**DEPARTMENT OF COMPUTING**

**ISYS114 – ASSIGNMENT TWO**

**(Marked out of 60- worth 15%)**

<span style="color:red">**Due: 6:00pm Friday 06 October 2017**</span>

<u>Plagiarism</u>

Plagiarism is where you use the work of another person and present it as your own. This is akin to stealing and is not permitted. If you are caught encouraging, assisting or committing plagiarism, you will receive negative marks for the work and possibly suspension from the unit.

The University's plagiarism rules are at:

http://www.mq.edu.au/policy/docs/academic_honesty/policy.html

It is in your interest to familiarise yourself with these rules.

# CASE STUDY:

Mr. Aegon Targaryen is the data architect hired by Macquarie University to work on the spreadsheets and convert it into relational databases. Aegon has decided to prototype the 'conference sessions' aspect of the university. Your task is to help Aegon construct the tables in the database and write frequently run queries.

## Task 1 (4 marks)

Create tables based on the schema given below:

**Table Name: BUILDING**

| Column-name | Datatype |
| --- | --- |
| BUILDINGNO (PK) | CHAR(2) |
| BUILDINGWING | VARCHAR2(15) |
| BUILDINGLANE | VARCHAR2(15) |

**Table Name: ROOM**

| Column-name | Datatype |
| --- | --- |
| BUILDINGNO (PK, FK) | CHAR(2) |
| ROOMNO (PK) | CHAR(2) |
| ROOMCAPACITY | NUMBER (3) |

**Table Name: CONFERENCESESSION**

| Column-name | Datatype |
| --- | --- |
| SESSIONID (PK) | CHAR(4) |
| BUILDINGNO(FK) | CHAR(2) |
| ROOMNO (FK) | CHAR(2) |
| SPEAKERID (FK) | CHAR(2) |
| SESSIONDATE | DATE |
| SESSIONPRICE | NUMBER(4,2) |

**Table Name: SPEAKER**

| Column-name | Datatype |
| --- | --- |
| SPEAKERID (PK) | CHAR(2) |
| SPEAKERNAME | VARCHAR2 (20) |
| SPEAKERADDRESS | VARCHAR2(50) |
| SPEAKERPHONE | CHAR (12) |

# Task 2 (4 marks)

Populate the tables with values given below. Data is case-sensitive

**BUILDING TABLE**

| BUILDINGNO | BUILDINGWING | BUILDINGLANE |
|---|---|---|
| B1 | NORTH WEST | WALLY'S WALK |
| B2 | NORTH | HOUSTON ROAD |
| B3 | WEST | LEIGH'S AVENUE |
| B4 | SOUTH EAST | BEECROFT ROAD |

**ROOM TABLE**

| BUILDINGNO | ROOMNO | ROOMCAPACITY |
|---|---|---|
| B1 | R1 | 121 |
| B1 | R2 | 253 |
| B2 | R1 | 275 |
| B2 | R2 | 126 |
| B2 | R3 | 124 |
| B3 | R1 | 256 |
| B3 | R2 | 324 |
| B4 | R1 | 431 |
| B4 | R2 | 345 |
| B4 | R3 | 231 |

**SESSIONS TABLE**

| SESSIONID | BUILDINGNO | ROOMNO | SPEAKERID | SESSIONDATE | SESSIONPRICE |
|---|---|---|---|---|---|
| SS01 | B1 | R1 | S1 | 3-05-17 | 12.50 |
| SS02 | B2 | R1 | S2 | 4-06-17 | 19.45 |
| SS03 | B1 | R2 | S2 | 13-05-17 | 12.67 |
| SS04 | B4 | R2 | S4 | 13-06-17 | 14.56 |
| SS05 | B3 | R2 | S5 | 23-05-17 | 14.56 |
| SS06 | B3 | R1 | S5 | 3-06-17 | 16.32 |
| SS07 | B4 | R2 | S3 | 13-05-17 | 21.78 |
| SS08 | B1 | R2 | S2 | 6-06-17 | 16.82 |
| SS09 | B2 | R3 | S4 | 13-05-17 | 17.90 |
| SS10 | B4 | R1 | S3 | 6-06-17 | 16.37 |

**SPEAKER TABLE**

| SPEAKERID | SPEAKERNAME | SPEAKERADDRESS | SPEAKERPHONE |
|-----------|-------------|----------------|--------------|
| S1 | ANAKIN SKYWALKER | 12, KHALEESI ST, WESTEROS, NSW-2113 | (02)98773241 |
| S2 | LEIA ORGANA | 22, SANSA AV, WINTERFELL, VIC-3125 | (03)93244362 |
| S3 | LUKE SKYWALKER | 67, JON ARRYN RD, VALE, NSW-2338 | (02)92341203 |
| S4 | CHEWBACCA | 92, OBERYN ST, DORN, VIC-3199 | (03)91210988 |
| S5 | R2D2 | 90, THEON RD, IRON ISLANDS, NSW-2192 | (02)91239890 |
| S6 | YODA | 56, CERCEI LN, KINGS LANDING, NSW-2144 | (02)91250359 |

# Task 3 (3 marks)

Write an SQL Statement that displays all the details of buildings. Display only buildings that are located on 'road' and somewhere in Northern Wing. (E.g. If wing contains the word 'NORTH' somewhere in it.) Sort the results by building number in descending order

# Task 4 (3 marks)

Write an SQL Statement that displays the details of speakers (name and address). Display only postcode in address.

