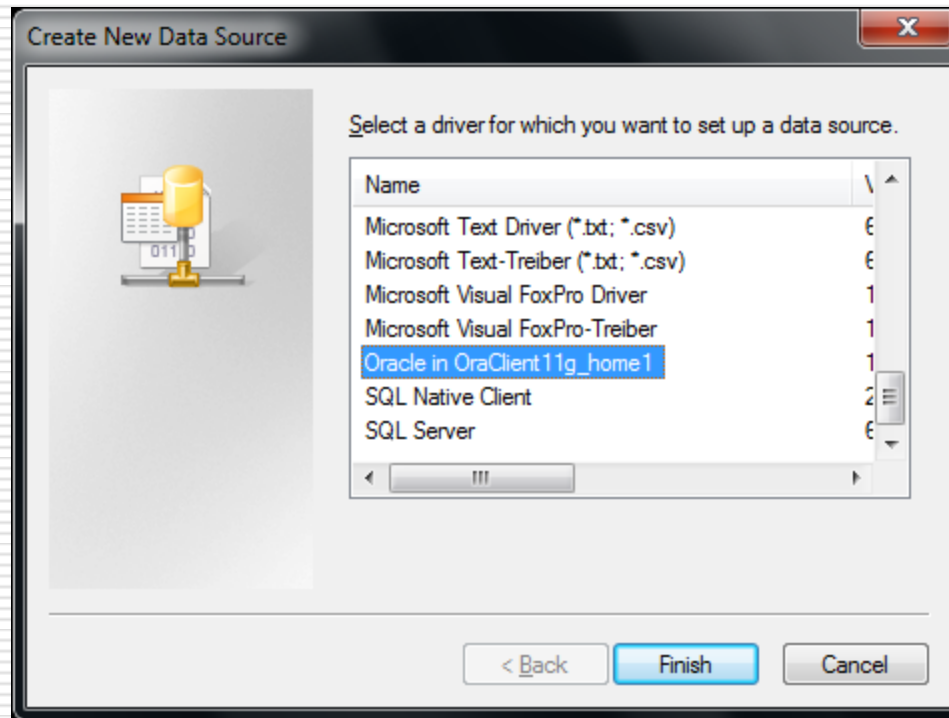
- ❑ 2. You should see the below window and click the “Add” button



Setting up the ODBC environment

4

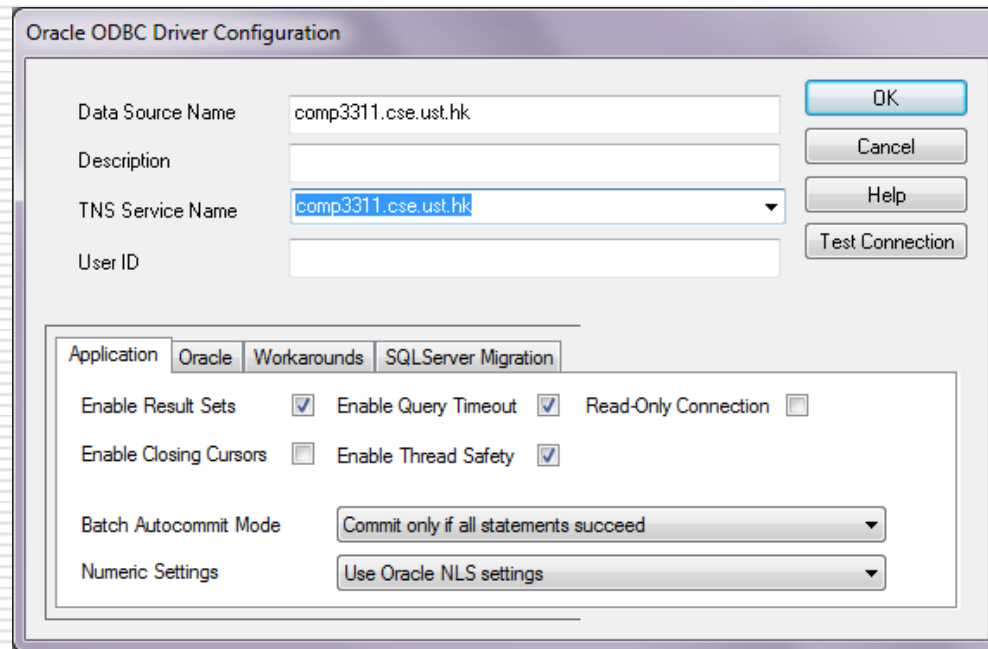
□ 3. Add the Oracle data source.



Setting up the ODBC environment

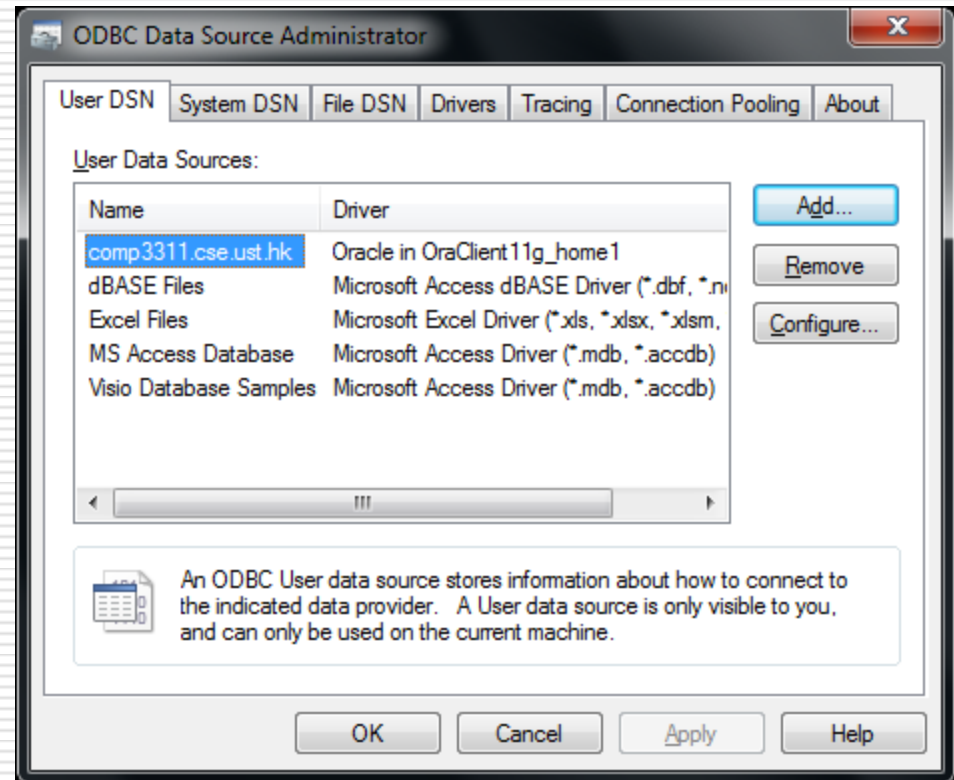
5

- 4. Give a name to the Data Source (you need this name in the `SQLConnectA()` function, the name here is “comp3311.cse.ust.hk”)



