

INF10004

Database Development Project: TP3 2022

This is a group project with a maximum of 3 students per Group.

This assignment contributes 15% of your total marks for this subject.

Due date/ time: Please see Canvas.

Project Requirements

This project requires you to construct a database for a given entity-relationship diagram (ERD) and develop some queries using SQL to find answers for given problems. There may be specific business rules that you need to reflect on your database.

You need to submit the following two files:

- Download the ASS_TP3_2022.txt template from the Canvas assignment section and do the following.
- Submit ASS_TP3_2022.txt text file that contains all the statements required for all tasks listed in this project. Please indicate names and student IDs at the top of the document using the comment symbol (two hyphens).

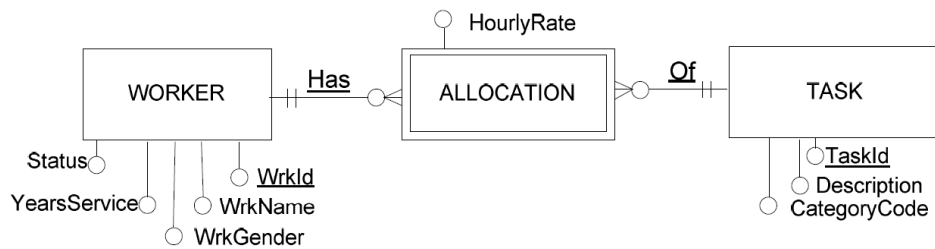
e.g. -- Ravinda Wijesinghe 1234568

-- Paul Sesta 3216549

-- Tom Jones 2354659
- Submit a .docx file with **all output** generated by iSQL Junior as a result of executing your script file. Use the naming convention ASS_OUTPUT_TP3_2022.docx. Please indicate names and student IDs at the top of the document (see above example)
- Your script must work with Oracle iSQL Junior.

Scenario

A database analyst has developed the following ER Diagram for a small company.



Requirement 1

Write the English sentences that best describe the ERD above. Place the text in the specified location in the script txt file (i.e. .txt file). Prefix each line with comment symbols -- (two hyphens)

- ONE Employee MUST belong to ONE Branch
- ONE Branch MAY employ to MANY Employees
- ONE Branch MUST belong to ONE Organisation
- ONE Organisation MAY employ to MANY Branches

Requirement 2

Write SQL DROP statements that will drop all the tables. Add these statements to the appropriate location within the script file.

Requirement 3

Write SQL CREATE TABLE statements to create all the tables. Add these statements to the appropriate location within the script file.

Business rules:

- ✓ All tables must have primary key constraints matching the requirements of the ERD.
- ✓ All tables must have appropriate foreign key constraints.
- ✓ Each foreign key column must have an identical column name, data type and size of the primary key that it refers to.
- ✓ Add any NOT NULL constraints as dictated by the ERD.
- ✓ All constraints must be named using naming conventions used in the INF10004 unit.
- ✓ The following column names, data types and sizes must be used.

Wrkid, tskid, yearsservice	Number (4)
Wrkname, status, tskddescription	Varchar (30)
Wrkgender, categorytype	Varchar (1)
HourlyRate	Number (5,2)

- ✓ A check constraint named CK_ALLOCATION_RATE must be created to ensure that the HourlyRate is in the range of 0.00 to 299.99
- ✓ A check constraint name CK_WORKER_wrkgender must be created to ensure that the worker gender values must be M or F

Requirement 4

Write SQL INSERT statements that add the data shown to the WORKER, TASK and ALLOCATION tables.

Add these statements to the appropriate location within the script file.

