**Assignment : Database Development**

For Learner Use:

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| Surname of Learner | Hartogh |
| Name of Learner | Alvina |
| Learner ID | 99080802088082 |
| Student Number | ISCTICT18:AIHartogh |
| Date of Test Given | 1/05/2019 |
| Location / Branch | iStudent Academy, Cape Town |

For Assessors Use:

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| Name of Branch | Cape Town |
| Name of Facilitator | Bradley Van Nelson |
| Name of Assessor | Bradley Van Nelson |
| Assessor Number | RAS/01/2017/0024 |
| Mark Allocation | 52 |
| Mark Obtained |  |
| Competency Status (C / NYC) |  |

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| Unit Standards MICT Seta | 115373, 114048, 114049 |
| Units C&G | 389 |

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| Candidates Signature |  | Date of Submission |  |
| Assessors Signature |  | Date Marked |  |

**Instructions**

The candidate must complete the assignment using SQL statements and scripts on a SQL server.

Candidates should produce the following for their Assessor:

• test plan

• test data (scripts)

• test log

• cross-referenced evidence of testing i.e. printout of script file and test output as necessary to show test results.

**Grading criteria**

Not Yet Competent – did not meet all criteria shown as [ ]

Competent – criteria shown as [ ] and 28 shown as ( )

Credit – criteria shown as [ ] and 34 shown as ( ).

Distinction - criteria shown as [ ] and 38 shown as ( ).

**Requirements**

To complete this assignment, you will require:

* SQL Server
* Windows 8.1 or later
* Working laptop or PC

Please ask for assistance from your Assessor, should you require it, to install SQL on your machine in working order!

**Scenario**

A company, Delta Books who supply educational books, have their Head Office in America and operate other branches in several locations. You work as an IT Assistant accessing the company database, fulfilling requests for information and services from other departments or branches. Your job involves writing and testing SQL scripts to provide the information and services required.

The following requests have been received today, via fax and e-mail, from Finance, Human Resources and the Database Administrator.

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| **Finance Requirements** | |
| Request 1 | List the last name, first name and employee number of all employees that have a last name starting with M. |
| Request 2 | List the department number, last name, first name and phone number of all sales representatives who were hired on or after 24 Mar 1998 sorted in ascending order of last name. |
| Request 3 | List all the data for all jobs where the minimum salary is less than or equal to 4500 sorted in descending order of the minimum salary. |
| Request 4 | Which jobs are found in the Marketing and Accounting departments? |
| Request 5 | List the department name, location, last name and salary of employees who work in location 1700 sorted in ascending order of department name. |
| Request 6 | List the last name and first name for all employees who were hired in the months of June or August (for all years) sorted in ascending order of last name. |
| Request 7 | Show the average salary for employees for one year (rounded to 2 decimal places). |
| Request 8 | Show the total monthly salaries figure (0 decimal places) for all employees in departments 80 and 60. |

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| **Human Resources Requirements** | |
| Request 9 | List the department number, department name and the number of employees for each department that has less than 4 employees grouping by department number and department name. |
| Request 10 | List the department number, department name and the number of employees for the department that has the lowest number of employees using appropriate grouping. |
| Request 11 | List the department number and name for all departments where no sales representatives work. |
| Request 12 | Add the following new job  IT\_ASST, IT Assistant, 5000, 8000 |
| Request 13 | Update all the minimum salaries for jobs with an increase of 500. |
| Request 14 | List all the data for jobs sorted in ascending order of job id. |

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| **Database Administrator Requirements** | |
| Request 15 | The database administrator has found the following entity-relationship diagram. He thinks that the diagram is incorrect. Check the diagram and draw a corrected diagram. |
| Request 16 | Print a copy of the data dictionary entry for the table departments. |
| Request 17 | Drop the table for job history. |
| Request 18 | Create a new table called SAL\_HISTORY to include the fields EMPID, FIRSTNAME, LASTNAME, HIREDATE and SAL with the same data types as the employees table. The EMPID must not be NULL. |
| Request 19 | Insert data from the employees table where the employee number is less than or equal to 130 into the SAL\_HISTORY table. |
| Request 20 | Display all the records and all the fields in the SAL\_HISTORY table. |