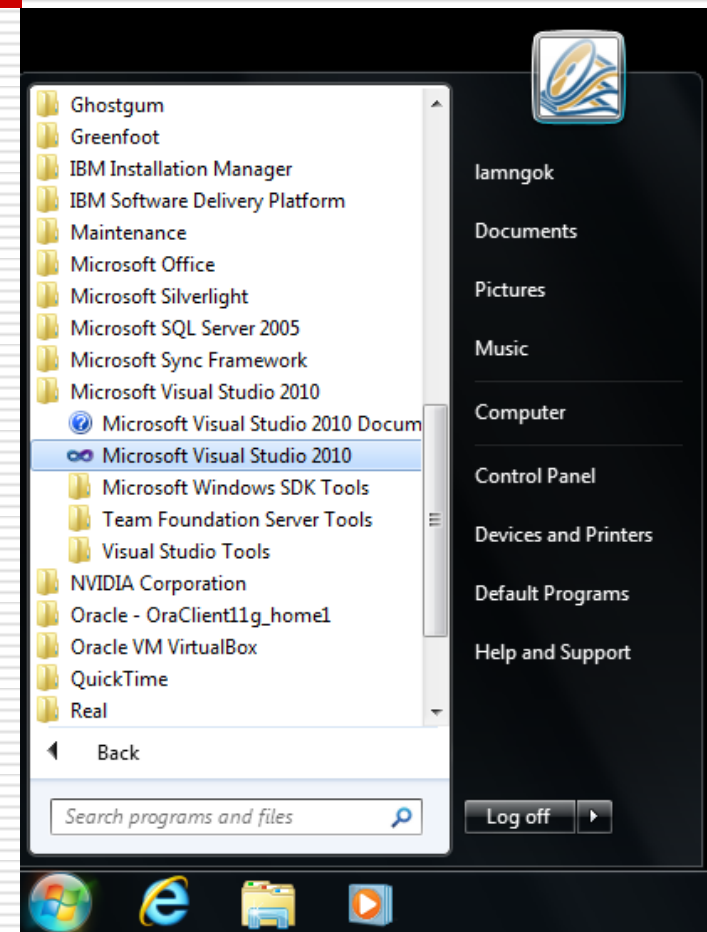
Setting up the ODBC environment 6

- 5. The name “comp3311.cse.ust.hk” appears in the data source administrator window. You are now ready to start your assignment 4 with the data source!



Working with Visual Studio 2010 1 *

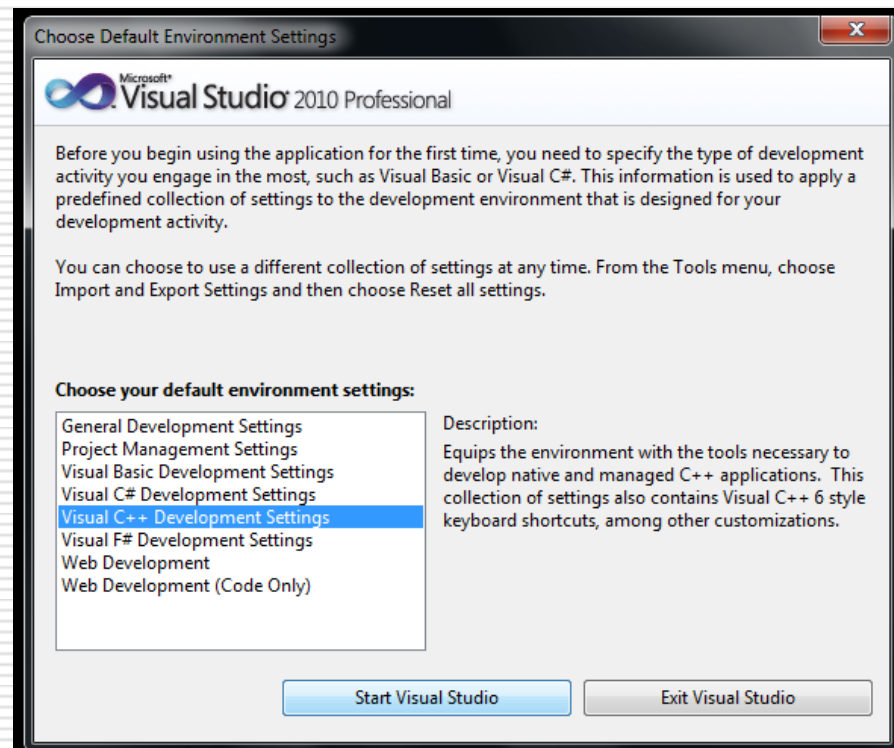
- ❑ After setting up the data source, you are ready to work on assignment 4 using visual studio.
- ❑ To start Visual Studio, one need to locate the visual studio 2010 package.
- ❑ Click the "start" button, and expand the folder "Microsoft Visual Studio 2010".
- ❑ Click on the "Microsoft Visual Studio 2010" icon as shown at the right to start it.



* The steps here are applicable to other versions of visual studio. We have tested VS2008 and VS2005.

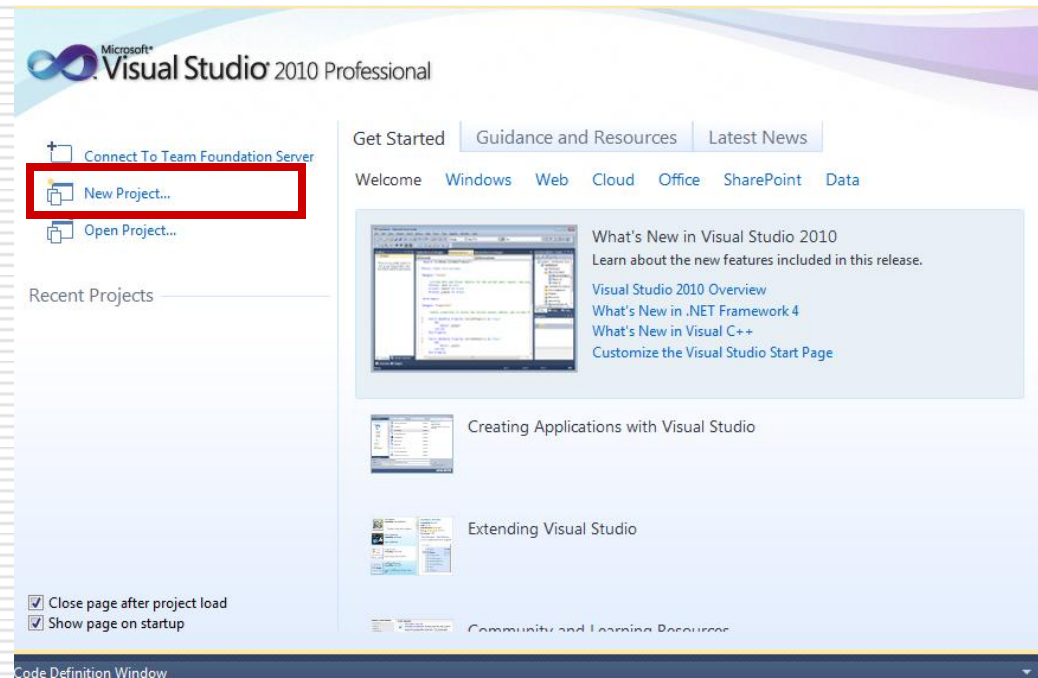
Working with Visual Studio 2010 2

- ❑ Select “Visual C++ Development Settings”