Worker Id	Name	Gender	Status	YearsService
1	Clyde	M	International	2
2	Sally	F	Local	9
3	Imogen	F	International	4
4	James	M	Local	3
5	Tara	F	International	6
6	Mike	M	Local	8
7	Kerri	F	Local	5

Task Id	Description	Category
151	Web Design	A
155	Python Coding	A
163	Sales and Marketing	B
165	Testing	C
171	Documentation	C

Worker Details		Task Details		Agreed Hourly Rate
1	Clyde	163	Sales and Marketing	45.50
2	Sally	155	Python Coding	30
5	Tara	165	Testing	30
3	Imogen	163	Sales and Marketing	65
5	Tara	155	Python Coding	27
5	Tara	151	Web Design	25
2	Sally	165	Testing	25
1	Clyde	151	Web Design	50.75
7	Kerri	163	Sales and Marketing	40

Requirement 5

Write a single SQL query statement that lists the work id, worker name, task id, task name and, hourly rate for each row in the allocation table.

Requirement 6: Testing Primary and foreign key constraints

Write SQL INSERT statements that attempt to add the data shown to the ALLOCATION table. If you have written your primary key and foreign key constraints correctly, the following data will be rejected by Oracle.

Worker Id	Task Id	Agreed Hourly Rate
1	163	100
5	155	99

Requirement 7: Testing Check constraints

Write SQL INSERT statements that attempt to add the data shown to the ALLOCATION table. This statement must fail due to check constraints.

Worker Id	Task Id	Agreed Hourly Rate
1	155	500
6	171	399

Requirement 8: Queries

For each of the following tasks, add an SQL statement to the appropriate location within the script file.

8.1 write a single SQL statement that lists the total number of rows in the ALLOCATION table. The Heading for the column must be "Total Allocation".

8.2 Write a single SQL statement that uses a Group By clause that counts the total allocations for each Task Category

e.g	Task Category	Total Allocations	
	A	7	
	B	2	
	C	5	(* these values do not necessarily match table data)

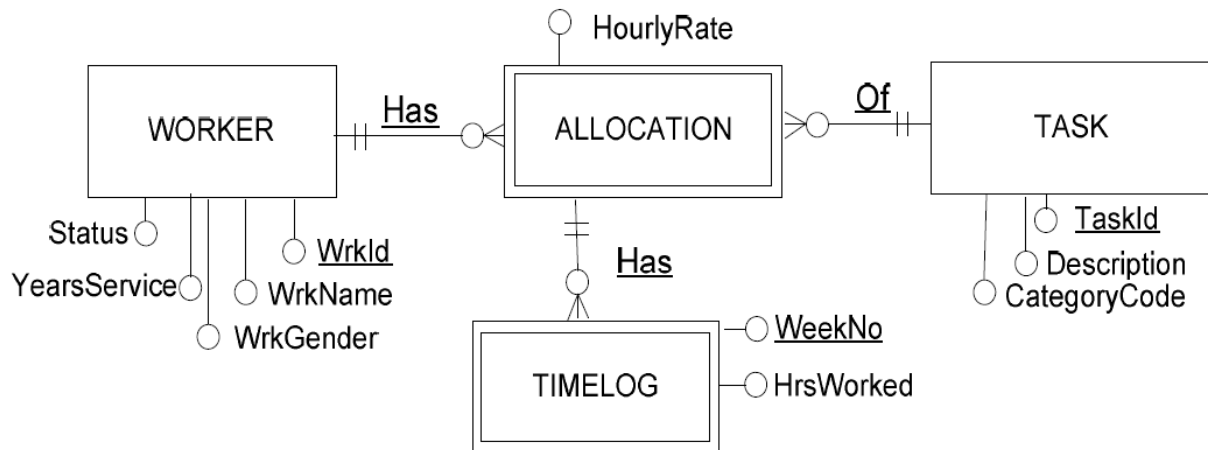
8.3 Write a single SQL statement that uses a Group By clause that counts the total allocations for each gender.

e.g	Gender	Total Allocations	
	M	4	
	F	11	(* these values do not necessarily match table data)

8.4 Write a single SQL statement that uses the Group By clause that counts the total gender type within each status type for all workers. The list must be in ascending Status Type/ Gender sequence.

e.g	Status Type	Gender	Count	
	International	F	3	
	International	M	4	
	Local	F	1	
	Local	M	2	(* these values do not necessarily match table data)

The ERD used in earlier has now been modified by a business analyst.



