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## 2 Important Links

### 2.1 References

#	Link	Description
1.	<a href="http://wiki.youtestme.com">http://wiki.youtestme.com</a>	YouTestMe Wiki Site – useful information about the project
2.	<a href="http://it-ebooks.info">http://it-ebooks.info</a>	Collection of IT Manuals

## 3 Design Documents

Every module has to have a design document in MS Word written using standard technical template.

Every document has to have the following sections:

1. Description what module is supposed to do
2. Description of the design
3. Technologies used
4. How are modules built, compiled and deployed
5. How can modules be tested
6. Location of the code, documentation and test data

Current (usually most recent) version of the design document has to be checked into SVN.

### 3.1 YTM Integration Testing and Demo Sites

Link	Database connection	Description
<a href="http://test1.youtestme.com">http://test1.youtestme.com</a> or <a href="http://206.248.172.39:55241/ytm/">http://206.248.172.39:55241/ytm/</a>	ytm10	Classroom 2020 (Mega 2) - functional test. These links are equivalent, however the first one uses "HTTP redirect" while the second one uses "Frame redirect". These represent primary development integration sites, should be used only by developers for system integration and testing. Database scheme used: "YTM10" Automated build times: 11 AM and then every 6 hours.
<a href="http://test2.youtestme.com">http://test2.youtestme.com</a> or <a href="http://206.248.172.39:55242/ytm20/">http://206.248.172.39:55242/ytm20/</a>	ytm20	Classroom 2020 (Mega 2) - performance test. These links are equivalent, however the first one uses "HTTP redirect" while the second one uses "Frame redirect". These represent sites used for performance, load and stress testing. Database scheme used: "YTM20". Automated build times: 11 AM and then every 6 hours
<a href="http://test3.youtestme.com">http://test3.youtestme.com</a> or <a href="http://206.248.172.39:55243/ytm30/">http://206.248.172.39:55243/ytm30/</a>	ytm30	Classroom 2020 (Mega 2). These links are equivalent, however the second one uses "Frame redirect" while the first one uses "HTTP redirect". These represent sites used for demos and presentations. Database scheme used: "YTM30". Automated build times: 12 AM daily.
<a href="http://test4.youtestme.com">http://test4.youtestme.com</a>	ytm40	Classroom 2020 (Mega 2). This link can be used for testing and development, although it is advisable to use the slower servers.
<a href="http://test5.youtestme.com">http://test5.youtestme.com</a>	ytm50	Classroom 2020 (Mega 2). This link is medium speed and can be used for performance testing, although it is advisable to use the slower servers.
<a href="http://test6.youtestme.com">http://test6.youtestme.com</a>	ytm10	Classroom 2020 (Mega 2) - functional test. This server uses the same database as servers 1 and 11; medium speed; should not be used for testing, only for demo presentations.
<a href="http://test7.youtestme.com">http://test7.youtestme.com</a>	ytm20	Classroom 2020 (Mega 2) - performance test. This server uses the same database as servers 2 and 12; medium speed; should not be used for testing, only for demo presentations.
<a href="http://test8.youtestme.com">http://test8.youtestme.com</a>	ytm30	Classroom 2020 (Mega 2). This server uses the same database as servers 3 and 13; medium speed; should not be used for testing, only for demo presentations.
<a href="http://test11.youtestme.com">http://test11.youtestme.com</a>	ytm10	Classroom 2020 (Mega 2) - functional test. This server uses the same database as servers 1 and 6; fast speed; can be used for testing and development, although it is advisable to use the slower servers.

<a href="http://test12.youtestme.com">http://test12.youtestme.com</a>	ytm20	Classroom 2020 (Mega 2) - performance test. This server uses the same database as servers 2 and 7; fast speed; can be used for performance testing, although it is advisable to use the slower servers.
<a href="http://test13.youtestme.com">http://test13.youtestme.com</a>	ytm30	Classroom 2020 (Mega 2). This server uses the same database as servers 3 and 8; fast speed; should not be used for testing, only for demo presentations.
<a href="http://demo1.youtestme.com">http://demo1.youtestme.com</a>	ytm21	Mega 1 - First YouTestMe stable version; Database copied from ytm10.
<a href="http://demo2.youtestme.com">http://demo2.youtestme.com</a>	ytm25	Demo version of Mega 1; New database set (ytm30 for now).
<a href="http://demo3.youtestme.com">http://demo3.youtestme.com</a>	ytm28	Classroom 2020 (Mega 2); Database copied from ytm30.

#	Link	Description
1.	<a href="http://206.248.172.39:55241/ytm/">http://206.248.172.39:55241/ytm/</a> <a href="http://test1.youtestme.com">http://test1.youtestme.com</a> Links are equivalent however first one uses "HTTP redirect" while second one uses "Frame redirect".	Primary development integration site Should be used only by developers for system integration and testing Uses database schema "YTM10" Automated build times: 11 AM and then every 6 hours
2.	<a href="http://206.248.172.39:55242/ytm20/">http://206.248.172.39:55242/ytm20/</a> <a href="http://test2.youtestme.com">http://test2.youtestme.com</a> Links are equivalent however first one uses "HTTP redirect" while second one uses "Frame redirect".	Site used for performance, load and stress testing Uses database schema "YTM20" Automated build times: 11 AM and then every 6 hours
3.	<a href="http://206.248.172.39:55243/ytm30/">http://206.248.172.39:55243/ytm30/</a> <a href="http://test3.youtestme.com">http://test3.youtestme.com</a> <a href="http://demo.youtestme.com">http://demo.youtestme.com</a> All three links are equivalent however latter two are using "Frame redirect" vs. "HTTP redirect".	Site used for demos and presentations Uses database schema "YTM30" Automated build times: 12 AM daily
4.	<a href="http://206.248.172.39:56241/ytm/">http://206.248.172.39:56241/ytm/</a>	Primary development integration site Should be used only by developers for system integration and testing Uses database schema "YTM10" Automated build times: 11 AM and then every 6 hours
5.	<a href="http://206.248.172.39:56242/ytm20/">http://206.248.172.39:56242/ytm20/</a>	Site used for performance, load and stress testing Uses database schema "YTM20" Automated build times: 11 AM and then every 6

		hours
6.	<a href="http://206.248.172.39:56243/ytm30/">http://206.248.172.39:56243/ytm30/</a>	Site used for demos and presentations Uses database schema "YTM30" Automated build times: 12 AM daily

## 4 Development Culture

Company strategy is to establish highly efficient and productive culture by:

1. Automating all repetitive processes
2. Establishing and documenting procedures for all common tasks
3. Considering every task as a project and properly documenting it so anybody can take on that task at any given moment
4. Adhering to company standards and policies

## 5 Criteria for development completion of the project or module

Worst case scenario for development is to end up with stalled projects - unusable for various reasons:

1. not tested – does not perform well or does not do what is supposed to do
2. not documented – nobody know how to use it
3. not integrated with the rest of the system
4. not maintainable because of the bad design or nobody understands it

Solution:

1. Code has to be written according to company standards and policies
2. Functional and performance test have to be executed and documented
3. Developer should be able to create and recreate test environment. Process for creation test environment should be documented and all relevant test files should be checkd into SVN
4. Peer review – another team member should review code and documentation and do final confirmation that all criteria are fulfilled.

## 6 Development Methodologies

### 6.1 GDAO – Generated Data Access Objects

<http://www.mallocinc.com>

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## 6.2 Agile Software Development

[http://en.wikipedia.org/wiki/Agile\\_software\\_development](http://en.wikipedia.org/wiki/Agile_software_development)

Agile is just a “common sense” approach to development. This is just a guideline but not the rule. The key point is to be adaptable to current situation and requirements.

Twelve principles underlie the Agile Manifesto:

1. Customer satisfaction by rapid delivery of useful software
2. Welcome changing requirements, even late in development
3. Working software is delivered frequently (weeks rather than months)
4. Working software is the principal measure of progress
5. Sustainable development, able to maintain a constant pace
6. Close, daily co-operation between business people and developers
7. Face-to-face conversation is the best form of communication (co-location)
8. Projects are built around motivated individuals, who should be trusted
9. Continuous attention to technical excellence and good design
10. Simplicity- The art of maximizing the amount of work not done - is essential
11. Self-organizing teams
12. Regular adaptation to changing circumstances



## 7 Development Policies

### 7.1 Development Environment

#### 7.1.1 Project Root Directory

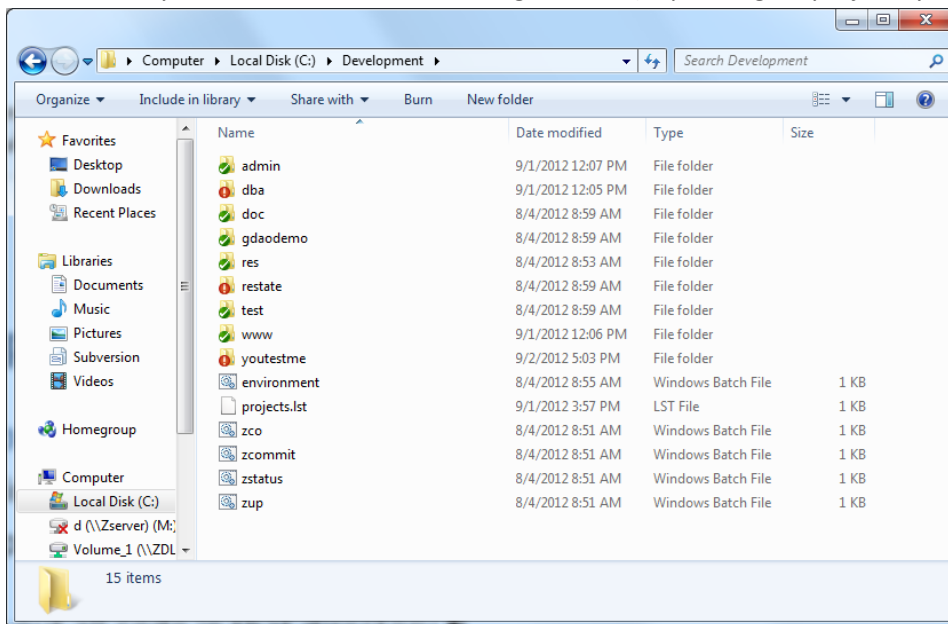
Create a “Root Development” directory:

C:\Zoran\Development

You should use your username as part of the root directory name because computer could be used by several individuals.

Check out all code in that directory.

Your directory structure will look something like this (depending on projects you checked out).



For remote desktop which is used by more than one person, create a directory with your name and copy paste the Development directory to the newly created directory. For example, instead of C:\Development, you should have C:\Zoran\Development. This policy is made so that conflicts are avoided while using SVN since more than one person is using the virtual machine. Personal computer can be set up in any way you like.

Files that start with “z” in “C:\Development” are utility DOS scripts that can help you checkout, update and commit files in multiple SVN Repositories. List of all affected repositories is in file “projects.lst”. You should edit this file and keep only list of repositories that you will be working on.

All “z” files and default “projects.lst” are in the archive below:



zfiles.zip

“z” scripts in SVN:

c:\Development\res\Scripts\SVN DOS Scripts\

### 7.1.2 Back End Source Code Location

c:\Zoran\Development\youtestme\source\

### 7.1.3 Front End Source Code Location

c:\Zoran\Development\youtestme\www\_source\

## 8 Required Development Environment Variables

Sample:

```
ZDEV_ENV=c:\Zoran\Development\res\Environment\environment_zoran_toshiba.bat
ZDEV_ROOT=c:\Zoran\Development\
ZYTM_ENV=c:\Zoran\Development\res\Environment\environment_zoran_toshiba.bat
ZYTM_ROOT=c:\Zoran\Development\youtestme\
```

## 9 Test Data

Development and testing cannot be done without good quality data in the database. Testing programs without data is like test driving car without fuel - you can just sit and look at it, you may like what you see but this still does not mean that car can move at all.

1. All test data have to be created in spreadsheets located here:  
    \youtestme\batch\_source\test\_data\excel\
2. Test data is loaded by Java program:
3. com.youtestme.loaders.excel.testdata.LoadAllTestData
4. Test data should always be generated through re-runnable programs, scripts, files, spreadsheet.  
    The process should be executable in one step.
5. Note that data created any other way (not through integrated process described below) will be lost every time database is refreshed.

- There are great benefits of using standardized test data so please stick to the process. Be proactive and create or amend test data spreadsheets.

## 9.1 QA testing tips

How you can quickly determine quality of your test environment?

You can use [Database Analyzer](#) database reporting capabilities to determine many things about the state of the data in the database.

The most important thing is to have a sufficient data for complete coverage and the simplest way to quickly determine that is:

- all tables have to have some data (more is generally better)
- you have to have all codes, for example if you know that we have many question or user types and you see that there is only one in all records in the database you know that various scenarios cannot be tested (see picture below)
- similar logic can be applied to all codes and many other data. For example timestamps, names, locations, etc.
- empty tables also indicate that some functionalities cannot be tested. Traditionally the biggest problem are data missing in associative tables connect related tables with each other.
- report also gives you number of records in each table which is very useful as a starting point and to determine if you have sufficient data for any type of testing
- look at the "warnings" and "suggestions" in report. They usually indicate problem with data (but sometimes it may be ok).

