



MIDDLE EAST TECHNICAL UNIVERSITY  
NORTHERN CYPRUS CAMPUS

DEPARTMENT  
OF  
COMPUTER ENGINEERING

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**CNG 351**  
**Data Management and File Structures**  
**Assignment 4**  
(7% of actual grade)

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**DUE DATE:** 28 December 2022, 23:55 (Cyprus Time).

## PURPOSE

This assignment aims to help you revise SQL in general. It aims to help you revise both Data Definition and Data Manipulation Components of SQL. In the first part, you are given a full database with data, and you need to query the database. This part aims to help you revise especially Select, Aggregation and also Join operations. In the second part, you are given a schema and you need to create the tables, populate them and then query. Therefore, this second part aims to help you revise Create, Insert, Select and Join operations.

## IMPORTANT RULES

1. You will need to implement and test all your queries.
2. For implementation, you need to use Oracle Express Edition. In particular, you will need to download and install Oracle 21C Express Edition which is available here: <https://www.oracle.com/database/technologies/xe-downloads.html>. Further instructions are given below.
3. For each query that you implement, in your report, you will need to include a screenshot of your query and also the output of your query. For creating your tables, you will need to show that they are successfully created in your DB.
4. Create a ZIP file that includes PDF file for your solution, and also three sql files called SecondBuyQueries.sql, SummerInternshipData.sql and SummerInternshipQueries.sql. Submit only one ZIP file to ODTUClass, one team member is enough to upload the solution.
5. Assignments will be completed by a team of two people that was formed for the previous assignment. if there is a problem with your partner, please let us know.
6. Please submit a report that includes a cover page with the team details including their names/surnames and also student IDs.

## GRADING

This assignment has two parts and the overall grading will be as follows:

1. Use Case 1 (FindJob): 35 points [Including FindJobQueries.sql];
2. Use Case 2 (SummerInternship): 60 points [including SummerInternshipData.sql and SummerInternshipQueries.sql];
3. Report: 5 points. A good report means type written, complete (every section fulfilled), with clear explanations in English (where relevant), and submitted via ODTUCLASS as one combined PDF document. The first page of the report

must be a title page which should clearly state team details and assignment number. Each use case should also include Assumptions clearly written. The footer of all subsequent pages should be numbered in the format x of y (eg 2 of 6), etc.

## DATABASE CREATION and QUERYING

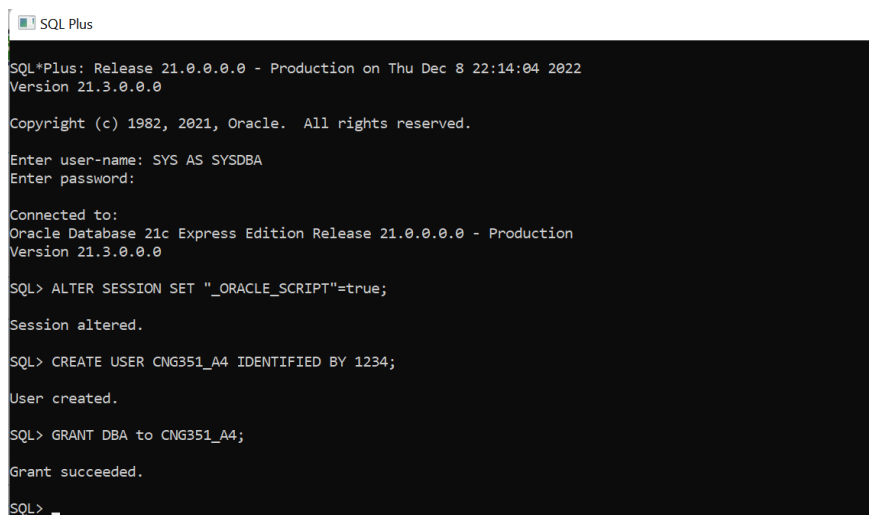
### Install and Setup Oracle

In order to continue with the following two use cases, you will need to first install and set up Oracle. Please do the following first:

- First of all, you will need to download and install Oracle 21C from here: <https://www.oracle.com/database/technologies/xe-downloads.html>.
- You will then need to open SQL\*Plus. Further information about SQL\*Plus is available here: <https://docs.oracle.com/en/database/oracle/oracle-database/21/sqpug/index.html>.
- You will need to execute the following commands to create a user account (replace *user-name* with the one you would like to use as your user name and also replace *password* with your own password) that you can use for this assignment. You need to execute the following commands:

```
sqlplus
SYS AS SYSDBA
ALTER SESSION SET "_ORACLE_SCRIPT"=true;
CREATE USER user-name IDENTIFIED BY password;
GRANT DBA to user-name;
```

Please see the following figure;



```
SQL Plus

SQL*Plus: Release 21.0.0.0.0 - Production on Thu Dec 8 22:14:04 2022
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: SYS AS SYSDBA
Enter password:

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> ALTER SESSION SET "_ORACLE_SCRIPT"=true;

Session altered.

SQL> CREATE USER CNG351_A4 IDENTIFIED BY 1234;

User created.

SQL> GRANT DBA to CNG351_A4;

Grant succeeded.

SQL> _
```

## Use Case 1 – FindJob (45 pts)

FindJob is a social networking site that aims to allow people to connect to other professionals and find a job in North Cyprus. Users and employers can connect through FindJob's social network and build real-world professional relationships. FindJob aims to create groups, publish articles, publish job postings and allow users to create profiles and post photos, and more. The database design for this system has the following schema, domains. Below we explain how you can load this database to your local Oracle instance.