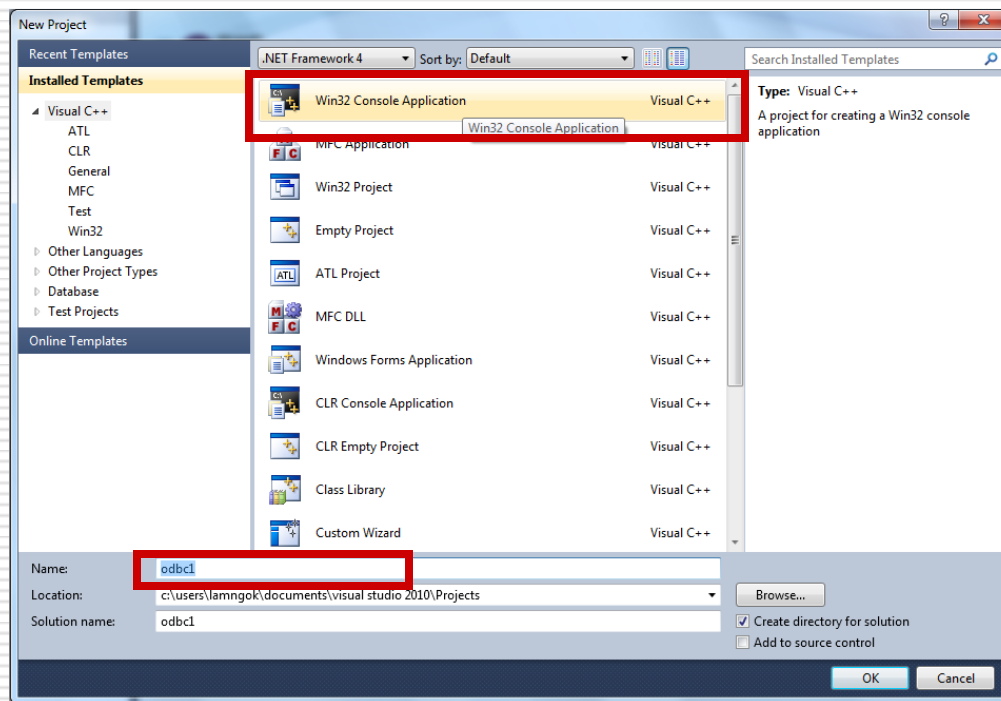
Working with Visual Studio 2010 3

- ❑ Select “New Project...” to start a new C/C++ project



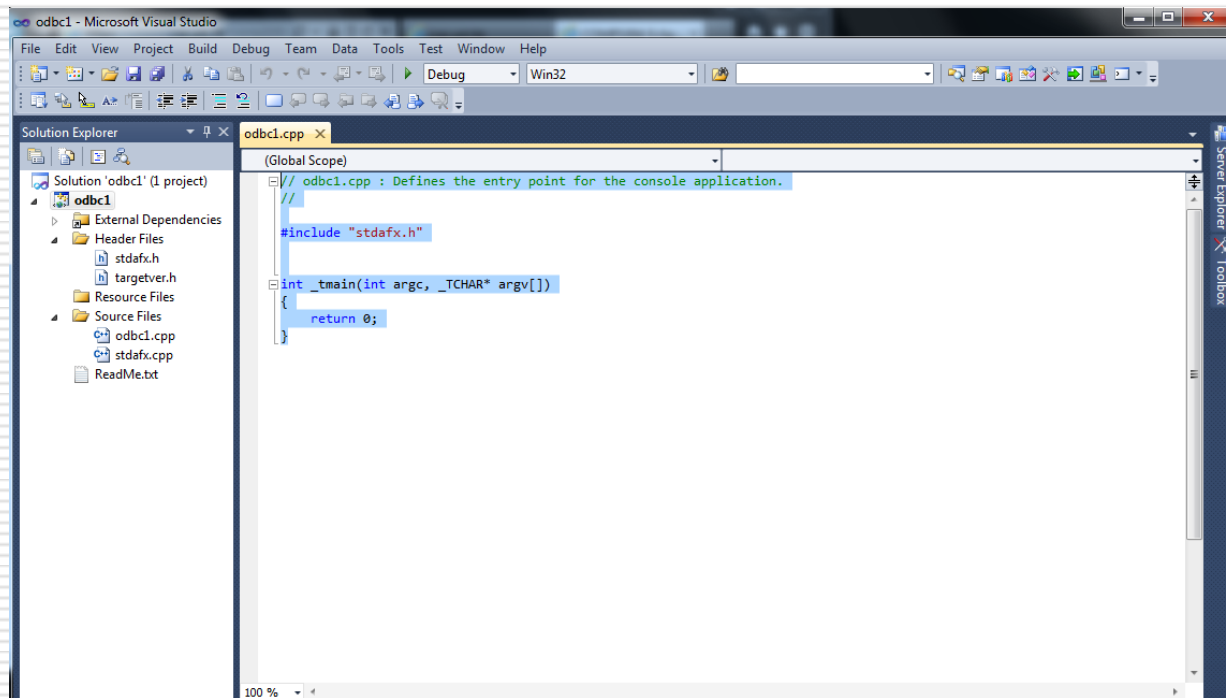
Working with Visual Studio 2010 4

- ❑ Select “Win32 Console Application”, and give the C++ project a name.