Table ID	Table Name	Column Name	Column Type	Column Length	Column Nullable	Column Default	Column Index	Column Count	Column Percentage	Value	Length	Count	Notes
12.	QUESTION_TYPE		VARCHAR2[10]		YES	NO		1	(0.01%)	SNC	3	16,403	Describes type of the question: SNC - Single Choice Question MLC - Multiple Choice Question TFC - True False Question ESY - Essay Question ORD - Ordering Question FBL - Fill in the Blanks Question MCH - Matching Question <b>SUGGESTION: All rows have the same data value in this column. Consider normalizing.</b>

## 10 Database Development

Each developer should use his/her own database schema for development. This way conflict are avoided and development is much more efficient.

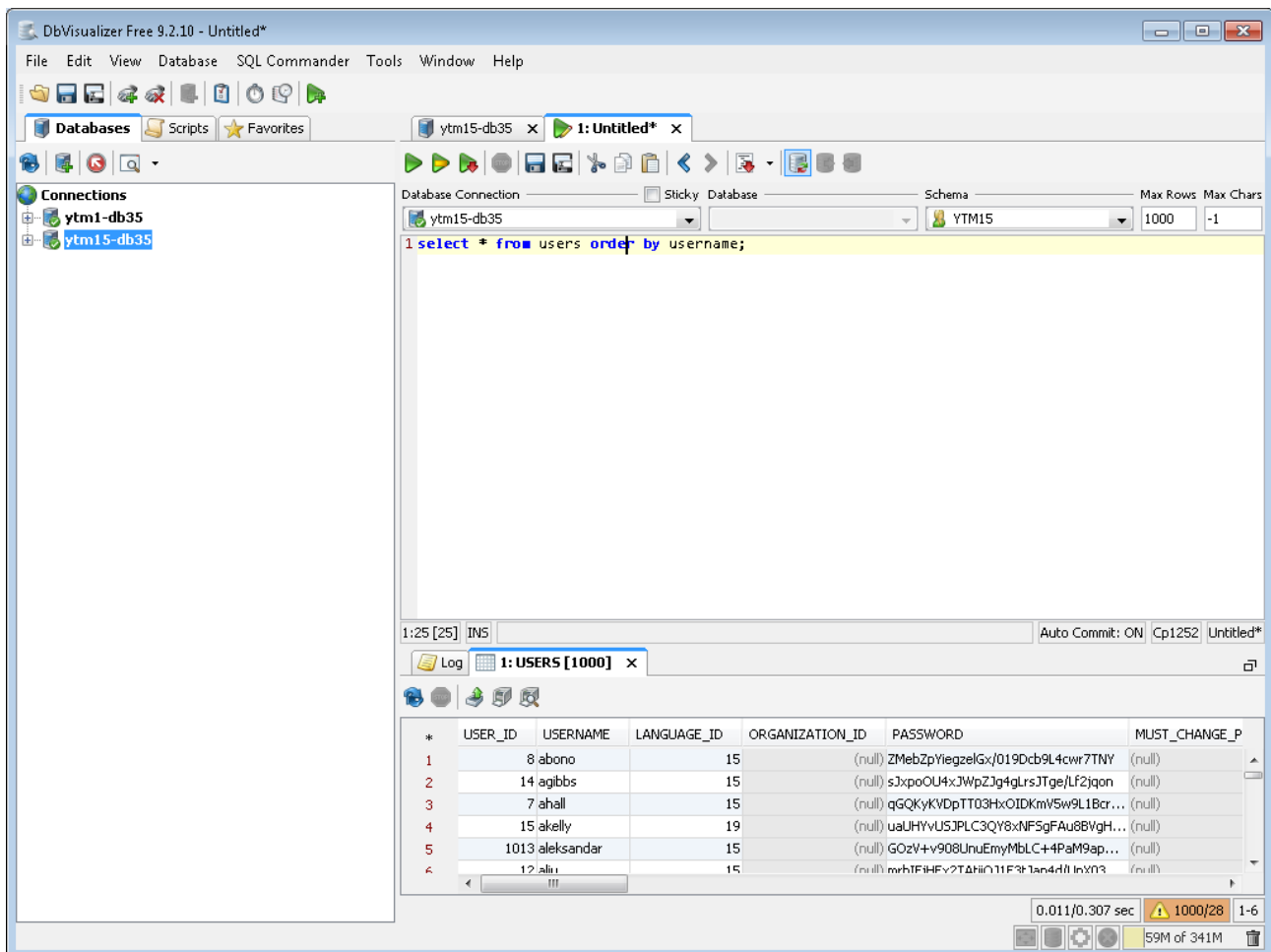
Please do the following:

1. Create your own schema and implement data model and data in it by using shell scripts or Oracle database export file created from another schema.
2. If you are unfamiliar with database administration please ask somebody to do it for you.

### 10.1 Database development tools

#### 10.1.1 SQL\*PLUS

#### 10.1.2 DB Visualizer



## 10.1.3 SQL Developer

## 10.2 Configuring Database Access

The following software is needed to access Oracle database:

- Oracle Database Client Software – in order to user SQL\*Plus and to run SQL\*Plus scripts from command line. To download Windows version you can use this [link](#) and the scroll to “Oracle Database Client (12.1.0.2.0) for Microsoft Windows (x64)”
- JDBC driver in order to have Java programs access to the database. JDBC driver is the same on all operating systems and can be downloaded [here](#). You should download “ojdbc7.jar”

The following information is required to access oracle database:

1. IP address of the server where database is installed
2. Port number where Oracle listener is accepting connection requests (by default it is 1521)
3. Database name (default is “ORCL”)
4. Username
5. Password

### 10.2.1 SQL\*Plus

SQL\*Plus is Oracle shell for executing SQL and PL/SQL statements and programs. It is universal tool for development and data administration. Unfortunately it is not very user friendly because it is exclusively command based so it is mostly used either when other tools are not available or when other tools cannot do operations that SQL\*Plus can perform – a common example is changing expired Oracle password.

In order to run SQL\*Plus and other programs that require Oracle native network interface you need to configure Oracle\*Net.

### 10.2.2 Configuring Oracle\*Net

## 10.3 Access to Database Servers in Canada

The following information is required to access oracle database:

6. IP address of the server where database is installed
7. Port number where Oracle listener is accepting connection requests (by default it is 1521)
8. Database name (default is "ORCL")
9. Username
10. Password

Use "external" IP address and port to access databases from remote location.

Use "internal" IP address and port to access databases from within local network – for example when you log in to the one of the local machines using remote desktop. "Local" machine is one of the machines on the same local network as database servers, meaning they are all located in Canada at the same physical location.

### 10.3.1 Database ytm-6 – Oracle Linux 7.1

<b>External IP</b>	mallocinc.dnsalias.com home.mallocinc.com
<b>External Port</b>	50106
<b>Service Name</b>	Orcl
<b>Username</b>	ytm1
<b>Password</b>	ytm1
<b>Version</b>	12c
<b>Server</b>	ytm-6 (Oracle Linux - virtual)
<b>Internal IP</b>	192.168.1.106

Users YTM2, 3, 4,....10 are also created so we will all have several database schemas for development and testing. Passwords are the same as username.

You can use DBA user: "ZDBA/ZDBA" if you want to create new users or to experiment.

Usernames and passwords are case sensitive.

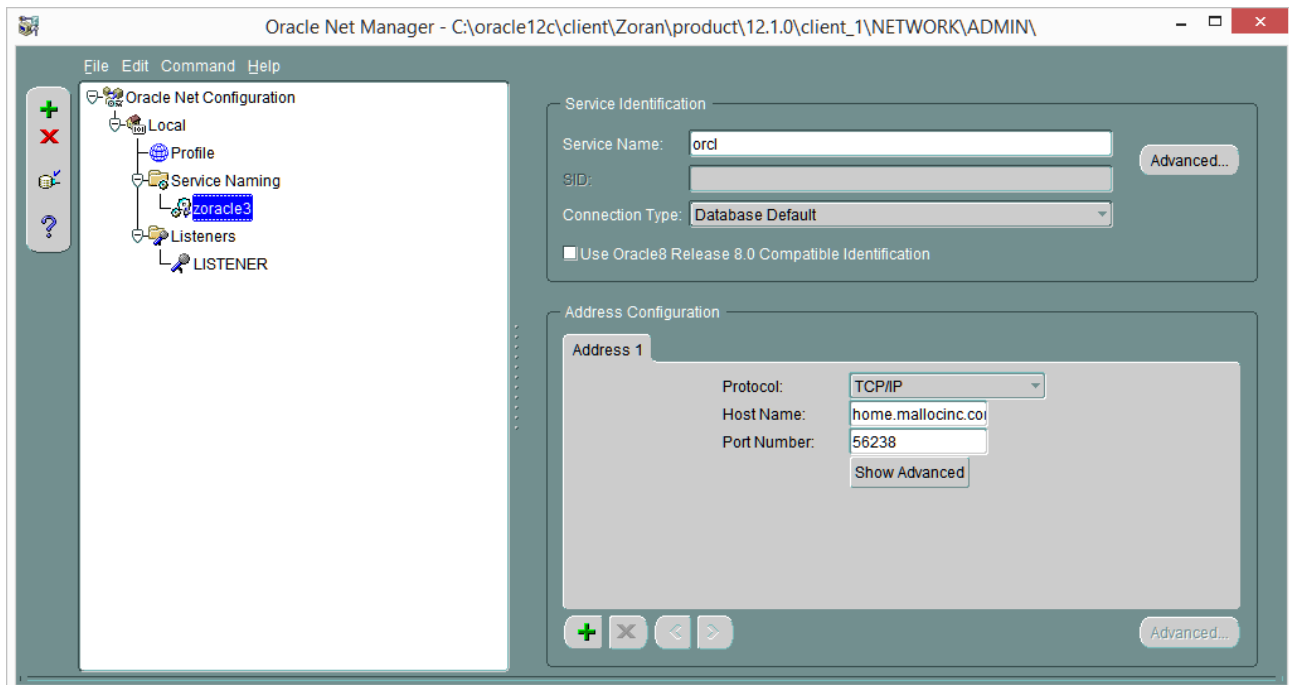
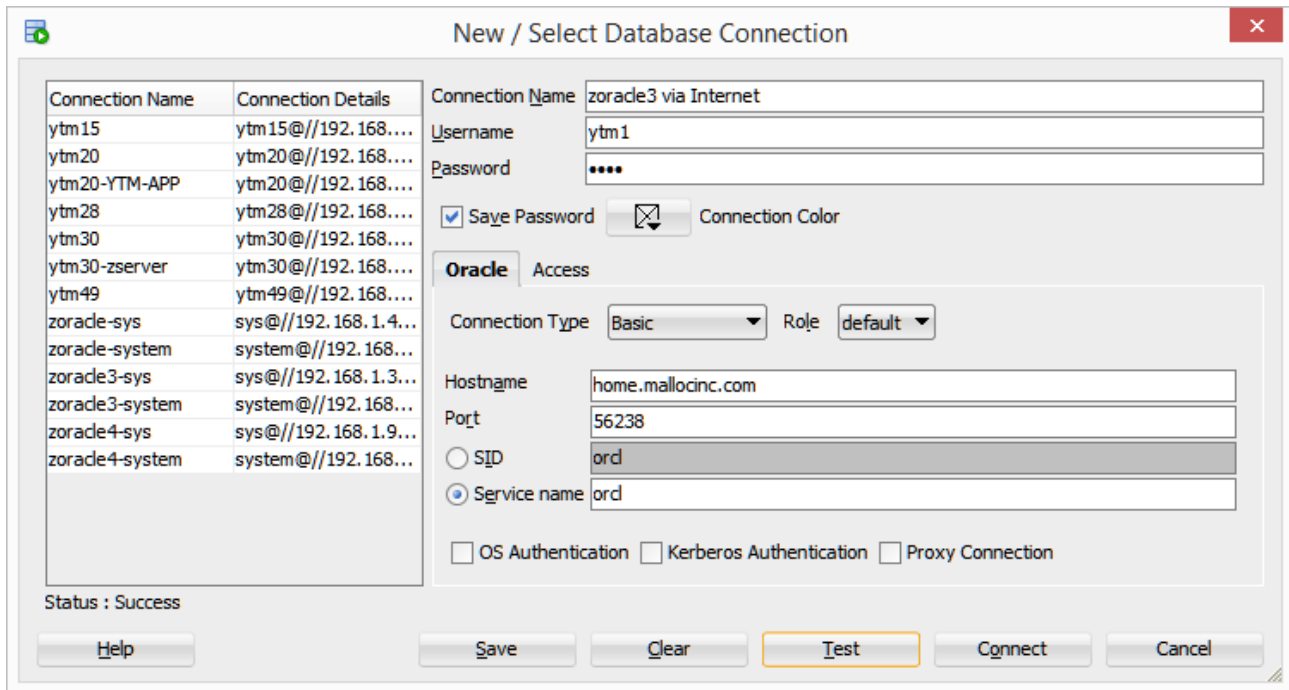
### 10.3.2 Database ytm-8 – Oracle Linux 7.1

