Assignment One

Individual or Paired Lab Assignment

Weighting 30% of total course mark

Module No	IT7359
Title	Database design and implementation
Level	7

Task – To build and an Oracle Enterprise RDBMS Server environment.

We will fully utilize lab classes to work on this assignment and resolve problems etc. However, you will have to put in a considerable amount of time outside scheduled labs to complete the assignment

Aim to have this assignment completed by the end of the mid trimester break.

THE FINAL Due Date is Monday 25th April.

Course Elements Covered by this Assignment

These course elements are referenced to the "Learning Outcomes" in the course outline.

1 Design, develop and implement an enterprise database environment

The Task : Build an Enterprise Oracle RDBMS Environment.

- I am happy for people to work individually or as a team pair. For team pairs I will expect more to be delivered – team pairs will both receive the same mark.
- You will be provided with Oracle Media, DB Server and Client software on the B labs file servers. This will allow you to install and configure the RDBMS on a virtual machine, which you will also have to build yourself.
- I will spend 45 mins or so each lab introducing some DBA concepts, from Oracle Architecture to Security and other related information.
- There are no step by step lab handouts for this assignment, I won't be holding your hand. You will have to figure out how to do this almost entirely on your own.
- **Your task : to build and configure an Enterprise Oracle DBMS Environment and a client installation – and demonstrate this working environment**

Note – you have **complete** personal responsibility for goal setting, planning, resourcing, researching and managing processes involved in this project. You are completely accountable for determining, achieving and evaluating personal outcomes in this project. This is consistent with NZQA expectations of courses at Level 7 (3rd Year degree).

Think of it as a mini version of the final 3rd year project.

This project will form 30% of the overall assessment of the course.

You need to do your own research. Of course as the lecturer of this course I will help where possible and point you in the right direction but you are to think of this as a mini final project. Technically it is not that difficult, but it I expect you to **do it properly** (this means, appropriate planning, documentation and professional implementation with satisfactory evidence that this process has been followed.

Broad Requirements

Note, these requirements are not necessarily in any order nor complete. The onus is on **you** to decide just exactly what you will deliver (however I would generally expect the list of ***Probably Compulsory Requirements*** below to be completed)

In order to complete and pass the project I am be looking for

"*An adequate amount of work to a professional standard*".

There are some minimum criteria expected of a project that is run to professional standards – use all your experience and knowledge to decide what this might be (and document it as such). Ask for my feedback at anytime (through intelligent questioning).

There is no compulsory requirement to design or implement a 'data model' we are physically implementing an Enterprise DBMS as opposed to a relational data model. However you may deem it necessary to implement a small database in order to demonstrate functionality of the database, web interface etc.

Within the deliverables I will be looking for evidence of "due diligence", process, research, methodology, all equating to real time spent learning – to a level expected of 3rd year bachelor degree students.

Probably Compulsory Requirements

I would suggest the following as bare minimum deliverables to demonstrate to me that something of value has been delivered.

1. A working Oracle Enterprise Database implemented on your Virtual Machine.
2. Demonstrated Client connectivity to the Oracle DBMS Server using at least two client applications. (for example, SQL Developer, and Enterprise Manager Console.)
3. Appropriately created user accounts. I suggest demonstrating 3 levels of users (Roles) – for eg. *Administrator, Power User*, and *Guest* style users.
4. Appropriate levels of security implemented via ROLES and PRIVILEGES for Roles.
5. Documentation for the installation and environment – (consider the audience to be a reasonably competent DBA).
6. Individual personal log/reflections/timesheets. Record time spent and other items of interest.
7. Implementation and demonstration of the Enterprise Toolset – this includes the browser based Enterprise console.

Other Considerations / Requirements

You will need to sort out what from the below list needs to be performed. It is entirely up to you to decide what is in scope and what is not. This list is merely a suggestion.

- Develop and document an implementation plan
- Specify the database

  Configuration options, tablespaces, extent and block size, rollback allocation etc. Redo (Txn) log files – how many, archivelog mode?

  Which Oracle Version are we using, 9i, 10g, 11g ??
  64bit / 32bit?

- Research and apply necessary upgrades/patches to Oracle installation. (note installation media will be at a certain version, a variety of "patches" may well be current and need to be installed – you need to figure this out).
- Specify a security plan

  Implement appropriate user profiles, access rights, DBA accounts etc

- Develop User documentation
- Develop Technical Documentation
- Project management considerations
- Change management plan, Develop Change control procedures
- Research and develop implementation plan for Oracle Apache HTTP server, test web scripting PHP, XSQL or Oracle JSP pages showing connectivity to DB (this would be highly regarded).
- Test Client installations
- Test RDBMS from client installs, can you create a table, create a procedure, etc.
- Test database web access from clients
- Develop DBA Maintenance plan, scripts and schedules
- Develop performance monitoring plan / scripts
- Develop a backup and recovery plan. Have you backed your DB up? Do you know how to?
- Develop a disaster recovery plan.

Team Pairs

You are permitted to work as a team pair. This means a group of two students only. Alternatively you may work alone. Team pairs will work together dividing the work load – Obviously I would expect more to be delivered for team pair groups. Both members of the team will receive the same final mark.

Broad Domains of responsibility

Below are some examples of broad topic areas that may be addressed either by individuals or team pairs.

Security

Develop documents and implements database security policy and plan, create Oracle ROLES, user names and logins, assign roles to logins and document a comprehensive security policy.

Database Administration

Design, develop, document and implement Oracle Enterprise RDBMS.

Maintenance / Upgrade

Research existing Oracle installation – provide/share information with DBA team, discover and document via Metalink upgrades to Oracle installation and apply upgrades as necessary. Develop and document a DB backup strategy, DBA maintenance scripts and schedules for existing DEV database instance. Modify scripts so that they can be run against the new database instance.

Internet Development/implementation

Design, develop, document and implement browser / database connectivity application. Test and demonstrate web client to DB connectivity, PhP, XSQL, XML, JSP,

What you need to do now!

- If you are forming a team pair – do it this week.
- Start developing a plan. Most of you have done Systems Analysis and Design and Project Management – Develop a terms of reference or project proposal. Decide what you are going to deliver – start researching the Oracle documentation
- Check out Oracle's e-Delivery site https://edelivery.oracle.com/ let me know if there is any extra media you need and I will download onto a portable hard drive.
- Check out Oracle's OTN – Technical Network. For support and help.
- Start developing a project plan together ASAP!
- "*Time waits for no man*" Don't sit around and do nothing - you will fail. The time period is short and it is highly unlikely that I will give out time extensions by mid April we will need to be getting on with other topics.

A final note.

If you feel daunted by this consider these thoughts.

- It's actually easier than it looks.

- For many of you, this time next year you will be either in a job or looking for one. Most of you, once employed will have to work with little supervision, there will be few people to help you solve problems (they are all too busy working out their own stuff), you'll just have to work it out yourself. Consider this project "a real world practice session".

- You don't achieve anything worthwhile without some pain. If you could get a degree out of a weetbix packet – everyone would have one.

- Keep in mind the economic climate we are currently in. Jobs are more difficult to get and keep. There are two types of people in industry – *doers* and *dodgers*. People that can do something of value and worth will be favored over those that spend their time actually avoiding doing anything of any value.

- If you do a good job, you can put on your CV that you have implemented an 11g Oracle Enterprise Server environment - many DBAs in industry have not done this.

- Use all and any resources available to you – the online documentation on Oracle online is vast and comprehensive – all the answers are there.