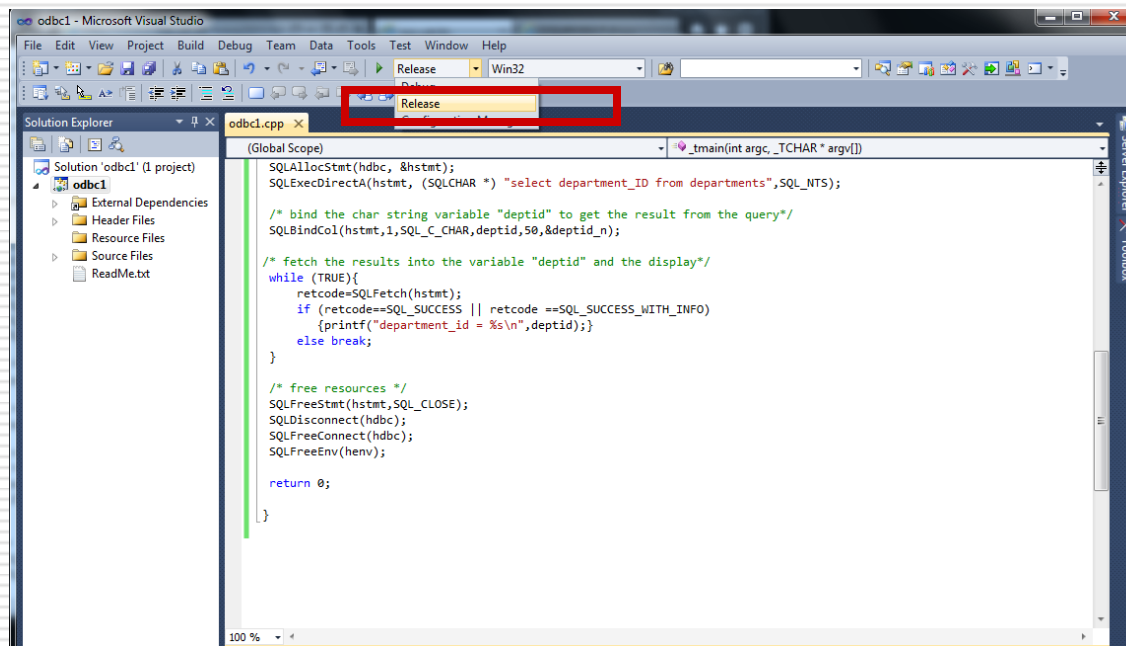
Working with Visual Studio 2010 5

- Then click “next” and “finish”, and you will see the following:



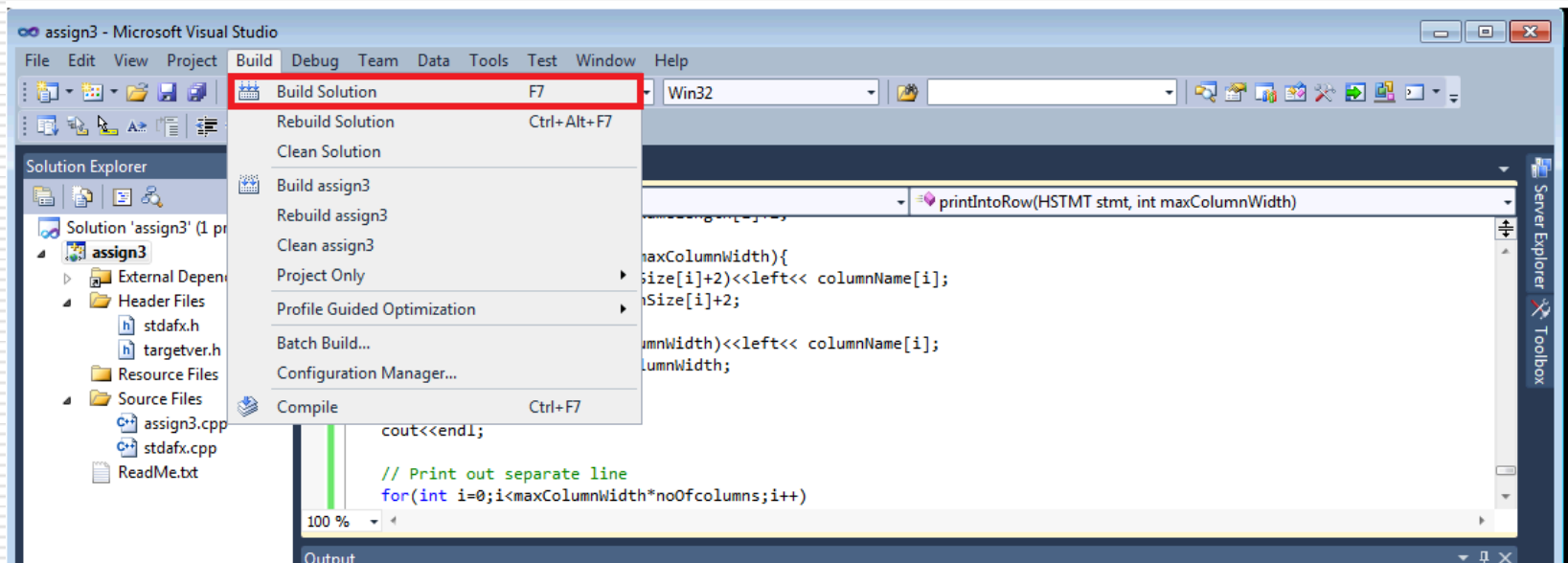
Working with Visual Studio 2010 6

- ❑ Replace the C-codes with assign4.cpp you have downloaded, and select "Release" for the compilation option.



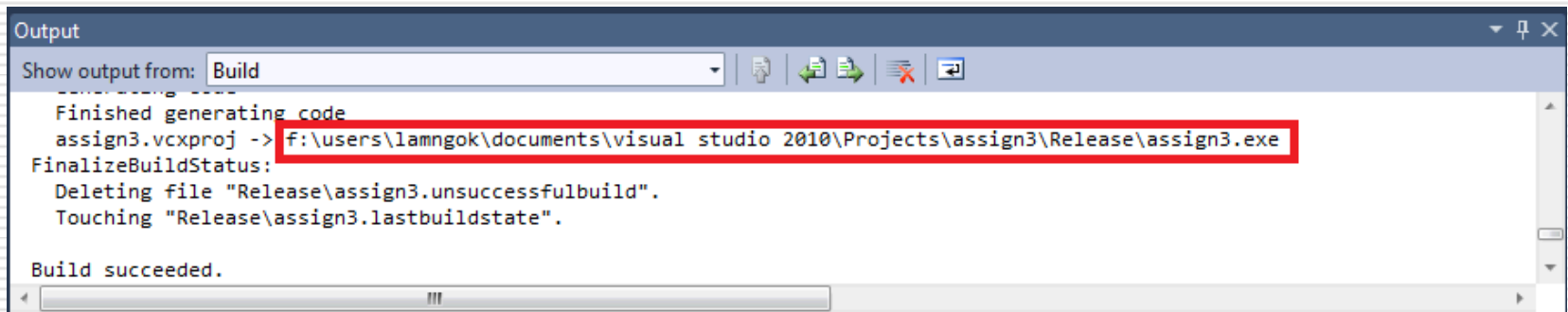
Working with Visual Studio 2010 7

- When you are done with assignment 4, **save** the file and **compile** the program by selecting “Build Solution”.