### Schema

**Member** (member\_id , name, surname, email, username, password, tel, gender, country, works\_for\_company [FK: Company: company\_id])

**Company** (company\_id, companyname, address, companytel)

**ConnectionList**(member\_id [FK: Member: member\_id],  
connection\_member\_id [FK: Member: member\_id], status, connection\_date)

**GroupInfo**(group\_id, name, description, type, manager\_id[FK:Member: member\_id],  
created\_by [FK: Member: member\_id], creation\_date)

**Post**(post\_id, date, content, title, posted\_by[FK:Member: member\_id] )

**GroupMembers**(group\_id [FK: Group: group\_id], member\_id [FK: Member: member\_id],  
status, join\_date)

**Assessment**(assessment\_id, name, asses\_level)

**AssessmentTaken** (member\_id [FK: Member: member\_id],  
assessment\_id [FK: Assessment:assessment\_id], asses\_date, status)

### **Domains**

*Member.gender* = Male, Female, NonBinary, Unknown

*Date* is stored in the system as "DD/MM/YYYY", e.g., 01/12/2022

*Group.type* = Standard, Unlisted

*GroupMembers.status* = Active, Passive

*Assessment.level* = Beginner, Expert

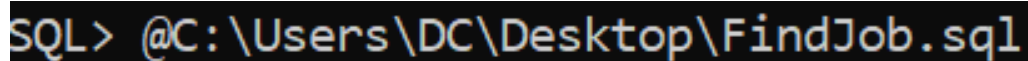
*AssessmentTaken.status* = Pass, Fail

## Data Installation

As part of this assignment you are given an SQL file that includes all the commands to create the tables given above, the constraints and also the data. First of all you need to load this file. In order to load it, you will need to execute the following command on SQL\*Plus:

```
@path-to-file/FindJob.sql
```

Please note that *path-to-file* shows the path to the folder that you stored this file. Also, having spaces in the folder names could cause error. An example screenshot can be seen below.



```
SQL> @C:\Users\DC\Desktop\FindJob.sql
```

## Submission Instructions

For this part, you need to do the following:

- You need to submit a file called FindJobQueries.sql that includes all your SQL queries for the queries asked in the following section.
- You also need to include the queries and also the screenshots of the output of the queries in your PDF report.

## Queries

1. List the id, name, surname and telephone number of all members in the system.
2. List the name and the date of creation of the groups that are “Unlisted” (type) and created by the member with the ID of 1333.
3. List the name, surname, and email address of the Members who created Standard groups after the 1st of January 2022.
4. We would like to display all the posts (listing their title and content) that are made by all the connections of the member called “Yeliz Yesilada”.
5. There is a company called “Curiosity” and this company would like to receive a report that shows the list of employee names (name/surname) that has created a group, the name of that group and also the manager name/surname of that group.
6. There is an assessment in the system named as “Introduction to Phyton”. We would like to list the name/surname of the members and how many times they took this assessment.

## Use Case 2 – NCCCloud (50 pts)

NCCCloud is a recent established company aiming to provide cheap cloud gaming solutions in Northern Cyprus. Their database engineers designed the database and they also have data ready to be inserted in the database, you now need to create the database, add the given data and write queries for this database.

The data to be inserted is given in the file called NCCCloudData.xlsx.

### Schema

You will need to write the necessary commands to create the following tables with all the necessary constraints given below. In your report, you will need to include full queries.

**User**(username, name, surname, email, dob)

**Subscription**(subscription\_id, type, monthly\_price, payment\_type)

**UserSubscription**(username [FK: User: username],  
subscription\_id [FK: Subscription: subscription\_id], start\_date, end\_date)

**Game**(game\_id, game\_name, game\_description)

**Library**(library\_connection\_token, username [FK: User: username], library\_name)

**LibraryGame**(library\_connection\_token [FK: Library: library\_connection\_token],  
game\_id [FK: Game: game\_id])

**Computer**(id, price, cpu, gpu, time\_bought, maintenance\_date)

**PlaySession**(game\_id [FK: Game: game\_id], computer\_id [FK: Computer: computer\_id],  
library\_connection\_token [FK: Library: library\_connection\_token], start\_date\_time,  
end\_date\_time)

### Domains

*Subscription.type* = low, mid, high

*Subscription.payment\_type* = credit-card, PayPal, bank-transfer

*Subscription.monthly\_price* can be minimum of 100 and maximum of 1000.

*Library.library\_name* = Steam or Epic Games

*PlaySession.start\_date\_time* and *PlaySession.end\_date\_time* should store both the date and also the time together.

### **Submission Instructions**

- You need to create a file called NCCCloudData.sql that includes all the necessary create commands for the full schema given above with Primary key and Foreign key constraints and also the insert commands for inserting the data. In your PDF report, you need to include screenshots to show the content of your tables in the Oracle DBMS.
- You need to also write SQL queries for the queries asked in the following section, and save all your queries in a file called NCCCloudQueries.sql. You also need to include the queries and also the screenshots of the output of the queries in your PDF report.

### **Queries**

1. List the username, name, surname and email address of all users in the system.
2. List the price, cpu and gpu details of all computers that costed more than 15000 and were bought after the 30th of January 2022, and they have a maintenance date after the 10th of June 2022.
3. List the name and surname of all the users who have a subscription after the 1st of January 2022. We are interested in the starting date of the subscriptions.
4. List the name, surname and the ID of the games that are stored in the libraries of all users.
5. List the name, surname of all the users that played the game "Assassin's Creed Valhalla" after the 17th of October. You need to list only the users who played with the Computer with a GPU of Nvidia RTX 3090.
6. List the name, surname of all users and their total play time for the game "Assassin's Creed Valhalla".