**Task A**

*In this task you are required to plan testing and write and test scripts to fulfil the requirements specified by Finance, Human Resources and the Database Administrator.*

1. Prepare a test plan to carry out the testing of the SQL scripts.

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| 1. Create Database 2. Received request 3. Prepare scripts 4. Test query 5. Record results |

1. Prepare the test scripts to be used with the test plan.

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| 1. USE CGDatabase   SELECT Last\_Name, First\_Name  FROM Employees  WHERE Last\_Name like ‘M%’;   1. USE CGDatabase   SELECT Department\_No, Last\_Name, First\_Name, Phone\_Number  FROM Employees  WHERE Hire\_Date >= ‘1998-03-24’  ORDER BY Last\_Name ASC;   1. USE CGDatabase   SELECT \*  FROM Jobs  WHERE Min\_Salary <= ‘4500’  ORDER BY Min\_Salary DESC   1. USE CGDatabase   SELECT \* FROM Jobs WHERE Job\_ID like ‘AC%’ OR Job\_ID like ‘MC’;   1. USE CGDatabase   SELECT department\_name, location\_ID, last\_name, Annual\_salary FROM dbo.Employees, dbo.Departments  WHERE location\_ID = ‘1700’  ORDER BY department\_name ASC;   1. USE CGDatabase   SELECT Last\_Name, First\_Name  FROM Employees  WHERE MONTH(Hire\_Date) = 6 OR MONTH(Hire\_Date) = 8  ORDER BY Last\_Name ASC;   1. USE CGDatabase   SELECT CAST(ROUND(AVG(Annual\_Salary),0) AS DECIMAL(12,2)) AS ‘Average Salary’  FROM Employees;   1. USE CGDatabase   SELECT Employees.Last\_Name, First\_Name, Department\_No, CAST(ROUND(Annual\_Salary/12,2) AS decimal(10,2))AS Monthly\_Salary  FROM Employees  WHERE Department\_No = 60 or Department\_No = 80;   1. USE CGDatabase   SELECT Departments.Department\_No, Department\_Name,  COUNT(Employees.Department\_No) AS No\_Of\_Employees  FROM Employees  Inner join Departments ON Departments.Department\_No = Employees.Department\_No  GROUP BY Departments.Department\_No, Department\_Name  HAVING COUNT (Employees.Department\_No) < 4;     1. USE CGDatabase   SELECT Department\_Department\_No, Department\_Name,  COUNT(\*) AS ‘No\_Of\_Employees’  FROM Departments  INNER JOIN Employees on Departments.Department\_No = Employees.Department\_No  GROUP BY Departments.Department\_No, Departments.Department\_Name  ORDER BY COUNT(\*) ASC;   1. USE CGDatabase   SELECT Departments.Department\_No, Departments.Department\_Name  FROM Departments  WHERE Department\_Name not like ‘Sales’;   1. USE CGDatabase   INSERT INTO Jobs VALUES(‘IT ASST’, ‘IT Assistant’, ‘5000’, ‘8000’);   1. USE CGDatabase   UPDATE Jobs SET Min\_Salary = (Min\_Salary = 500);   1. USE CGDatabase   SELECT \*  FROM Jobs  ORDER BY Job\_ID ASC;  **Employees**  Employee\_No  First\_Name  Last\_Name  Email  Phone\_Number  Hire\_Date  Job\_ID  Annual\_Salary  Commission\_Percent  Manager\_ID  Department\_No  **Departments**  Department\_No  Department\_Name  Manager\_ID  Location\_ID    **Location**  Location\_ID  Street\_Address  City  Postal\_Code  State\_Province\_Country  Country\_ID  **Jobs**  Job\_ID  Job\_Title  Min\_Salary  Max\_Salary |

1. USE CGDatabase

Exec sp\_columns employees;

1. USE CGDatabase

SELECT \*

FROM Job\_History

DROP TABLE Job\_History;