Requirement 9

Write the Drop Table statement for this table and add it to the other Drop Table statements that you created in requirement 2 above.

Requirement 10

Write a Create Table statement for the Timelog table. Add this statement to the appropriate location within the script file.

Business rules:

- ✓ The table must have primary key constraint matching the requirements of the ERD.
- ✓ The table must have appropriate foreign key constraints.
- ✓ Each foreign key column must have identical column name, data type and size of the primary key that it refers to.
- ✓ Add any NOT NULL constraints as dictated by the ERD.
- ✓ All constraints must be named using naming conventions used in INF10004 unit.
- ✓ The following column names, data types and sizes must be used.

Weekno	Number (2)
Hrsworked	Number (4,1)

Requirement 11

Write SQL INSERT statements that add the data shown to the TIMELOG table. Add these statements to the appropriate location within the script file.

Worker Details		Task Details		Week Number	Hours Worked on Task
1	Clyde	163	Sales and Marketing	39	10
1	Clyde	163	Sales and Marketing	40	8
1	Clyde	163	Sales and Marketing	42	6
1	Clyde	151	Web Design	41	5
1	Clyde	151	Web Design	42	5.5
2	Sally	155	Python Coding	39	10
2	Sally	165	Testing	39	15
2	Sally	155	Python Coding	42	10
2	Sally	165	Testing	40	20
2	Sally	155	Python Coding	41	10
5	Tara	155	Python Coding	39	8
5	Tara	155	Python Coding	40	6
5	Tara	155	Python Coding	41	5
5	Tara	151	Web Design	42	11.5

Requirement 12: Testing Primary and foreign key constraints

Write SQL INSERT statements that attempt to add the data shown to the TIMELOG table. If you have written your primary key and foreign key constraints correctly, the following data will be rejected by Oracle.

Worker Id	Task Id	Week Number	Hours Worked
1	171	43	5
10	163	40	2
3	155	40	10
5	188	39	10
1	163	39	2
5	151	42	6

Requirement 13: Listing Timelog data

List all rows in the timelog table in ascending primary key sequence. Show the following columns only.

Worker Id, Worker Name, Task Id, Task Name, WeekNo, HrsWorked

Requirement 14: Queries

For each of the following tasks, add an SQL statement to the appropriate location within the script file.

14.1 Based on rows in the timelog table, write the query that shows:

Worker ID, Worker Name, Week Number, Task Number, Hours Worked, Total Pay

Note: Total Pay is (HrsWorked * HourlyRate for the task)

The list must be in Worker ID/ Week Number/ Task Number ascending sequence.

14.2 Based on rows in the timelog table, write the query that shows:

Worker Id, Worker Name, Week Number, Total Pay

Note: Total Pay is (HrsWorked * HourlyRate for the task)

The list must be in Worker ID/ Week Number ascending sequence.

14.3 Based on rows in the timelog table, write the query that shows:

Worker Id, Worker Name, Total Pay

Note: Total Pay is (HrsWorked * HourlyRate for the task)

The list must be in Worker ID ascending sequence.

14.4 Based on rows in the timelog table, write the query that displays for each week number:

WeekNo, Total Pay

Note: Total Pay is (HrsWorked * HourlyRate for the task)

The list must be in WeekNo in ascending sequence.

14.5 Based on rows in the timelog table, write the query that displays the total number of hours and total amount paid by each task:

Task Id, Task Description, Total Hours, Total Pay

Note: Total Pay is (HrsWorked * HourlyRate for the task)