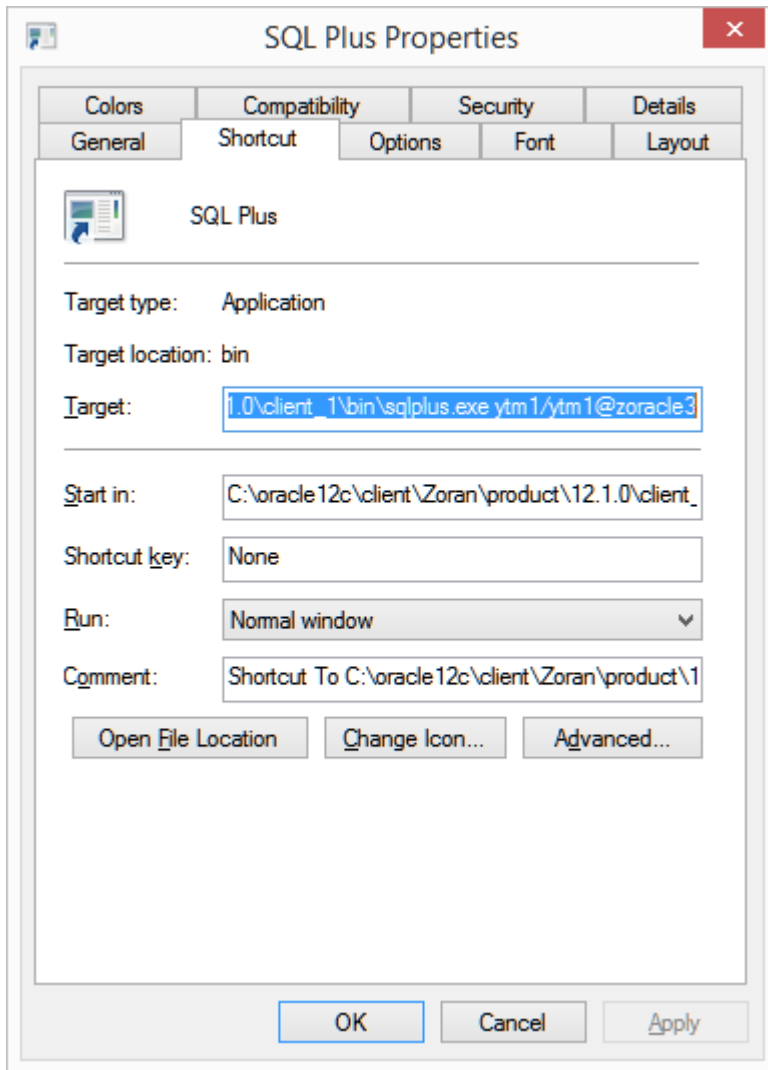
<b>External IP</b>	mallocinc.dnsalias.com home.mallocinc.com
<b>External Port</b>	50108
<b>Service Name</b>	Orcl
<b>Username</b>	ytm1
<b>Password</b>	ytm1
<b>Version</b>	12c
<b>Server</b>	ytm-8 (Oracle Linux - virtual)
<b>Internal IP</b>	192.168.1.108

Users YTM2, 3, 4,....10 are also created so we will all have several database schemas for development and testing. Passwords are the same as username.

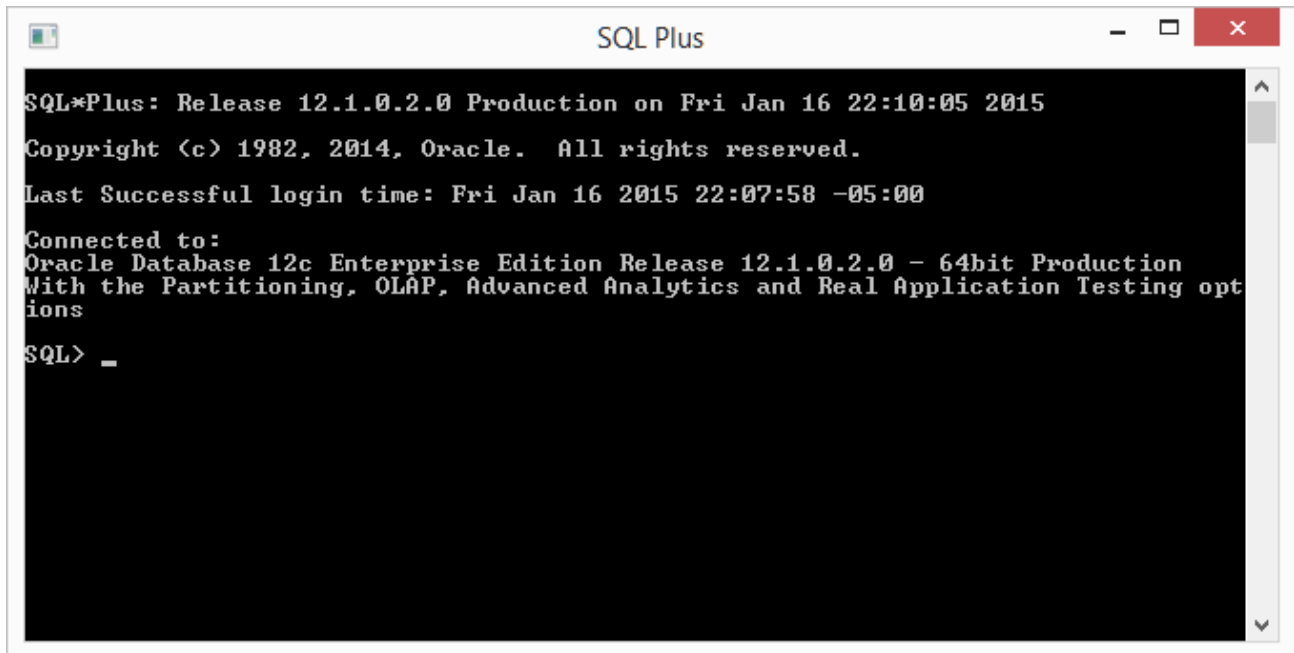
You can use DBA user: "ZDBA/ZDBA" if you want to create new users or to experiment.

Username and passwords are case sensitive.

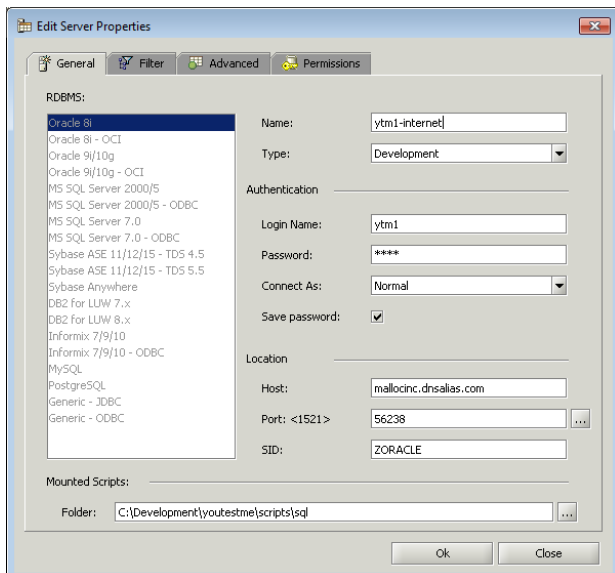








### 10.3.3 Sample from Aqua Data Studio



## **10.3.4 Utility database scripts**

`\youtestme\db\dbmodel\scripts\`

Check those scripts to see how to create database user(schema) and how to create database objects in that schema.

### 10.3.5 Creating new database user

To create new database user, execute these commands in SQL:

```
CREATE USER user1 PROFILE "DEFAULT"  
  IDENTIFIED BY password1 DEFAULT TABLESPACE "USERS"  
  ACCOUNT UNLOCK;  
  
GRANT "CONNECT" TO user1 WITH ADMIN OPTION;  
GRANT "DBA" TO user1 WITH ADMIN OPTION;  
GRANT "RESOURCE" TO user1 WITH ADMIN OPTION;  
GRANT UNLIMITED TABLESPACE TO user1 WITH ADMIN OPTION;  
GRANT SELECT ANY DICTIONARY TO user1;
```

Note the following:

- Statement terminator is “;” character so everything up to that character is one statement.
- User is granted role DBA which is very powerful role and practical for development however in the real production environment user will have more restrictions (no DBA role).

### 10.3.6 Expired Database Password

Expired database password have to be changed in SQL\*Plus:

Follow instructions from this document:

`\youtestmedoc\Procedures\Database Password Change Procedure.docx`

### 10.3.7 Copying Database Schema

This is example procedure how to copy database schema YTM6 to schema YTM30 which is used by web site "/ytm30". This may be done because new data is prepared in YTM6 is now it is suitable to be used for demos in YTM30.

Steps:

1. Log in to remote desktop on one of the application servers using user "ytm3":  
Primary application server IP: "home.mallocinc.com:55240"  
Secondary application server IP: "home.mallocinc.com:56240"
2. Stop tomcat server by executing:  
"c:\ytm3\Development\res\ProgramFiles\tomcat\scripts\zstop.bat"  
Stopping Tomcat is required in order to close all database connections to database schema YTM30.

If there are any other database connections, say from SQL Developer or SQ\*Plus – they should be closed. Database schema which has an active connection from cannot be dropped.

3. Copy schema ytm6 to ytm30 by executing:
  - a. `cd c:\ytm3\Development\youtestme\db\dbmodel\scripts\`
  - b. `copy_schema.bat ytm6 ytm30`
4. Start tomcat server by executing  
`"c:\ytm3\Development\res\ProgramFiles\tomcat\scripts\zstartup_qa.bat"`

## 11 Database Analyzer

Install Database Analyzer 6.0 and use this configuration file to create analyze database and create a code:  
`"\youtestme\cfg\youtestme.dba"`

Code will be generated in directory:

`"\youtestme\source\generated\"`

In the early stages of the project we will be generating and regenerating a lot of files and it will be unpractical to check them and update them all the time. This will change when code stabilizes.

If you are planning to use different database schema to analyze database and generate code then save this file under different name and change Database connection parameters since you will be using your own schema.

## 12 Eclipse

Eclipse will be used as a Java development environment.

Project file is located here:

`\youtestme\www_source\ytm.webview\.project`

`\youtestme\www_source\ytm.db\.project`

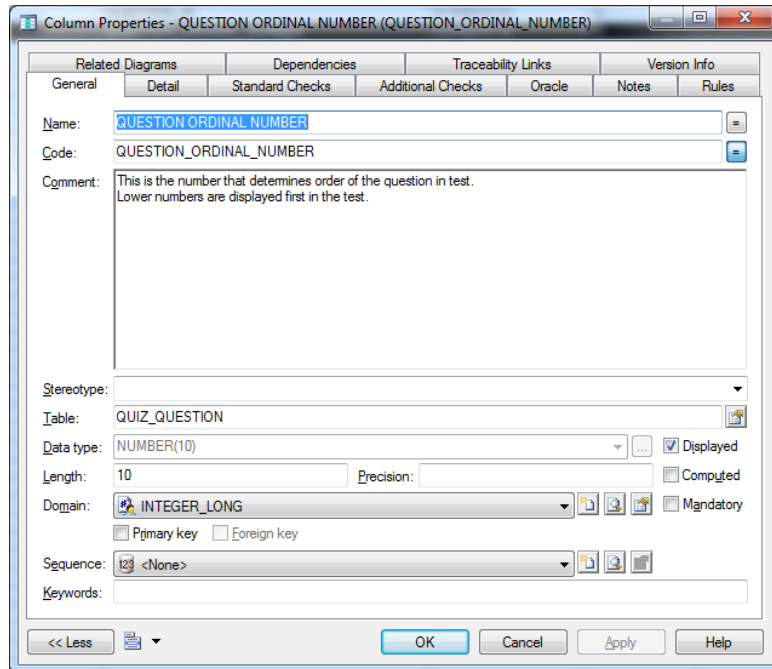
`\youtestme\www_source\ytm.model\.project`

## 13 Database Model

### 13.1 Very Important – Data Dictionary

Whenever you make any change to database model such as adding new object ALWAYS add comment.

Example is shown on the picture below.



### 13.2 File Locations

Power Designer Database Model:

`\youtestme\db\dbmodel\YOUTESTME_ER_DIAGRAM.pdb`

Utility database scripts:

`\youtestme\db\dbmodel\scripts\`

## 14 Source Control System – Subversive SVN

Policies:

1. Never check in the code that does not compile!
2. Code in SVN has to be complete – anybody should be able to check out entire project from SVN and be able to compile it without any fixing, adding libraries and similar.
3. Eclipse hidden files “.project” and “.classpath” have to be checked into SVN because project cannot be opened in Eclipse without them. Any other file required to open and build the project from scratch has to be checked into SVN.
4. Update and Commit your code frequently to avoid code conflicts.
5. Use SVN to Rename, Move or Remove files.
6. Communicate your development plans to other team members.
7. Do not check in things in SVN that do not belong there (for example: third party software or manuals). We keep those in designated directory.
8. Never put the Java source code in production. Always deploy application as “jar”, “war” or “ear”.
9. Occasionally test your code by checking it out (or exporting it) to empty directory and try to compile it. If there are errors then code is not properly checked into SVN or it is not complete. You should fix it as soon as possible. Please see prescribed procedure below.