Working with Visual Studio 2010 8

- ❑ Open a Windows command window (type "cmd" at "run...")
- ❑ Change to the directory where the executable is located:



The screenshot shows the 'Output' window in Visual Studio. The 'Show output from:' dropdown is set to 'Build'. The output text is as follows:

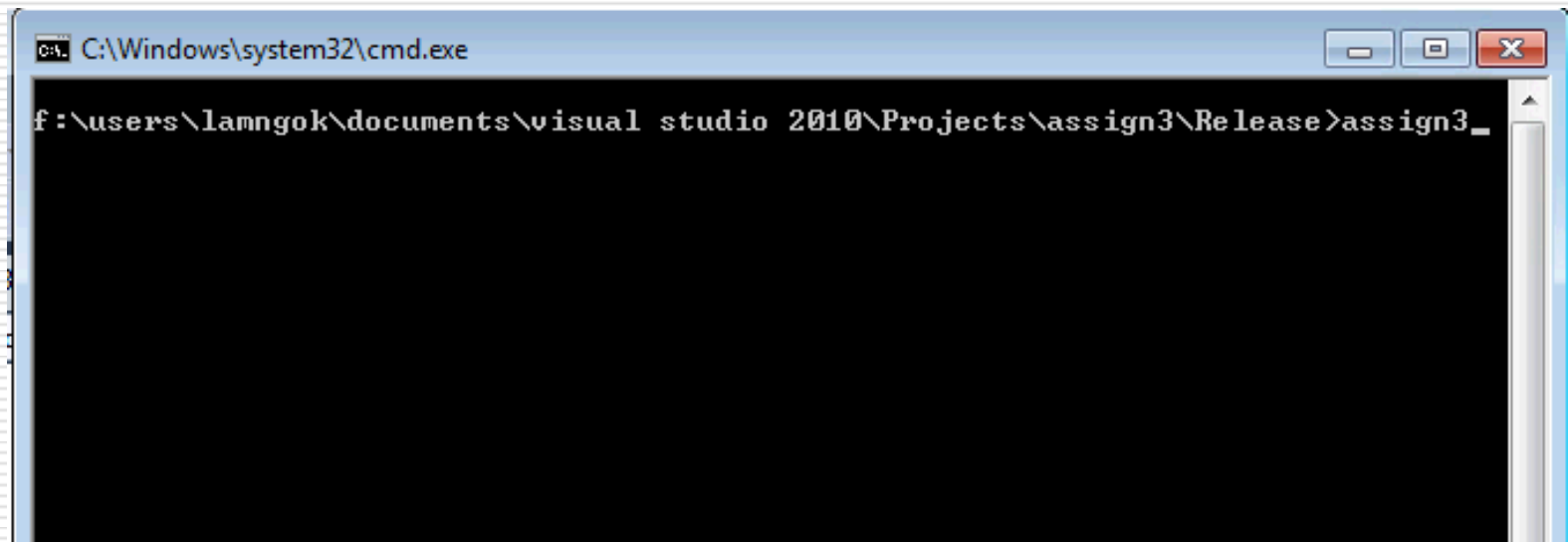
```
Finished generating code
assign3.vcxproj -> f:\users\lamngok\documents\visual studio 2010\Projects\assign3\Release\assign3.exe
FinalizeBuildStatus:
  Deleting file "Release\assign3.unsuccessfulbuild".
  Touching "Release\assign3.lastbuildstate".

Build succeeded.
```

The path `f:\users\lamngok\documents\visual studio 2010\Projects\assign3\Release\assign3.exe` is highlighted with a red rectangle.

Working with Visual Studio 2010 9

- Then run the executable from the path.



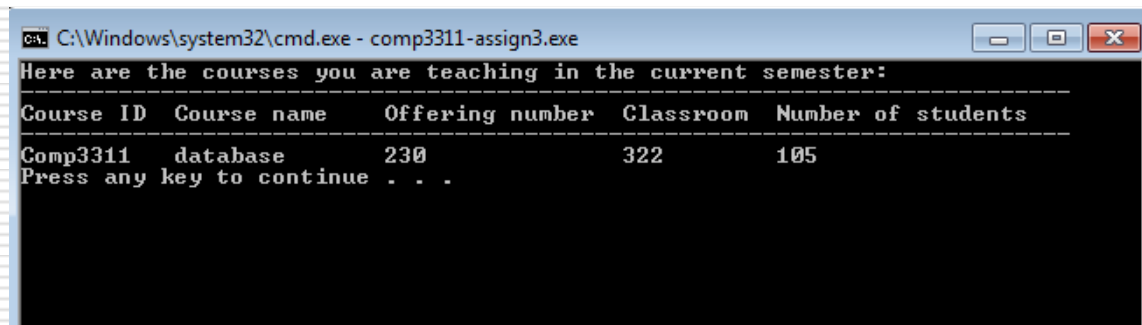
```
C:\Windows\system32\cmd.exe
f:\users\lamngok\documents\visual studio 2010\Projects\assign3\Release>assign3_
```

The assignment 4 skeleton program

- ❑ You can download the skeleton program from:
<https://course.cse.ust.hk/comp3311>
- ❑ There are altogether of 9 places to fill in your code (labeled "TODO #"),
- ❑ You can **MODIFY** any contents inside assign3.cpp,
- ❑ You can **INCLUDE** any standard libraries,
- ❑ Your program **MUST** be compiled and tested to run on a **CS Lab machine**,
- ❑ If we **can not compile** your code, you will have **zero mark** for the project!
- ❑ You should **submit ONLY** the **assign4.cpp** file.

TODO 1

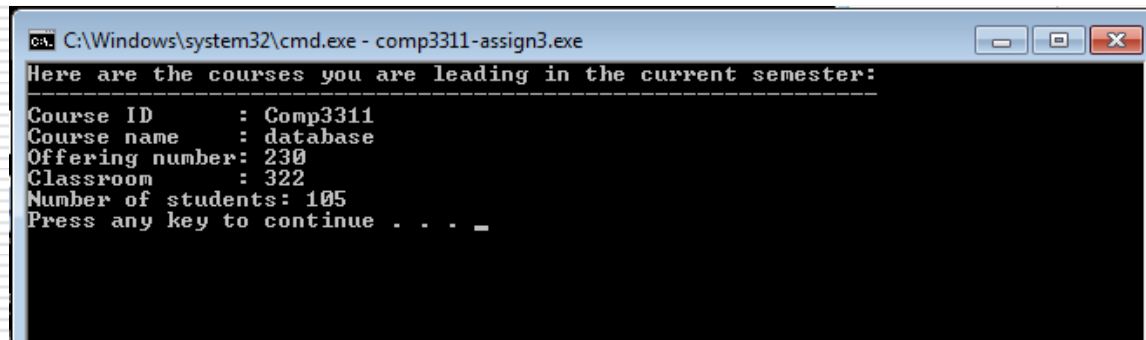
- TODO 1: display course information of the courses the Prof is teaching in the current semester (his/her staff ID value "staff_id" is a global variable).