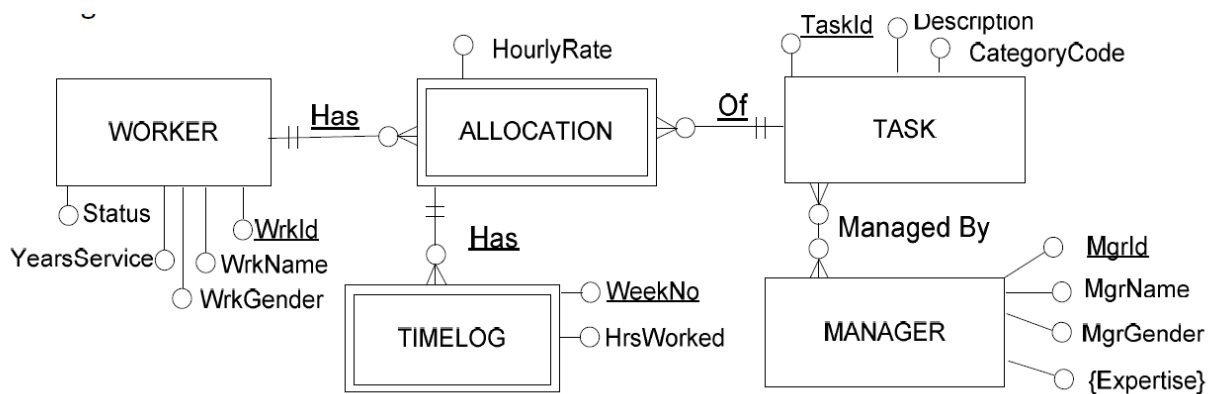
- This list must be displayed in ascending Task Id sequence
- There is no need to display tasks that have zero hours.

14.6 Display every worker and the total number of hours worked by that worker. Show these columns:

Worker Id, Worker Name, Total Hours

- This list must be displayed in ascending Worker Id sequence
- You must include all workers even if they have not worked any hours.

The ERD used in earlier has now been modified by a business analyst.



Requirement 15

Write the Drop Table statement for this table and add it to the other Drop Table statements that you created in requirement 2 above.

Requirement 16

Write Create Table statement for the Manager table. Add this statement to the appropriate section within the script file.

Business rules:

- ✓ The table must have primary key constraint matching the requirements of the ERD.
- ✓ The table must have appropriate foreign key constraints.
- ✓ Each foreign key column must have identical column name, data type and size of the primary key that it refers to.
- ✓ All constraints must be named using naming conventions used in INF10004 unit.
- ✓ The following column names, data types and sizes must be used.

mgrid	Number (3)
mrgender	Varchar (1)
Mgrname, Expertise	Varchar (30)

- ✓ Use a check constraint named CHK_MANAGER_GENDER to ensure that the gender value must be either M or F.
- ✓ Use a check constraint named CHK_MANAGER_ID to ensure that the mgrid is a value in the range 70 to 150.

- ✓ Use a unique constraint named UC_MANAGER_NAME to ensure that each manager's name is unique and cannot be duplicated.

Requirement 17

Write SQL Insert statements for the additional tables. Add these statements to the appropriate section within the script file.

Manager Id	Manager Name	Manager Gender	Areas of Expertise	Tasks Managed
71	Sue	F	Counselling Negotiating	163
72	Fred	M	Analysis	151 155
73	Mike	M	Motivation Analysis	163 171
74	Lilly	F	Negotiating Motivation	163 165 171
75	Tara	F	Training Counselling Motivation	151 155 171
76	Albert	M	Analysis	

Requirement 18: Testing Check Constraints

Write SQL Insert statements that attempt to add the data shown to the MANAGER table. Add these statements to the appropriate location within the script file. If you have written your check constraints correctly, the following data must be rejected by Oracle.

Manager Id	Manager Name	Manager Gender
50	Ben	M
81	Kurt	X
82	Fred	M
83	Tara	F

Requirement 19: Queries

For each of the following tasks, add an SQL statement to the appropriate location within the script file.

19.1 List the total number of workers allocated to each manager

- Show the manager name and the total number of workers value
- This list must be in ascending manager name sequence.

19.2 For every task list and every managerial expertise associated with that task

- Show the manager name and the expertise value

- This list must be in ascending manager name/ expertise sequence.

19.3 Write a single SQL statement that lists the worker id and name and year service of all workers who have a years service value less than the average years service of all workers. You must use a subquery in your solution.

- This list must be in ascending worker id sequence.

---- End of the assignment ----