### 14.1.1 Refreshing Working Directory

This procedure is required in order to solve following problems:

1. Identify files that are required for the project but they are not checked into SVN
2. Resolve occasional issues with SVN

Procedure should be done every time you suspect that something is not right, files are missing or experiencing issues with SVN that cannot be easily resolved (say by SVN cleanup). It is recommended that it is executed at least once a week even if no problems are encountered.

#### 14.1.1.1 Procedure

Assume that your working directory structure looks like this:

```
C:\Zoran\Development\youtestme
    \youtestmedoc
    \res
    \doc
```

Refreshing procedure should be as follows:

1. Rename directory "C:\Zoran\Development" to "C:\Zoran\Development-Nov-16-2014"
2. Create new directory "C:\Zoran\Development"
3. Check out fresh copy of the code form SVN into "C:\Zoran\Development"  
You can use SVN batch scripts from "\res\Scripts\SVN DOS Scripts\" to do this automatically.
4. Use "C:\Zoran\Development" for development
5. Use old directory "C:\Zoran\Development-Nov-16-2014" only for reference (do not use it for development anymore!). For example if you forgot to check in some files you can find them in this old directory.

## 14.2 SVN Repositories

Example check out:

```
svn --username zoran.kukoljac co http://svn.mallocinc.com/youtestme/trunk youtestme
```

Make sure that you put your username in the line above.

#	YTM Repository URL	Description
1.	<a href="http://svn.mallocinc.com/res">http://svn.mallocinc.com/res</a>	Resources
2.	<a href="http://svn.mallocinc.com/youtestme">http://svn.mallocinc.com/youtestme</a>	YouTestMe Application code
3.	<a href="http://svn.mallocinc.com/youtestmedoc">http://svn.mallocinc.com/youtestmedoc</a>	YouTestMe Documentation

#	DBA Repository URL	Description
1.	<a href="http://svn.mallocinc.com/dba">http://svn.mallocinc.com/dba</a>	Database Analyzer Development
2.	<a href="http://svn.mallocinc.com/doc">http://svn.mallocinc.com/doc</a>	Documentation

#	Utility Repository URL	Description
1.	<a href="http://svn.mallocinc.com/www">http://svn.mallocinc.com/www</a>	Web development
2.	<a href="http://svn.mallocinc.com/test">http://svn.mallocinc.com/test</a>	Sandbox – testing repository
3.	<a href="http://svn.mallocinc.com/admin">http://svn.mallocinc.com/admin</a>	Administrator’s documents (restricted access to administrators only).

NOTE: Use code from "trunk" for development.

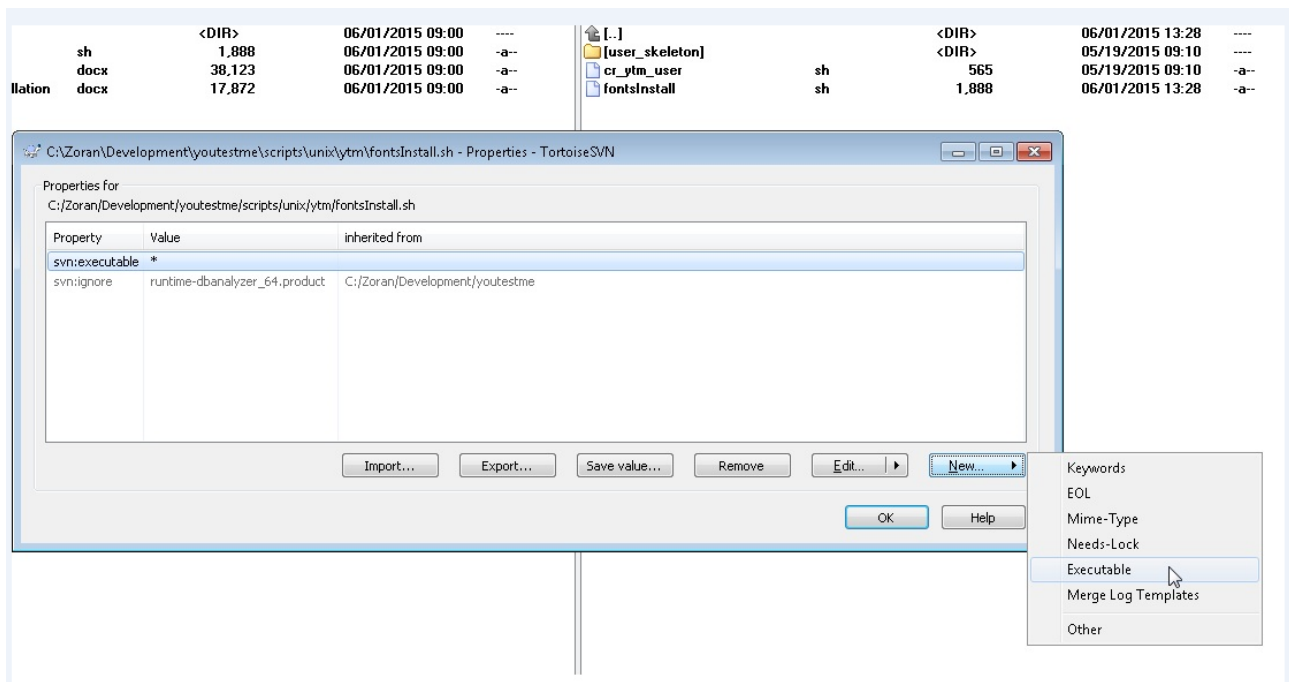
## 14.3 Checking out code from branch - Example

CALL environment

```
svn checkout %REPO%/youtestme/branches/Demo_Mega_v1.0 youtestme
```

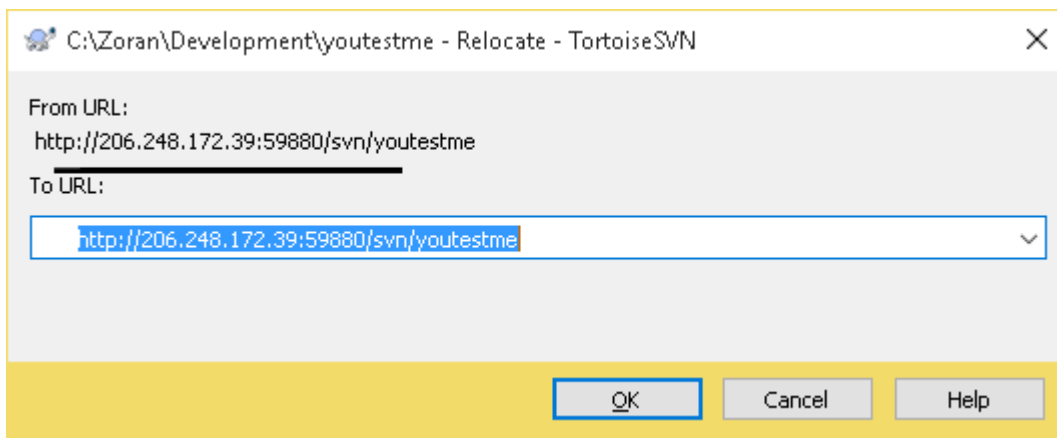
### 14.4 Setting Executable property for UNIX Shell Scripts

UNIX executable file have to have “executable” property set in SVN as shown on the picture below. Do not forget to commit after property is set. Unlike Windows which uses file extensions to determine if file is executable UNIX uses “executable” property of the file.



#### 14.4.1 Relocating SVN Repositories

If SVN repositories change URL (for example moved to another server or IP changes) then you need to do “SVN -> Relocate” in your local copy.





**Example from the command line:**

```
svn relocate http://home.mallocinc.com:59880/svn/res/trunk http://svn.mallocinc.com/res/trunk
```

Where:

Old URL: <http://home.mallocinc.com:59880/svn/res/trunk>

New URL: <http://svn.mallocinc.com/res/trunk>

Alternatively you can do new code checkout using new URL.

## 15 UTF-8 Character Encoding

Unicode UTF-8 character encoding will be used by default. Application has to support all languages and as many special characters as possible.

## 16 WWW Development

Each developer should do development in your own instance of the application server. This way he/she is free to experiment and conflicts are avoided.

### 16.1 Fonts

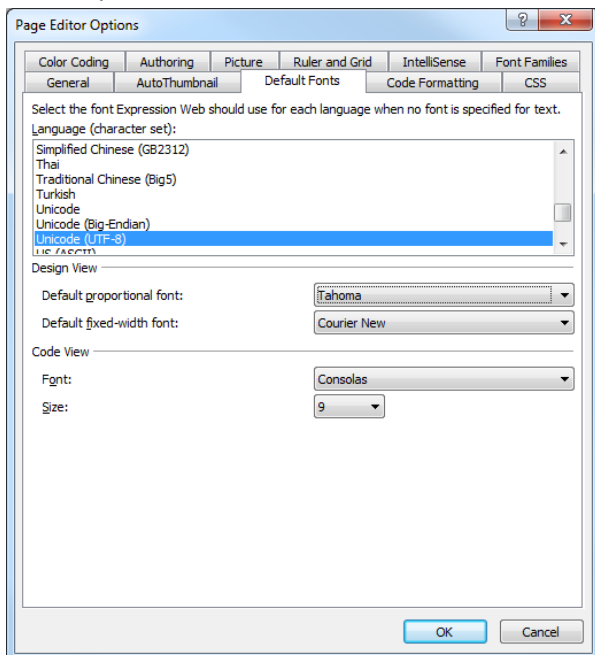
“Tahoma” or “Arial” family fonts are used as default fonts for:

- Text on the web site.
- Documentation

### 16.2 Using Microsoft Web Expression 4

Set default font to “Tahoma” by following this procedure:

- Go to: Tools -> Page Editor Options
- Choose tab: “Default Fonts”
- For every “Language (character set)” change “Default Proportional Font” to “Tahoma”. Please see picture below for reference.



## 17 Good Programming Practices

### 17.1 Important!

- Do as much data processing in the database as possible. Consider processing outside of the database as necessity, not as a good option.
- Minimize number of database hits. Always stream to retrieve, update, delete or insert data in one query.
- It is always better to do data processing, calculation, counting, summing, and sorting in the database than in other language.
- If you need data from more than one table – create view.
- Avoid using cursors – try to do everything in one SQL statement if possible
- Check for errors after every SQL statement.

### 17.2 Optimizing Performances

#### Step by step procedure:

1. Run the query with the same parameters in SQL\*PLUS. If it runs fine go to next step:
2. Run same program outside of Application Server. If it runs fine go to next step:
3. Run the same program with the local database, to eliminate networking issues.
4. Run it in Application server with inserted debug lines to isolate lines that take most of the time.

### 17.3 Automation

Write a script for everything even if you are going to execute it only a few times. You may reuse it later and it may be used as reference what was done.

### 17.4 SQL Coding

#### 17.4.1 Sample 1

Sample of the well formatted SQL Code (every condition on the new line):

```
CREATE OR REPLACE VIEW V_TABLESPACE_USED
(TABLESPACE_NAME
, TABLESPACE_SIZE_MB
, USED
, AVAIL
, USED_VISUAL
, PCT_USED)
AS
SELECT   DF.TABLESPACE_NAME           TSNAME
,        SUM(DF.BYTES)/1024/1024      TBS_SIZE_MB
,        ROUND(NVL(SUM(E.USED_BYTES)/1024/1024,0),2)  USED
,        ROUND(NVL(SUM(F.FREE_BYTES)/1024/1024,0),2)  AVAIL
,        RPAD(' '||RPAD('X',ROUND(SUM(E.USED_BYTES)
*10/SUM(DF.BYTES),0), 'X'),11,'-')  USED_VISUAL
,        ROUND(NVL((SUM(E.USED_BYTES)*100)/SUM(DF.BYTES),0), 2) PCT_USED
```

```

FROM      DBA_DATA_FILES DF
,         (SELECT      FILE_ID
,              SUM(NVL(BYTES,0)) USED_BYTES
          FROM      DBA_EXTENTS
          GROUP BY FILE_ID) E
,         (SELECT      SUM(NVL(BYTES, 0)) FREE_BYTES
,              FILE_ID
          FROM      DBA_FREE_SPACE
          GROUP BY FILE_ID) F
WHERE     E.FILE_ID(+) = DF.FILE_ID
AND       DF.FILE_ID   = F.FILE_ID(+)
GROUP BY DF.TABLESPACE_NAME
UNION
/*
   Include Temporary tablespace
*/
SELECT    DF.TABLESPACE_NAME          TSNAME
,         SUM(DF.BYTES)/1024/1024      TBS_SIZE_MB
,         ROUND(NVL(SUM(E.USED_BYTES)/1024/1024,0),2) USED
,         ROUND(NVL(SUM(F.FREE_BYTES)/1024/1024,0),2) AVAIL
,         RPAD(' '||RPAD('X',ROUND(SUM(E.USED_BYTES)
*10/SUM(DF.BYTES),0), 'X'),11,'-') USED_VISUAL
,         ROUND(NVL((SUM(E.USED_BYTES)*100)/SUM(DF.BYTES),0), 2) PCT_USED
FROM      DBA_TEMP_FILES DF
,         (SELECT      FILE_ID
,              SUM(NVL(BYTES,0)) USED_BYTES
          FROM      DBA_EXTENTS
          GROUP BY FILE_ID) E
,         (SELECT      SUM(NVL(BYTES, 0)) FREE_BYTES
,              FILE_ID
          FROM      DBA_FREE_SPACE
          GROUP BY FILE_ID) F
WHERE     E.FILE_ID(+) = DF.FILE_ID
AND       DF.FILE_ID   = F.FILE_ID(+)
GROUP BY DF.TABLESPACE_NAME
ORDER BY 6

```

Note comma (“,”) at the begging of the line – not at the end.