# Task 5 (3 marks)

Write an SQL Statement that displays all the details of speakers (ID and name). Display only speakers from 'VIC' who do not have single-worded names.

# Task 6 (3 marks)

Write an SQL Statement that displays all the details of rooms. Display only rooms from 'B1' and 'B4', If the capacity of a room is not between 120 (exclusive) and 160 (exclusive). Capacity must be displayed, not just with the value but with the text 'PEOPLE' appended to it with a space (E.g. '60 PEOPLE'). Use proper aliases for any computational columns.

# Task 7 (3 marks)

Write an SQL Statement that displays the details (id, date and price) of sessions. Display sessions that are scheduled on June, 2017 or cost $14 or less. Price must be prefixed with "$" and the results must be sorted by the date of the sessions, in descending order.

# Task 8 (4 marks)

Write an SQL statement that displays the details of sessions (id and date) that are scheduled if the speaker's phone number has '03' as the area code. You MUST use equi-join to obtain the answer

## Task 9 (4 marks)

Rewrite Task 8 without a join and use a sub query instead

## Task 10 (4 marks)

Write an SQL statement that displays the details of sessions (id, buildingno and roomno) that are scheduled in rooms that are not in 'B2' with at least 180 seating capacity. You MUST use a join to obtain the answer. The result must not include duplicate values

## Task 11 (4 marks)

Write an SQL Statement that displays all the details of sessions. Display sessions that schedule a speaker who has a name with letter 'A' as the third character or have fewer than 7 characters in their name. Your result should also include the names of speakers displayed in lowercase.

## Task 12 (4 marks)

Write an SQL Statement to find the number of sessions scheduled in each room in every building. Display the room details (building number and room number) and their corresponding number of sessions. Perform a multi-level sort with building number and the number of sessions. You do not have to include rooms that have not been scheduled yet.

## Task 13 (6 marks)

Write an SQL Statement that displays only the top 2 buildings and their corresponding average price of a session. (The top 2 buildings are those which have the highest average costs).

## Task 14 (5 marks)

Write an SQL Statement that displays the details of sessions - id, wing of the building the session is scheduled for, the name of the speaker, room capacity and the session date. Include only the sessions scheduled on 6th of June, 2017 or 13th of May, 2017.

## Task 15 (6 marks)

Write an SQL Statement that displays the details of sessions (id, total price). If a session gets completely booked out, include only those sessions that would make over $5000. Sort the results in descending order. [Session getting booked out, means every seat in the rostered room has been paid for/booked]

## Submission File

- Download the file 'Submit_This.txt' provided in your Assignment-2 folder on iLearn. This will be the template for you to insert your SQL statements.
- Rename this file to your StudentID_Name..txt. Example: 41122111_JackDaniels.txt
- To achieve each of the tasks described above, you need to answer your tasks by writing queries, run them, check the results, copy and insert the codes at the right place in the template.

## Submission Instructions

- You need to submit this file back on iLearn (Assignment-2 link) after you have inserted all the answers, before the due date.
- Format of the file will be .txt, do not change it to a .sql file.

## To Note

- There will be a penalty, if file is not renamed to your StudentID_Name.txt
- There are many clients that you can use to connect to an Oracle Database, and you may use any of them. The marker will run your script on an SQL Developer client (the same client we use on our lab computers).
- You could download SQL developer and work on the assignment from home. [http://www.oracle.com/technetwork/developer-tools/sql-developer/downloads/index.html] (It is a free client)
- Make sure your Java is also up to date. [http://www.oracle.com/technetwork/java/javase/downloads/index.html]
- Marks for each of the tasks have been indicated next to each task.
- You need to create all the tables from scratch, populate them and work on the SQL queries. There are 15 tasks in total.

## FAQs from last semester

1. When you say, display the details (id, name) of conference sessions, what does it mean?
    > It means you need to print the details from the session table. But instead of every single column, you only have to display what's asked in the bracket.
2. Sometimes, you are adding sentences that say, display 'something else' as well. What do we do for that?
    > Add that to your SELECT too!
3. Can I submit a word document/pdf instead?
    > No, we're sorry! Please use the template and follow the guidelines
4. Can I make my own data types up? I don't like the ones you've given
    > No, we're sorry!
5. Is SQL Developer available on iLab?
    > Yes, it is!
6. Can I change the data to lower case! I feel like SQL is screaming at me.

No, we're sorry! Please stick to the case since it is data

7. For each SQL statement for each task should we only look to display the data that is specifically requested or can we also include a column that gives the table meaning or readability?

   Please display the ones that are asked. Nothing extra :)

8. How to create a table with two PK?

   You mean like a composite PK? Please refer back to lectures/workshops!

9. You didn't teach this in our lectures. How am I supposed to do this?

   95% of the assignment is based on whatever we have done in the lectures or workshops. You will have to do a bit of research and understand how SQL works. If the assignment doesn't make you think, what's the point?

10. Do I have to include apostrophe (') in data? I see them in BUILDINGLANE column

    Yes, you do

11. Do we need constraints in create query for PK and FKs?

    Yes, you should!

12. What does 'order of execution mean'?

    It means you put tables in the order in which you would create and populate them.