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe
Here are the courses you are teaching in the current semester:
-----
Course ID  Course name  Offering number  Classroom  Number of students
-----
Comp3311   database    230             322        105
Press any key to continue . . .
```

TODO 2

- ❑ TODO 2: display course information of the courses the Prof is leading in the current semester.

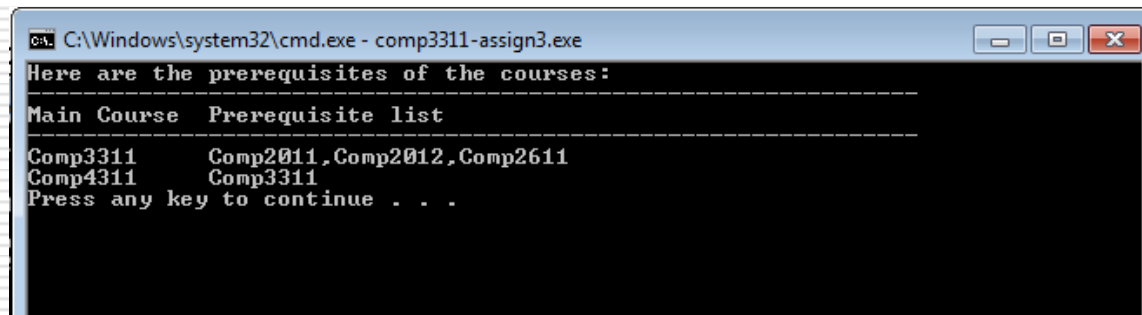


A screenshot of a Windows command prompt window. The title bar reads "C:\Windows\system32\cmd.exe - comp3311-assign3.exe". The window contains the following text:

```
Here are the courses you are leading in the current semester:
-----
Course ID       : Comp3311
Course name     : database
Offering number: 230
Classroom      : 322
Number of students: 105
Press any key to continue . . . _
```

TODO 3

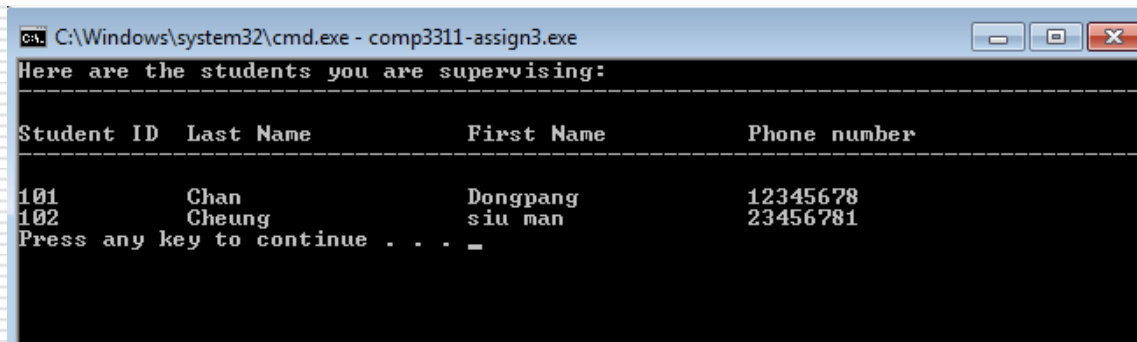
- TODO 3: Show the prerequisites (course_IDs) of all the main courses.



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe
Here are the prerequisites of the courses:
-----
Main Course  Prerequisite list
-----
Comp3311     Comp2011,Comp2012,Comp2611
Comp4311     Comp3311
Press any key to continue . . .
```


TODO 4

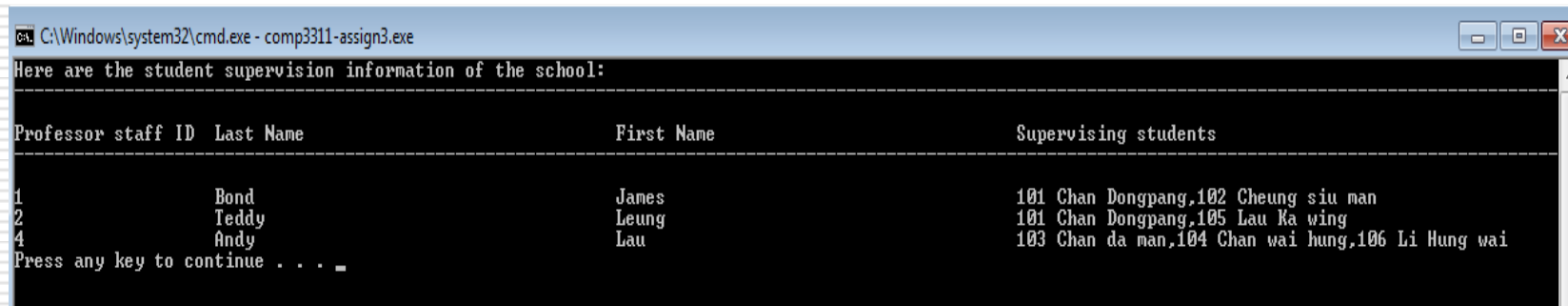
- TODO 4: display all the students supervised by the Prof.