Also note alignment of the columns and aliases.

There should be NO **blank lines** and **trailing spaces** in SQL statements.

### 17.4.2 Sample 2

```

/*=====
View: V_ST_QUIZ

This view is used only to load data from staging tables to
permanent tables.

=====*/
CREATE OR REPLACE VIEW V_ST_QUIZ AS
SELECT
    ST_QUIZ.ST_QUIZ_ID
, ST_QUESTION.ST_QUESTION_ID
, ST_ANSWER.ST_ANSWER_ID
, ST_QUIZ.USERNAME
, ST_QUIZ.PASSWORD
, ST_QUIZ.USER_ID
, ST_QUIZ.QUIZ_NAME
, ST_QUIZ.DEFAULT_DURATION

```

```
,ST_QUIZ.USERS_COMMENT
,ST_QUIZ.DEFAULT_ENABLED_FROM
,ST_QUIZ.DEFAULT_ENABLED_TO
,ST_QUIZ.RESULT_TRANSPARENCY
,ST_QUIZ.DURATION_FACTOR
,ST_QUIZ.STATUS
,ST_QUIZ.CREATE_USER_ID
,ST_QUIZ.CREATE_DATETIME
,ST_QUESTION.ARTIFICIAL_QUESTION_ID      QST_ARTIFICIAL_QUESTION_ID
,ST_QUESTION.QUESTION_TEXT
,ST_QUESTION.PICTURE
,ST_QUESTION.DURATION
,ST_QUESTION.DIFFICULTY
,ST_QUESTION.POINTS
,ST_QUESTION.ORDINAL_NUMBER              QUESTION_ORDINAL_NUMBER
,ST_ANSWER.ARTIFICIAL_QUESTION_ID        ANS_ARTIFICIAL_QUESTION_ID
,ST_ANSWER.ANSWER_TEXT
,ST_ANSWER.ORDINAL_NUMBER                ANSWER_ORDINAL_NUMBER
,ST_ANSWER.CORRECT_ANSWER_IND
FROM ST_QUIZ,
     ST_QUESTION,
     ST_ANSWER
WHERE ST_QUIZ.ST_QUIZ_ID                  = ST_QUESTION.ST_QUIZ_ID
AND   ST_QUIZ.ST_QUIZ_ID                  = ST_ANSWER.ST_QUIZ_ID
AND   ST_QUESTION.ARTIFICIAL_QUESTION_ID = ST_ANSWER.ARTIFICIAL_QUESTION_ID
ORDER BY ST_QUIZ.ST_QUIZ_ID
        ,ST_QUESTION.ST_QUESTION_ID
        ,ST_ANSWER.ST_ANSWER_ID
;

comment on table V_ST_QUIZ is
'Used during load from staging tables into permanent tables in the database';

comment on column V_ST_QUIZ.ST_QUIZ_ID is
'Primary key';

comment on column V_ST_QUIZ.ST_QUESTION_ID is
'Primary key of table table ST_QUESTION_ID';

comment on column V_ST_QUIZ.ST_ANSWER_ID is
'Primary key of table table ST_ANSWER';

comment on column V_ST_QUIZ.USERNAME is
'Username has to be unique across the system.
Use of email adress is encouraged however it cannot be enforced because many
user will not have e-mail addresses or they will not provide it for various
reasons. ';

comment on column V_ST_QUIZ.QUIZ_NAME is
'Name (Title) of this test.';

comment on column V_ST_QUIZ.DEFAULT_DURATION is
'Test duration in seconds.
This is time available to complete the test once test instance started.';

comment on column V_ST_QUIZ.DURATION_FACTOR is
'Factor (in percents, for example: -40%, +120%, +300%) - how much the available
time for answering the questions should be shortened or prolonged.
Apply duration factor to the length of every question.
On this way duration of the questions can be parametrized.';

comment on column V_ST_QUIZ.STATUS is
```

```
'"S" - Loaded only in staging tables
"L" - Loaded into permanent tables, data from staging tables can be deleted';

comment on column V_ST_QUIZ.QST_ARTIFICIAL_QUESTION_ID is
'This is number assigned by user in order to link questions with answers in
excel.';

comment on column V_ST_QUIZ.PICTURE is
'This is picture that is displayed with question.';

comment on column V_ST_QUIZ.DURATION is
'Duration of the question in seconds.
This is optional value and it is intended to be used to limit time available to
answer this question.';

comment on column V_ST_QUIZ.DIFFICULTY is
'This is degree of difficulty.
Higher number represents higher difficulty of question.';

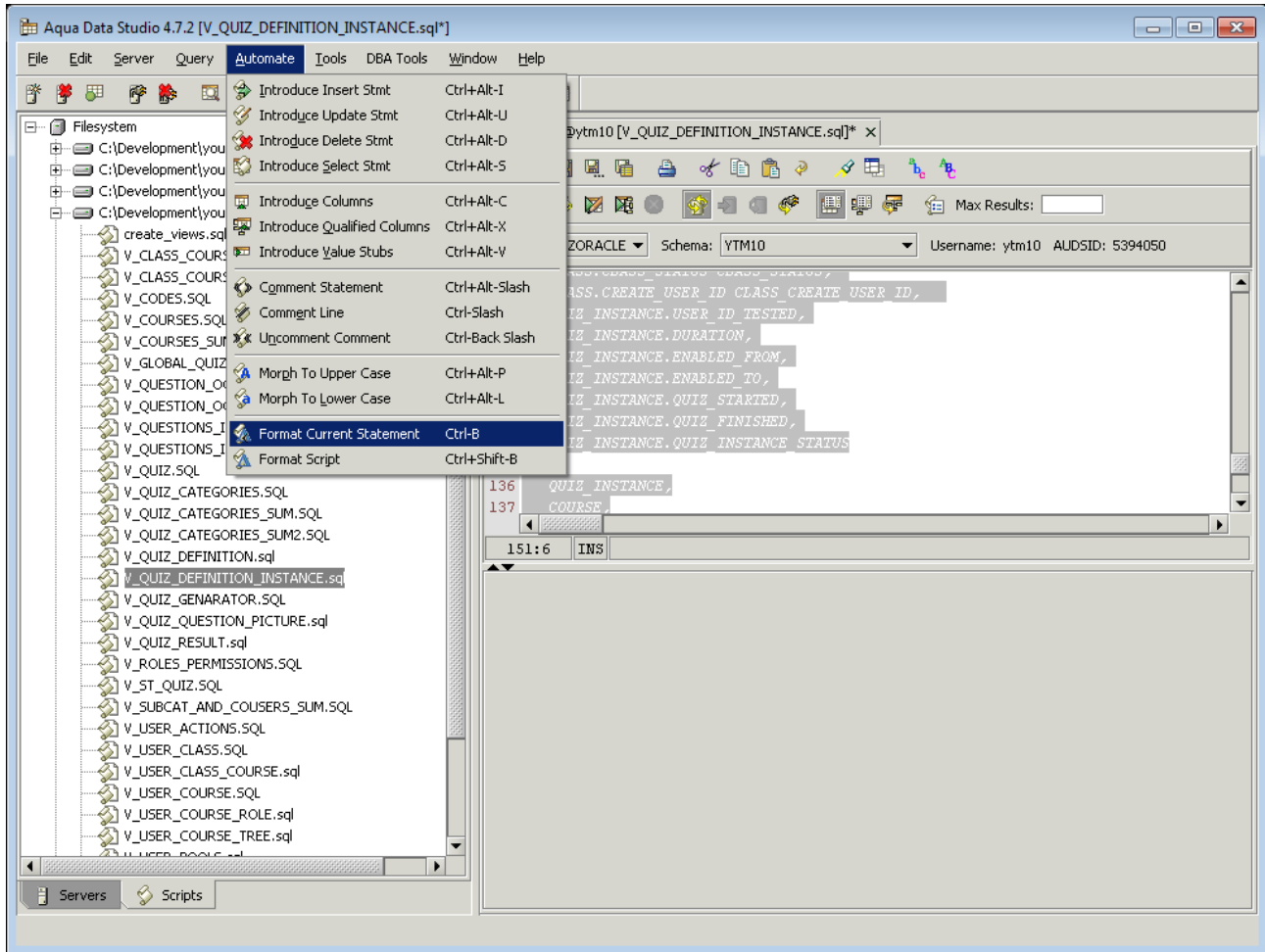
comment on column V_ST_QUIZ.POINTS is
'Number of points that person gets by answering this question correctly.
For example difficult questions can score more points than the others.
This is the "weight" of the question. ';

comment on column V_ST_QUIZ.QUESTION_ORDINAL_NUMBER is
'This number determines the order of this question as it appears on the test.
Lower numbers are displayed first. If this number is not present then questions
will be displayed in default order.';

comment on column V_ST_QUIZ.ANSWER_ORDINAL_NUMBER is
'This number determines the order of this answer as it appears on the test.
Lower numbers are displayed first. If this number is not present then answers
will be displayed in default order.';

comment on column V_ST_QUIZ.CORRECT_ANSWER_IND is
'Indicates if this is the correct answer.';
```

You can use configurable SQL code formatter from Aqua Data Studio to assist you with complex statements:



### 17.4.3 SQL Formatting Utilities

#### 17.4.3.1 Poor SQL

<http://poorsql.com/>

or command line tool:

`\res\ProgramFiles\sqlformatter\SqlFormatter.exe`

Sample usage:

DOS:> `sqlformatter v_user_pools.sql`

### 17.4.3.2 SQLinForms

<http://www.sqlinform.com/default.html>

Highly recommended by:

[http://www.dba-oracle.com/t\\_formatting\\_oracle\\_sql.htm](http://www.dba-oracle.com/t_formatting_oracle_sql.htm)

**!!! Do not code like this !!!**

```
CREATE OR REPLACE VIEW V_QUIZ_DEFINITION_INSTANCE ("QUIZ_INSTANCE_ID", "QUIZ_DEFINITION_ID",
"USER_ID", "QUIZ_CATEGORY_ID", "QUIZ_NAME", "DEFAULT_DURATION", "USERS_COMMENT",
"DEFAULT_ENABLED_FROM", "DEFAULT_ENABLED_TO", "DISPLAY_ANSWER_IND", "DISPLAY_CORRECT_IND",
"DURATION_FACTOR", "QUIZ_DEF_CREATE_USER_ID", "QUIZ_DEF_CREATE_DATETIME", "QUIZ_DEF_UPDATE_USER_ID",
"QUIZ_DEF_UPDATE_DATETIME", "CATEGORY_NAME", "QUIZ_CATEGORY_DESCRIPTION", "COURSE_ID",
"COURSE_NAME", "COURSE_CODE", "COURSE_STATUS", "COURSE_DESCRIPTION", "COURSE_CREDITS", "CLASS_ID",
"CLASS_NAME", "CLASS_CODE", "CLASS_ACTIVE_FROM", "CLASS_ACTIVE_TO", "CLASS_STATUS",
"CLASS_CREATE_USER_ID", "USER_ID_TESTED", "QUIZ_INST_DURATION", "QUIZ_INST_ENABLED_FROM",
"QUIZ_INST_ENABLED_TO", "QUIZ_INST_STARTED", "QUIZ_INST_FINISHED", "QUIZ_INSTANCE_STATUS") AS....
```



## 17.4.4 WRONG SQL ALIGNMENT

```
SELECT
  QUIZ_INSTANCE.QUIZ_INSTANCE_ID QUIZ_INSTANCE_ID,
  QUIZ_INSTANCE.QUIZ_DEFINITION_ID,
  QUIZ_INSTANCE.USER_ID_TESTED USER_ID_TESTED,
  QUIZ_RESULT.QUIZ_RESULT_ID QUIZ_RESULT_ID,
  QUIZ_RESULT.QUESTION_ID QUESTION_ID,
  QUIZ_RESULT.ANSWER_TEXT ANSWER_TEXT,
  QUIZ_RESULT.NOT_SURE_FLAG NOT_SURE_FLAG,
  QUIZ_RESULT.POINTS_ASSIGNED POINTS_ASSIGNED,
  QUIZ_RESULT.CREATE_USER_ID Q_RESULT_CREATE_USER_ID,

WHERE UNIQUE QUIZ.QUIZ_DEFINITION_ID = QUIZ_DEFINITION.QUIZ_DEFINITION_ID
AND UNIQUE QUIZ.UNIQUE QUIZ_ID = QUIZ_QUESTION.UNIQUE QUIZ_ID
AND QUIZ_QUESTION.QUESTION_ID = QUESTION.QUESTION_ID
AND QUESTION.QUESTION_ID = ANSWER.QUESTION_ID (+)
```

## 17.4.5 CORRECT SQL ALIGNMENT

```
SELECT
  QUIZ_INSTANCE.QUIZ_INSTANCE_ID      QUIZ_INSTANCE_ID
, QUIZ_INSTANCE.QUIZ_DEFINITION_ID
, QUIZ_INSTANCE.USER_ID_TESTED        USER_ID_TESTED
, QUIZ_RESULT.QUIZ_RESULT_ID          QUIZ_RESULT_ID
, QUIZ_RESULT.QUESTION_ID             QUESTION_ID
, QUIZ_RESULT.ANSWER_TEXT             ANSWER_TEXT
, QUIZ_RESULT.NOT_SURE_FLAG           NOT_SURE_FLAG
, QUIZ_RESULT.POINTS_ASSIGNED         POINTS_ASSIGNED
, QUIZ_RESULT.CREATE_USER_ID          Q_RESULT_CREATE_USER_ID

WHERE UNIQUE QUIZ.QUIZ_DEFINITION_ID  = QUIZ_DEFINITION.QUIZ_DEFINITION_ID
AND   UNIQUE QUIZ.UNIQUE QUIZ_ID      = QUIZ_QUESTION.UNIQUE QUIZ_ID
AND   QUIZ_QUESTION.QUESTION_ID       = QUESTION.QUESTION_ID
AND   QUESTION.QUESTION_ID            = ANSWER.QUESTION_ID (+)
```

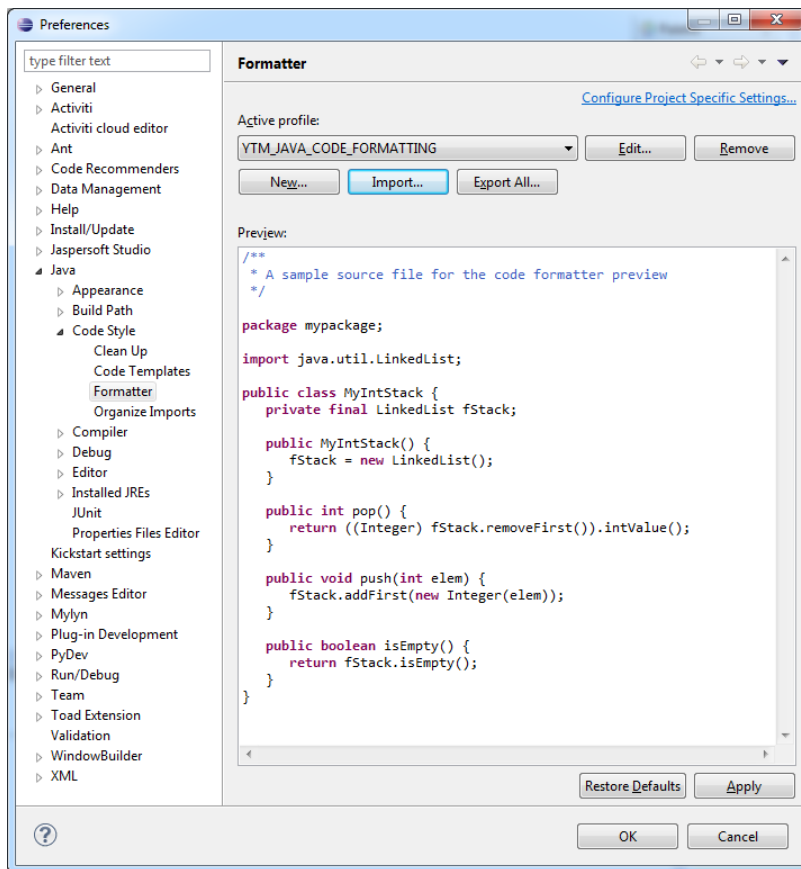
## 17.5 Java Code Formatting

We should all use same formatting style. Use this code formatting configuration file for Eclipse:

In Eclipse, go to “Window” -> “Preferences” and choose “Formatter” as show on the picture below. Then use button “Import” and choose this XML file:

`\youtestme\cfg\Eclipse\ytm_eclipse_java_code_formatting.xml`

Click “OK” to close the window.



Java code formatter is executed when you place cursor anywhere in the Java code widow and press: “Ctrl”+”Shift”+”F”

You can format all code in certain directory with this procedure:

1. Right-click on directory
2. Choose “Source”
3. Click “Format”

All code should be uniform across the project.

## 17.6 Eclipse Source Clean Up

By configuring and using Eclipse Source “Clean Up” you can accomplish many different things at one on all source code selected:

- organizing imports
- cleaning redundant variables
- removing extra spaces at the end of the lines
- various other code cleanups and amendments

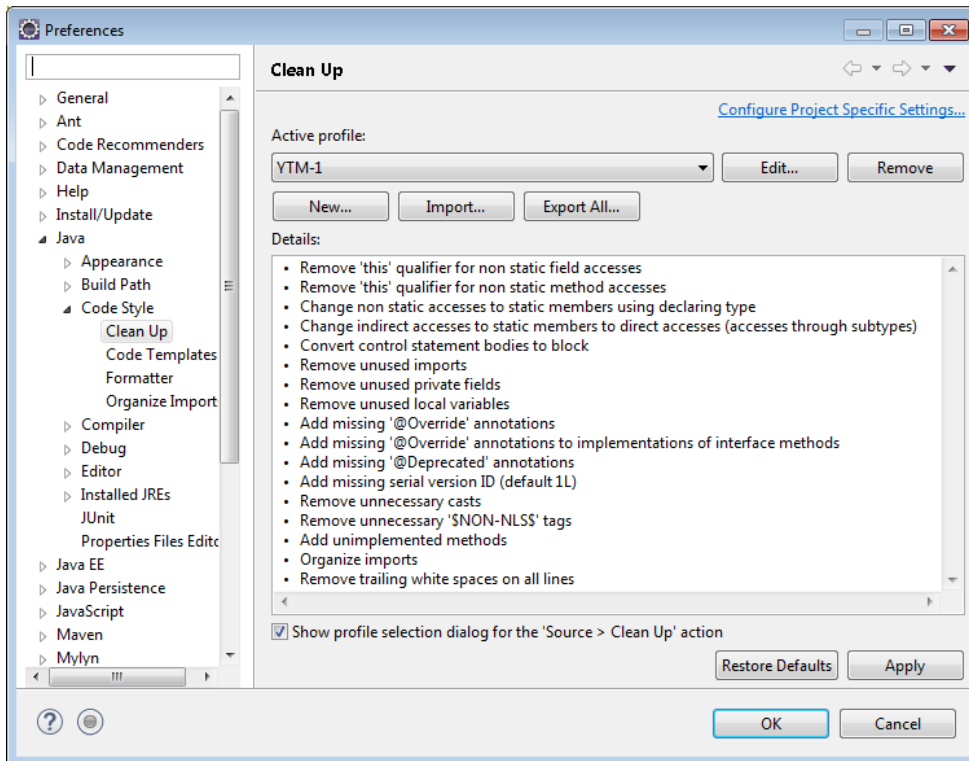
In Eclipse Package Explorer right click on the packages that you want to clean up. Then choose “Source” -> “Clean Up”

### **Important:**

When you install eclipse or change workspace you need to import (see screen below) standard YTM profile which is located in SVN here:

```
\youtestme\cfg\Eclipse\ytm_code_cleanup_profile.xml
```

Also, don't forget to set up YTM standard formatting profile as explained in [Java Code Formatting](#) before doing source clean up.



## 17.7 Eliminate Java Warnings

Java warnings in eclipse should be eliminated as much as possible.

This can be accomplished to great extent by performing a source clean up procedure in Eclipse which is explained above.

Also, a lot of warnings come from unused imports and those can be easily cleaned up automatically in Eclipse by selecting Java packages and pressing “Ctrl+Shift+O”

### 17.7.1 Clean Java Imports

Java code should not have unused imports. They can be quickly cleaned by pressing “Ctrl+O” in Eclipse.

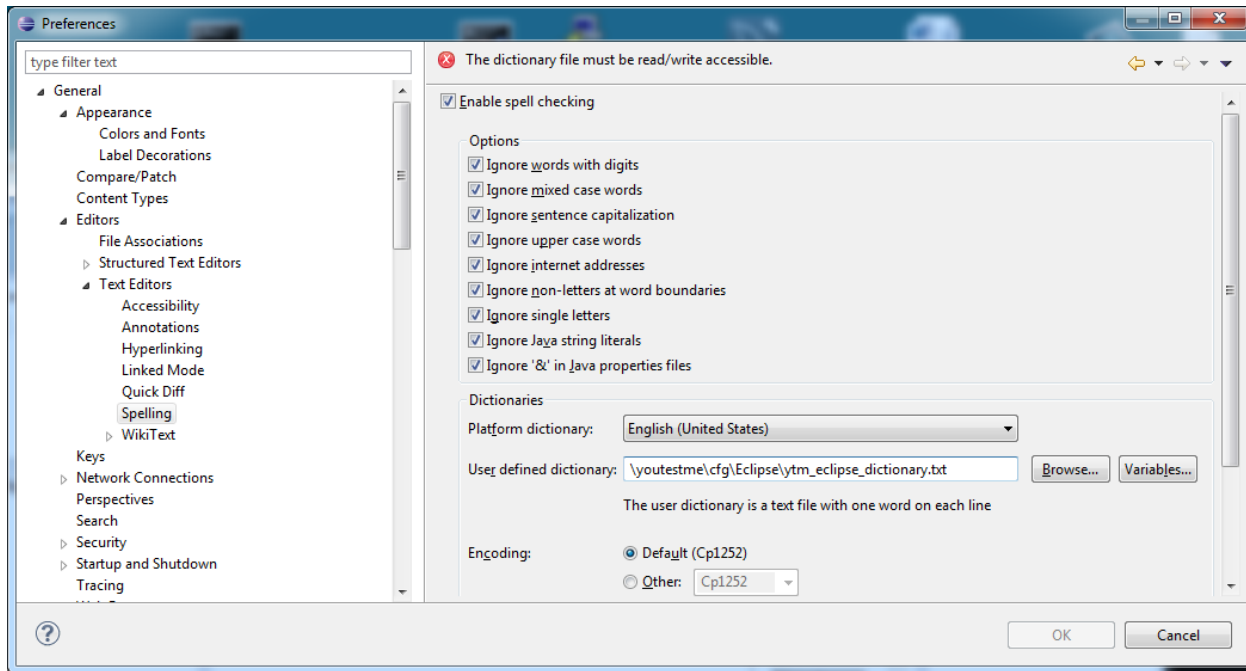
## 18 Setting up Eclipse English Dictionary

Team should be using the same English dictionary for the project.

The location of the file is:

`\youtestme\cfg\Eclipse\ytm_eclipse_dictionary.txt`

In eclipse it is set up as shown on the screen:



Team members should check in dictionary file into SVN.

This way, new words will be available to other team members.

## 19 User Interface design

Gaps marked in red should be constant and independent of screen resizing.

The image shows a screenshot of a web form with several input fields. Red lines and arrows are drawn over the form to indicate constant gaps. A vertical red line is drawn to the left of the labels, and another vertical red line is drawn to the right of the input fields. Red arrows point from these lines to the gaps between the labels and the input fields, and between the input fields and the right edge of the form. The form contains the following fields:

- Class name: Accounting I
- Class code: [empty]
- Active from: 5-Oct-2004
- Active to: 5-Oct-2015
- Status: Active
- Create user: [empty]

## 20 FTP for Developers

Hostname	Username	Password	Remote directory
ftp://home.mallocinc.com	ytm	22ytmftp33	/My_Passport/FTP_malloc
ftp://s117953983.onlinehome.us	u37512132-ytmftp	22ytm12!	