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe
Here are the students you are supervising:
-----
Student ID  Last Name      First Name      Phone number
-----
101         Chan            Dongpang        12345678
102         Cheung          siu man         23456781
Press any key to continue . . . -
```

TODO 5

- TODO 5: show supervising information of all the profs.



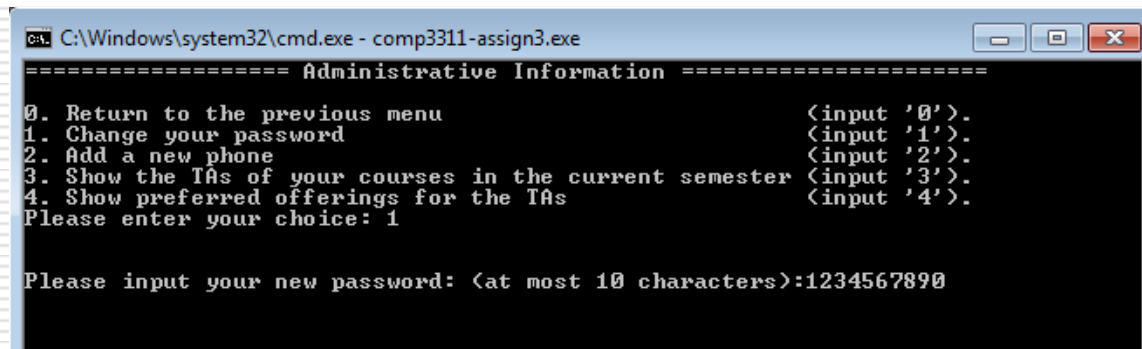
A screenshot of a Windows command prompt window titled "C:\Windows\system32\cmd.exe - comp3311-assign3.exe". The window displays the text "Here are the student supervision information of the school:" followed by a table of professor staff information. The table has four columns: "Professor staff ID", "Last Name", "First Name", and "Supervising students". The data is as follows:

Professor staff ID	Last Name	First Name	Supervising students
1	Bond	James	101 Chan Dongpang, 102 Cheung siu man
2	Teddy	Leung	101 Chan Dongpang, 105 Lau Ka wing
4	Andy	Lau	103 Chan da man, 104 Chan wai hung, 106 Li Hung wai

Below the table, the text "Press any key to continue . . . _" is displayed.

TODO 6

- ❑ TODO 6: Change the password for the Prof.



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe

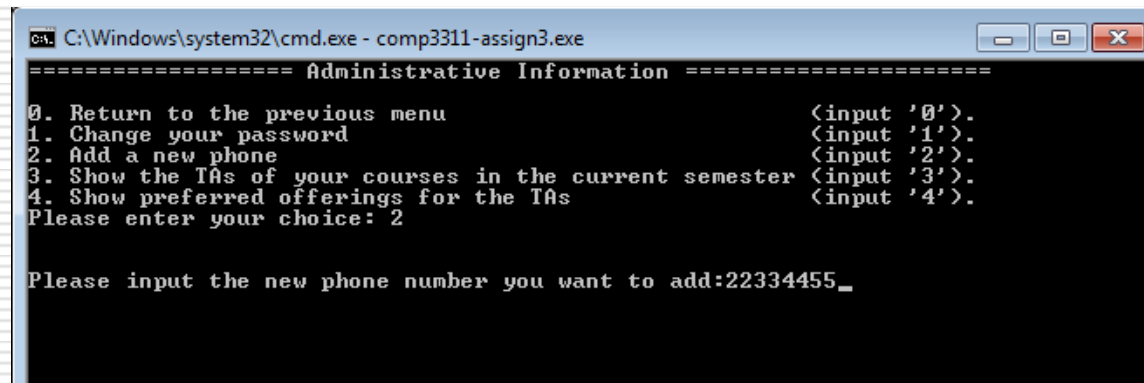
===== Administrative Information =====

0. Return to the previous menu           <input '0'>.
1. Change your password                  <input '1'>.
2. Add a new phone                       <input '2'>.
3. Show the TAs of your courses in the current semester <input '3'>.
4. Show preferred offerings for the TAs  <input '4'>.
Please enter your choice: 1

Please input your new password: <at most 10 characters>:1234567890
```

TODO 7

- TODO 7: add a new phone number for the Prof.



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe

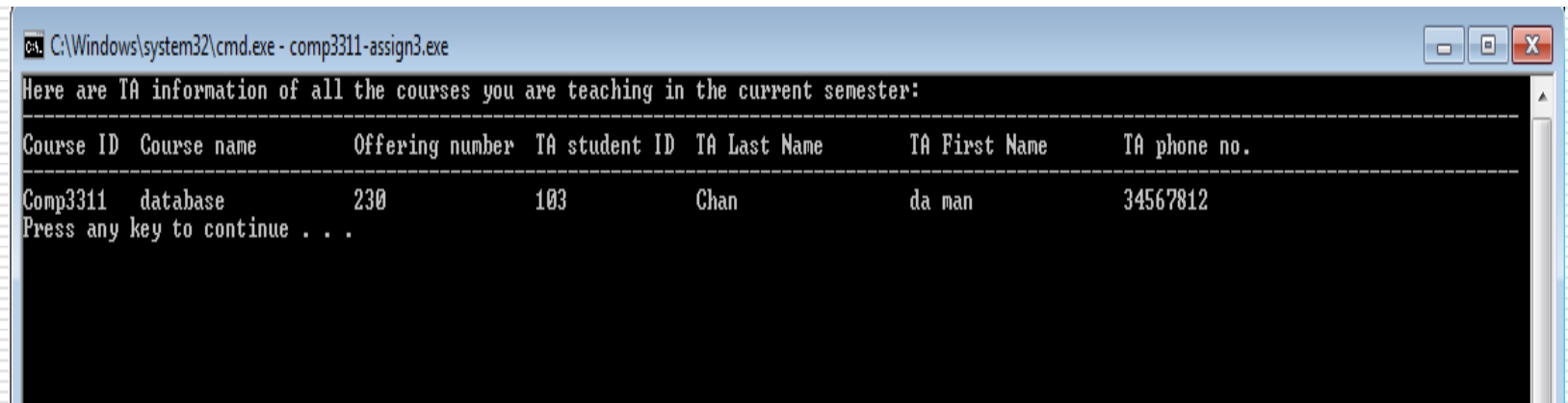
===== Administrative Information =====

0. Return to the previous menu          <input '0'>.
1. Change your password                 <input '1'>.
2. Add a new phone                      <input '2'>.
3. Show the IAs of your courses in the current semester <input '3'>.
4. Show preferred offerings for the IAs  <input '4'>.
Please enter your choice: 2

Please input the new phone number you want to add:22334455_
```

TODO 8

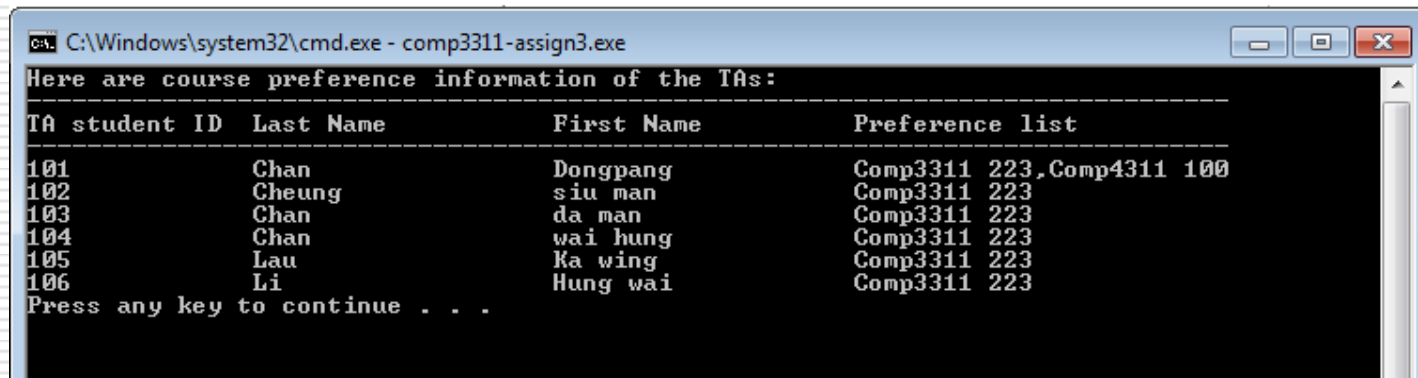
- TODO 8: shows all the TAs working with the Prof in the current semester.



```
C:\Windows\system32\cmd.exe - comp3311-assign3.exe
Here are TA information of all the courses you are teaching in the current semester:
-----
Course ID  Course name    Offering number  TA student ID  TA Last Name    TA First Name    TA phone no.
-----
Comp3311   database       230             103            Chan            da man           34567812
Press any key to continue . . .
```

TODO 9

- ❑ TODO 9: show the offering preference information of all the TAs.



A screenshot of a Windows command prompt window titled "C:\Windows\system32\cmd.exe - comp3311-assign3.exe". The window displays the following text:

```
Here are course preference information of the TAs:
-----
TA student ID  Last Name      First Name      Preference list
-----
101            Chan            Dongpang        Comp3311 223,Comp4311 100
102            Cheung          siu man         Comp3311 223
103            Chan            da man          Comp3311 223
104            Chan            wai hung        Comp3311 223
105            Lau             Ka wing         Comp3311 223
106            Li              Hung wai        Comp3311 223
Press any key to continue . . .
```

The provided Printing Functions 1

- ❑ The `printRecordIntoCol()` function prints the query result into a single column.
- ❑ You need to have “executed” the SQL query first.
- ❑ Then you pass the statement handle to `printRecordIntoCol()`, it will print the result automatically.
- ❑ Always **remember to free the statement handle** in a function before the function returns.

**Warning : DO NOT “fetch” the result, if you are using `printRecordIntoCol()`. The function will fetch itself.*

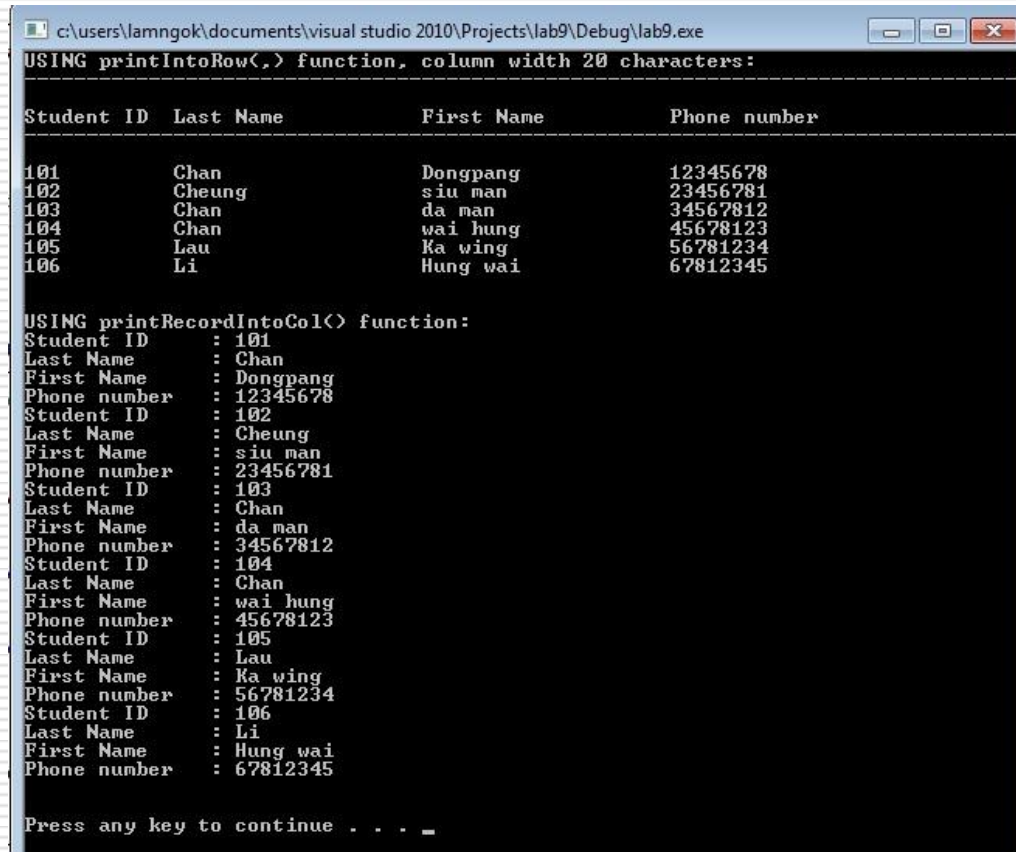
The provided Printing Functions 2

- ❑ The `printIntoRow ()` is a similar function that prints the query results into rows.
- ❑ You can specify the maximum column width for each column of the result.
- ❑ You need to have “executed” the SQL query first.
- ❑ Then you pass the statement handle and the maximum column width (integer) to `printIntoRow()`, it will print the result automatically.
- ❑ You can download the following example program to see how they work:

<https://course.cse.ust.hk/comp3311/labs/lab9.cpp>

**Warning : DO NOT “fetch” the result, if you are using `printIntoRow()`. The function will fetch itself.*

Sample Execution of the two provided functions



The screenshot shows a Windows command prompt window titled "c:\users\lamngok\documents\visual studio 2010\Projects\lab9\Debug\lab9.exe". The window displays the output of two functions. The first function, "USING printIntoRow(>) function, column width 20 characters:", prints a table with four columns: Student ID, Last Name, First Name, and Phone number. The second function, "USING printRecordIntoCol(>) function:", prints the same data in a record-oriented format, with each field on a new line and a colon separator.

```
c:\users\lamngok\documents\visual studio 2010\Projects\lab9\Debug\lab9.exe
USING printIntoRow(>) function, column width 20 characters:
-----
Student ID  Last Name      First Name      Phone number
-----
101         Chan          Dongpang        12345678
102         Cheung        siu man         23456781
103         Chan          da man          34567812
104         Chan          wai hung        45678123
105         Lau           Ka wing         56781234
106         Li            Hung wai        67812345

USING printRecordIntoCol(>) function:
Student ID   : 101
Last Name    : Chan
First Name   : Dongpang
Phone number : 12345678
Student ID   : 102
Last Name    : Cheung
First Name   : siu man
Phone number : 23456781
Student ID   : 103
Last Name    : Chan
First Name   : da man
Phone number : 34567812
Student ID   : 104
Last Name    : Chan
First Name   : wai hung
Phone number : 45678123
Student ID   : 105
Last Name    : Lau
First Name   : Ka wing
Phone number : 56781234
Student ID   : 106
Last Name    : Li
First Name   : Hung wai
Phone number : 67812345

Press any key to continue . . . _
```

Conclusions

- We covered the following topics in this lab:
 - building the database for assignment 4,
 - setting up the data source,
 - compiling the ODBC/C++ program,
 - the TODOs, and the two provided function.