## 21 Instructional Videos

#	Link to the Presentation	Description
1.	<a href="http://videos.youtestme.com/SVNPractice.mp4">http://videos.youtestme.com/SVNPractice.mp4</a>	SVN Practice
2.	<a href="http://videos.youtestme.com/svncrashcourse.mp4">http://videos.youtestme.com/svncrashcourse.mp4</a>	SVN Crash Course
3.	<a href="http://videos.youtestme.com/GDAOUserRolesSample.mp4">http://videos.youtestme.com/GDAOUserRolesSample.mp4</a>	How to use GDAO on YouTestMe Project
4.	<a href="http://videos.youtestme.com/GDAOTransferObjects.mp4">http://videos.youtestme.com/GDAOTransferObjects.mp4</a>	GDAO Transfer Objects (TO)
5.	<a href="http://videos.youtestme.com/RunDBAFromEclipse.mp4">http://videos.youtestme.com/RunDBAFromEclipse.mp4</a>	Running DBA from Eclipse
6.	<a href="http://videos.youtestme.com/YTMEvironments.mp4">http://videos.youtestme.com/YTMEvironments.mp4</a>	Relevant information about Development and Integration testing environments

## 22 Testing

### 22.1 Expected Response Time for User Interface

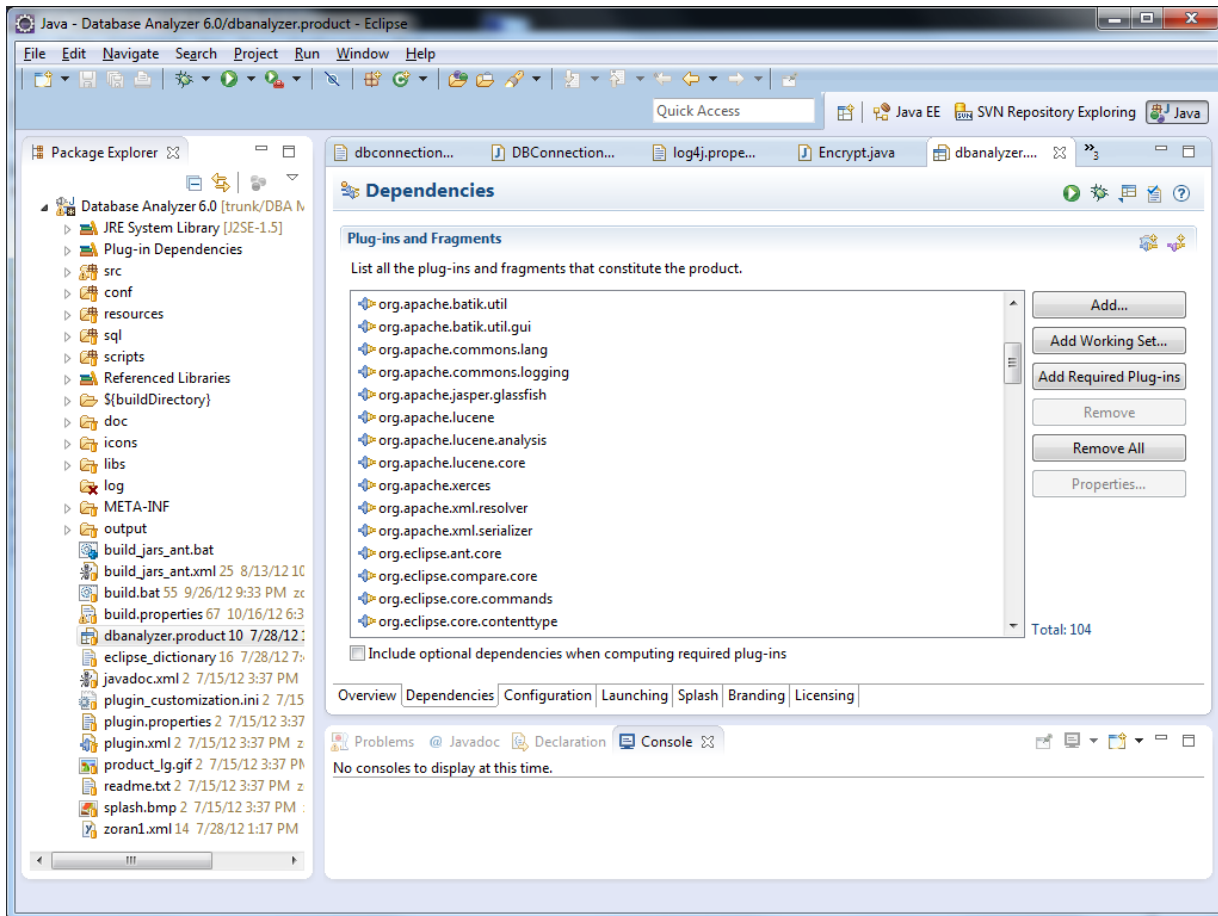
Response time in table below is given for complex operations. It is assumed that response time for simple operations is instant.

#	Response Time	Severity and Action Required
1.	< 3 seconds	Normal
2.	Between 3 and 6 seconds	Acceptable but optimization is desired
3.	Between 6 and 15 seconds	Slow – optimization is required
4.	Between 15 and 25 seconds	Function too slow, optimization or redesign is required in next release
5.	> 25 seconds	Function is practically unusable, optimization or redesign is required as soon as possible

## 23 Eclipse DBA Application Troubleshooting

If you have problem running Database Analyzer from Eclipse try one or both of the following:

1. Start eclipse with “eclipse –clean”
2. In “dependencies” remove all invalid plug-ins (they will have invalid symbol in front) and then click on “Add Required Plug-Ins” (picture below). This is because you may have 32 bit platform and you are trying to run 64 bit plug ins (or vice versa)



## 24 Manual Application Build and Deploy

Use windows remote desktop to log in to application server:

IP: [home.mallocinc.com:55240](http://home.mallocinc.com:55240) (primary application server)

IP: [home.mallocinc.com:56240](http://home.mallocinc.com:56240) (secondary application server)

Note that if application is accessed on port “55...” then it runs on server with remote desktop on port “55240”. Similarly, if application is accessed on port “56...” then it runs on server with remote desktop on port “56240”.

Log in using one of three usernames:

- ytm
- ytm2
- ytm3



For example, if you would like to build and restart application “/you30” then you should log in as “ytm3”.

Go to directory:

```
\youtestme\www_source\redeploy.bat
```

Open DOS command window and run this script:

```
“redeploy.bat”
```

This script should do the following:

- Stop Tomcat
- Update code from SVN
- Compile and build the code
- Deploy the code
- Start Tomcat

You can see the log from the whole process in this directory:

```
\youtestme\www_source\log\
```

Log file will have name in format “redeploy\_” + datetime, for example:

```
redeploy_Wed11-19-2014@12-03-23.41.log
```

Application can be accessed at links below:

Primary application server:

```
http://206.248.172.39:55241/ytm/
```

```
http://206.248.172.39:55242/ytm20/
```

```
http://206.248.172.39:55243/ytm30/
```

Secondary application server:

```
http://206.248.172.39:56241/ytm/
```

```
http://206.248.172.39:56242/ytm20/
```

```
http://206.248.172.39:56243/ytm30/
```

Demo web site:

```
http://demo.youtestme.com
```

or

<http://206.248.172.39:56243/ytm30/>

IP address 206.248.172.39 could be replaced by "home.mallocinc.com"

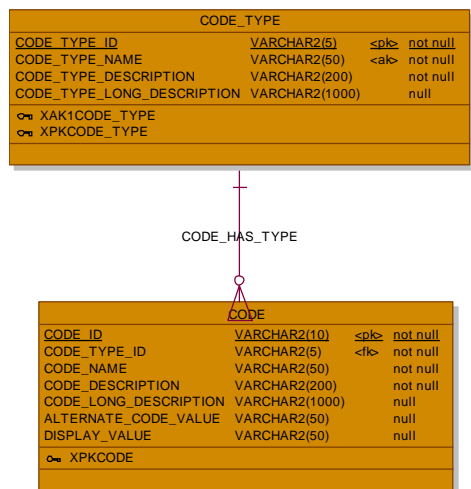
## 25 Code Deployment Check Pint

Code Deployment Check Point ensures that system components are in sync and should be done at least once a month.

1. Generate Database from PowerDesigner Model
2. Generate new GDAO code form the newly created database
3. Load demo data in new database
4. Build application and make sure there are no error and warnings
5. Start application an perform sanity check to make sure that all or functionalities are working

## 26 Codes

There are various codes required in programs. There are all stored in the database in these two tables:



Values from the codes are created and maintained in these two spreadsheets and they are loaded in the database as soon as database is created:

`\youtestme\batch_source\data\initial_data\System\Code.xls`

`\youtestme\batch_source\data\initial_data\System\Code_Type.xls`

CODE\_ID column represents a code itself and it is a Primary Key in table CODES, meaning it has to be unique. This is intentional because this way all codes are unique across the system and there is no possibility for confusion (for example: "what code type is this code?")

From February 15th, 2015 naming convention for CODE\_ID changed. Codes created prior to this date can stay unchanged. New convention is as follows:

CODE\_ID = CODE\_TYPE\_ID + unique\_character\_sequence  
CODE\_ID\_TYPE should be exactly 5 characters long

For example, user statuses:

CODE\_TYPE\_ID="USRST"

CODE\_ID="USRSTACTIVE" - user is active

CODE\_ID="USESTASUSPE" - user is suspended

CODE\_ID="USESTADELETE" - user is deleted

This new convention should make code more readable.  
Also it will be easier to come up the unique CODE\_IDs.

## 27 Using Powerdesigner

If you want to connect to the database using SAP Powerdesigner 16.5 you would need to have Oracle Client 11 32 bit version. Note that 64 bit version is not supported by Powerdesigner 16.5.

Connection from to the database is useful if you want to do reverse engineering of the database or comparison between the model and the database.

Currently Oracle 32bit Client is installed on Windows virtual machine: "ZWin7Ult64-Dev4"

## 28 Code Review from January 15th 2015

### 28.1 Database Connection Pool

### 28.2 Usage of loops and cursor in the database

## 28.3 Serialized Classes

## 28.4 Source Code Formatting

## 28.5 Source Code Warnings

# 29 Changing Oracle Password in Oracle 12c

```
SQL> show user
USER is "SYS"
SQL> alter user system identified by oracle;
alter user system identified by oracle
*
ERROR at line 1:
ORA-65066: The specified changes must apply to all containers
```

```
SQL> alter user system identified by oracle containers=all;
alter user system identified by oracle containers=all
*
ERROR at line 1:
ORA-00922: missing or invalid option
```

```
SQL> alter user system identified by oracle container=all;
alter user system identified by oracle container=all
*
ERROR at line 1:
ORA-65050: Common DDLs only allowed in CDB$ROOT
```

```
SQL> alter session set container=CDB$ROOT;
```

Session altered.

```
SQL> alter user system identified by oracle container=all;
```

User altered.

# 30 SVN Code HTTP Download

Every night the newest code is uploaded on server from where they could be downloaded using HTTP protocol. This is convenient when the code could not be obtained through SVN.

[http://downloads.mallocinc.com/svn/res\\_nosvn.zip](http://downloads.mallocinc.com/svn/res_nosvn.zip)

[http://downloads.mallocinc.com/svn/youtestme\\_nosvn.zip](http://downloads.mallocinc.com/svn/youtestme_nosvn.zip)

[http://downloads.mallocinc.com/svn/youtestmedoc\\_nosvn.zip](http://downloads.mallocinc.com/svn/youtestmedoc_nosvn.zip)

[http://downloads.mallocinc.com/svn/doc\\_nosvn.zip](http://downloads.mallocinc.com/svn/doc_nosvn.zip)

[http://downloads.mallocinc.com/svn/dba\\_nosvn.zip](http://downloads.mallocinc.com/svn/dba_nosvn.zip)

### 30.1 Database Exports

<http://downloads.mallocinc.com/svn/ytm1.zip>

<http://downloads.mallocinc.com/svn/ytm2.zip>

<http://downloads.mallocinc.com/svn/ytm3.zip>

<http://downloads.mallocinc.com/svn/ytm10.zip>

<http://downloads.mallocinc.com/svn/ytm11.zip>

<http://downloads.mallocinc.com/svn/ytm20.zip>

<http://downloads.mallocinc.com/svn/ytm30.zip>

<http://downloads.mallocinc.com/svn/ytm40.zip>

<http://downloads.mallocinc.com/svn/ytm50.zip>

## 31 Exporting database with SQL Developer

Oracle Data Pump is the replacement for the original Export and Import utilities. Oracle Data Pump enables very high-speed movement of data and metadata from one database to another.

The Data Pump Export and Import utilities have a similar look and feel to the original utilities, but they are much more efficient and give you greater control and management of your import and export jobs.

### 31.1 Create directory for data pump

In the following example, SQL statement creates a directory object named test\_dir that is mapped to a directory located at D:\dumpfolder.

```
SQL> CREATE DIRECTORY test_dir AS 'D:\dumpfolder';
```

After a directory is created, you need to grant READ and WRITE permission on the directory to other users.

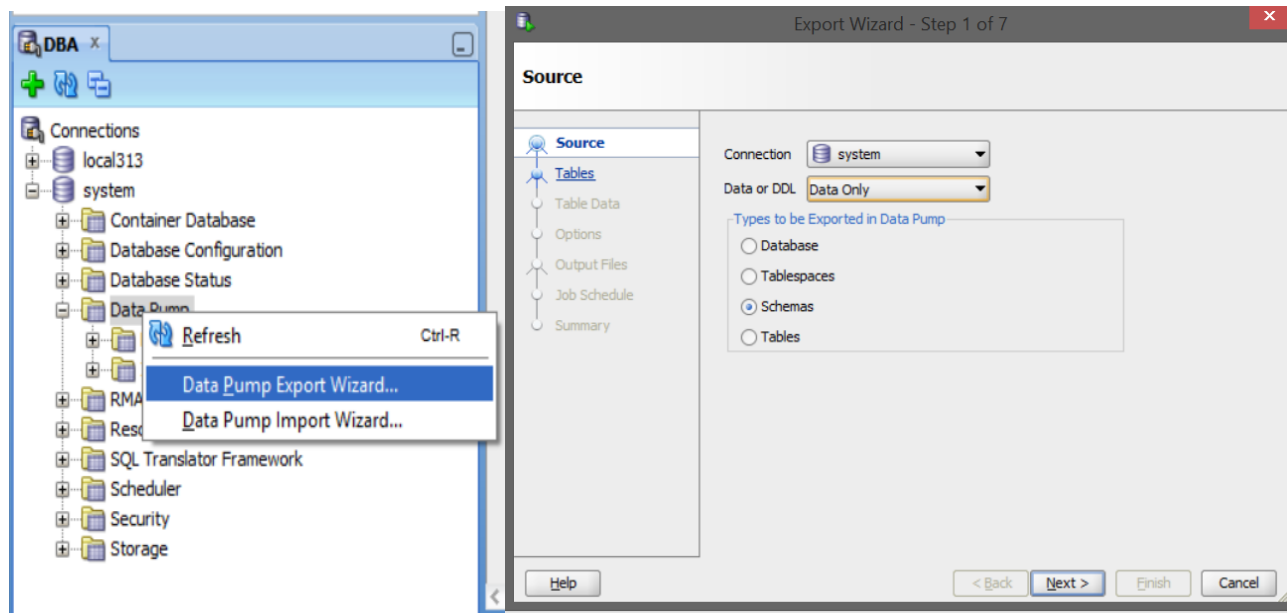
```
SQL> GRANT READ,WRITE ON DIRECTORY test_dir TO ytm5;
```

## 31.2 Data Pump Export Wizard

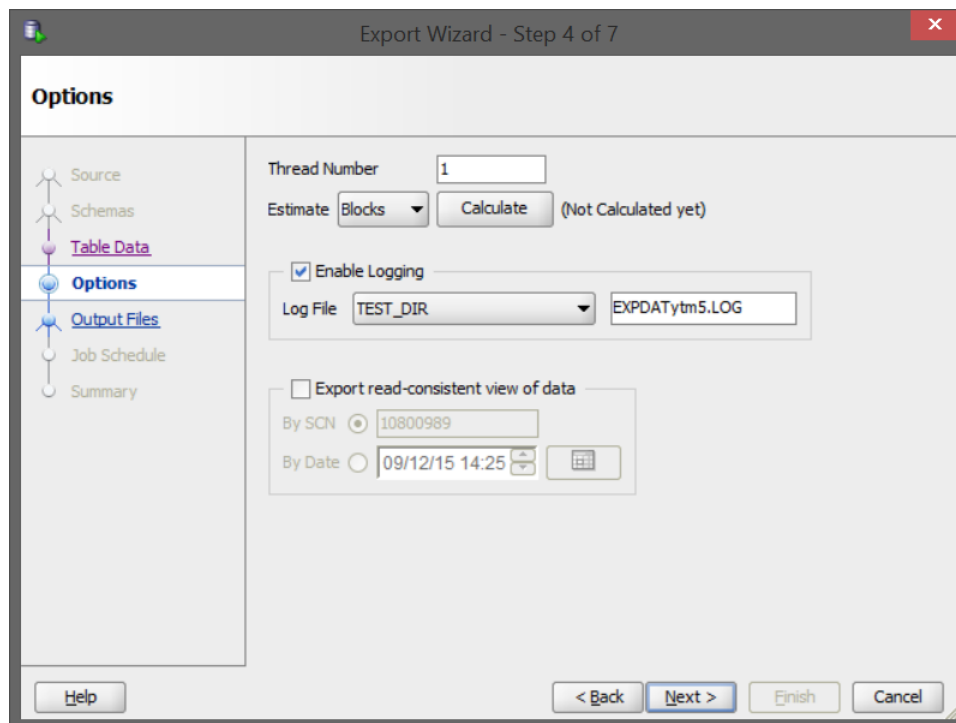
To access the export wizard go to “View”, then “DBA”

You will need to have DB privileges to use the data pump feature.

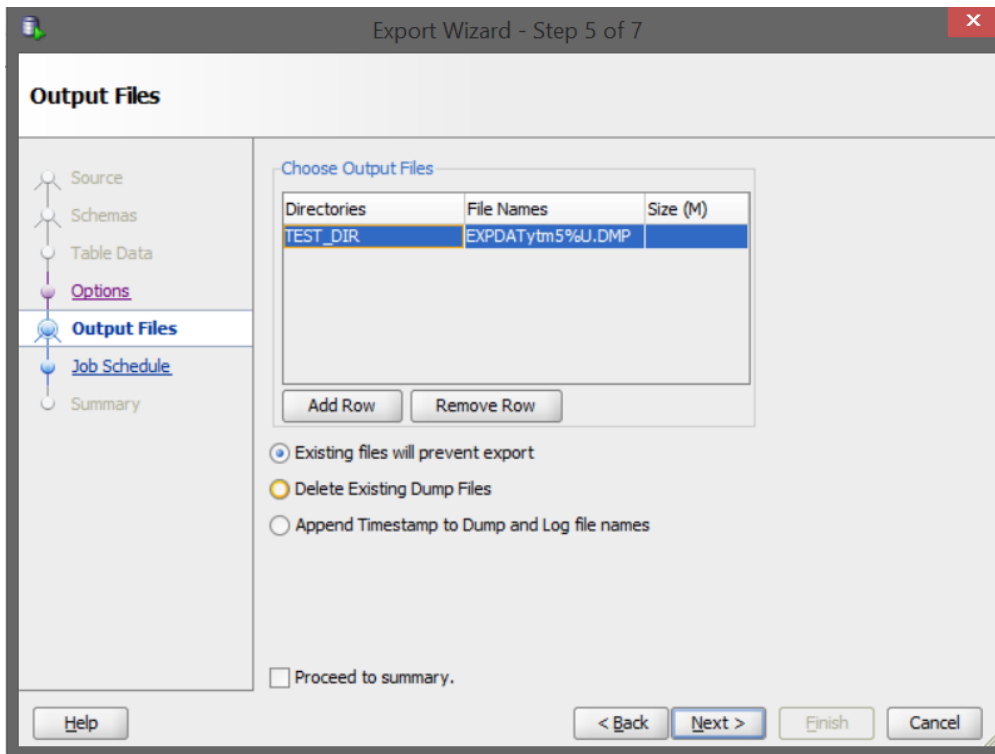
Choose what kind of export you need.



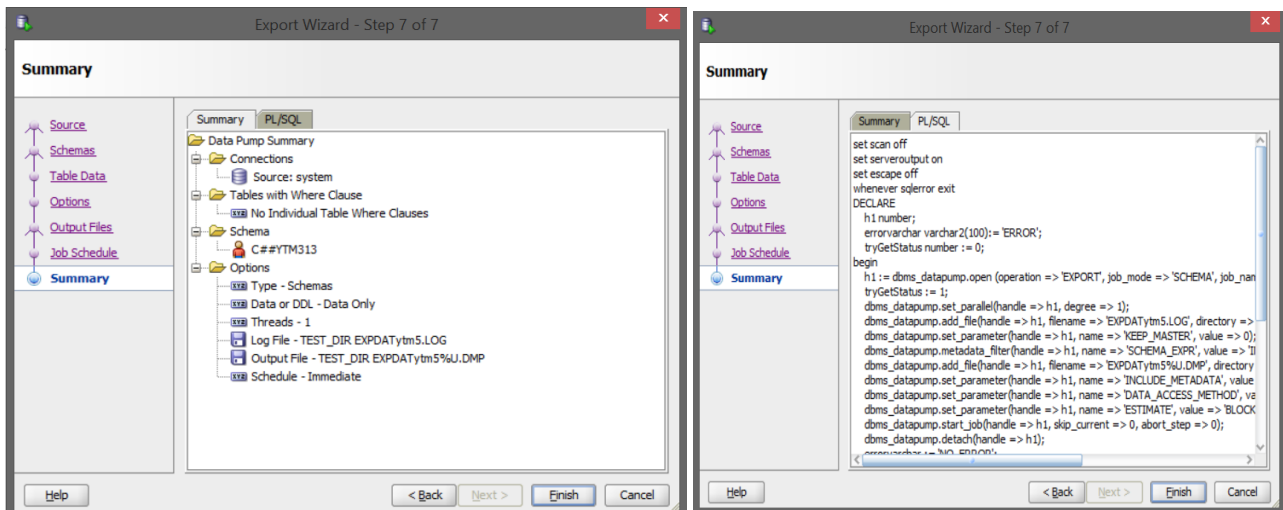
Choose your directory that you created and name your log file.



Also choose where you want to export your dump files and how to name them, there is default limit for dump files 100MB, so there will be a few files, "%U" means that if it is a bigger file it will create EXPDATytm501, EXPDATytm502, etc.

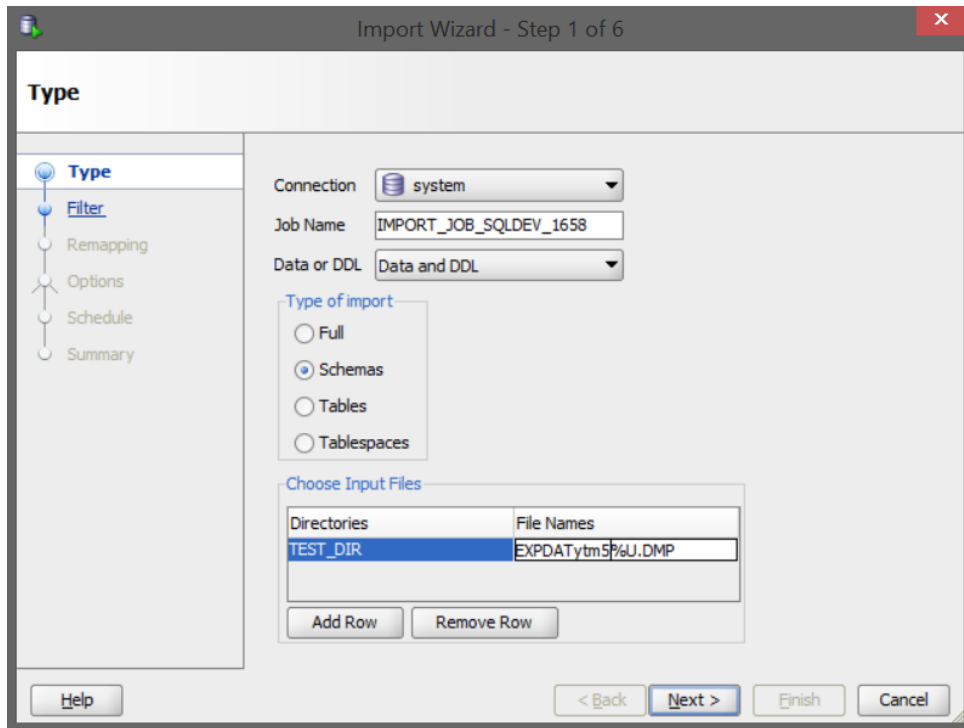


Details are in the summary right before export and after exporting in log file in your directory.

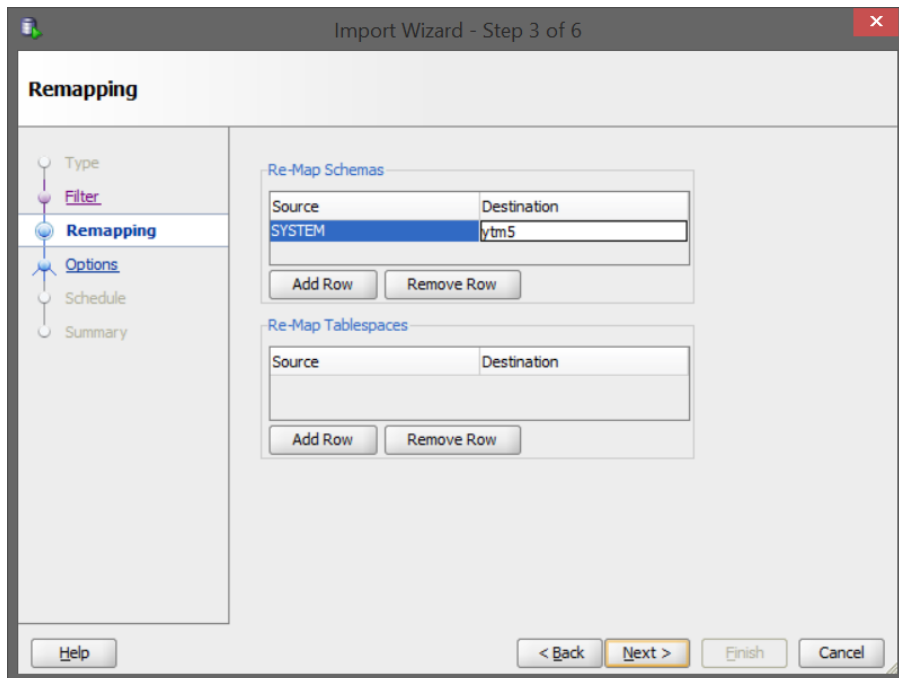


### 31.3 Import Data Pump Wizard

Select in what directory is your dump file, and file name.



Specify to what user you want to transfer data, then create log file and import the data.





## 32 Unix/Linux – Transfer Files From And To

Use GUI Utility WinSCP

<https://winscp.net/eng/download.php>