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| **Column Name** | **Data Type** | **Allow Nulls** |
| EMPID | nchar(10) |  |
| FIRSTNAME | nchar(10) |  |
| LASTNAME | nchar(10) |  |
| HIREDATE | nchar(10) |  |
| SAL | decimal(18,0) |  |

1. USE CGDatabase

INSERT INTO SAL\_HISTORY (EMPID, FIRSTNAME, LASTNAME, HIREDATE, SAL)

SELECT Employee\_No, First\_Name, Last\_Name, Hire\_Date, Annual\_Salary

FROM Employees

WHERE Employee\_No <= 130;

SELECT \* FROM SAL\_HISTORY;

1. USE CGDatabase

INSERT INTO SAL\_HISTORY (EMPID, FIRSTNAME, LASTNAME, HIREDATE, SAL)

SELECT Employee\_No, First\_Name, Last\_Name, Hire\_Date, Annual\_Salary

FROM Employees

WHERE Employee\_No <= 130;

SELECT \* FROM Sal\_HISTORY;

1. Use the test plan and test scripts to carry out the tests and record results of testing in a test log comparing the expected results to the actual results. The test scripts must be saved with an appropriate name eg Request1.

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| 1. Request 1 was SUCCESSFUL 2. Request 2 was SUCCESSFUL 3. Request 3 UNSUCCESSFUL   CORRECT:  USE CGDatabase  SELECT \*  FROM Jobs  WHERE Min\_Salary <= ‘4500’  ORDER BY Min\_Salary DESC;  ERROR  USE CGDatabase  SELECT \*  FROM Employees  WHERE Annual\_Salary <= ‘4500’  ORDER BY DESC;   1. Request 4 was SUCCESSFUL 2. Request 5 was SUCCESSFUL 3. Request 6 was UNSUCCESSFUL   CORRECT:  USE CGDatabase  SELECT Last\_Name, First\_Name  FROM Employees  WHERE MONTH(Hire\_Date) = 6 OR MONTH(Hire\_Date) = 8  ORDER BY Last\_Name ASC;  ERROR:  USE CGDatabase  SELECT Last\_Name, First\_Name  FROM Employees  WHERE Hire\_Date like ‘JUNE-AUGUST%’  ORDER BY Last\_Name ASC;   1. Request 7 was UNSUCCESSFUL   CORRECT:­  USE CGDatabase  SELECT CAST(ROUND(AVG(Annual\_Salary),0) AS DECIMAL(12,2)) AS ‘Average\_Salary’  FROM Employees;  ERROR:  USE CGDatabase  SELECT AVG(‘Annual\_Salary’) AS ‘Average\_Salary’  SELECT ROUND(‘Average\_Salary’ ,2)  FROM Employees;   1. Request 8 was UNSUCCESSFUL   CORRECT:  USE CGDatabase  SELECT Employees.Last\_Name, First\_Name, Department\_No, CAST(ROUND(Annual\_Salary/12,2) AS DECIMAL(10,2))AS Monthly\_Salary  FROM Employees  WHERE Department\_No = 60 or Department\_No = 80;  ERROR:  USE CGDatabase  SELECT CAST(ROUND(SUM(Annual\_Salary)/12),0) AS DECIMAL(12,2) as ‘Montly\_Salary’  FROM Employees  WHERE Department\_No = 60 or Department\_No = 80;   1. Request 9 was SUCCESSFUL 2. Request 10 was SUCCESSFUL 3. Request 11 was SUCCESSFUL 4. Request 12 was SUCCESSFUL 5. Request 13 was UNSUCCESSFUL   CORRECT:  USE CGDatabase  UPDATE Jobs SET Min\_Salary = (Min\_Salary + 500);  ERROR:  USE CGDatabase  UPDATE Jobs SET Min\_Salary = (Min\_Salary + 500);   1. Request 14 was SUCCESSFUL 2. Request 15 was SUCCESSFUL 3. Request 16 was SUCCESSFUL 4. Request 17 was SUCCESSFUL 5. Request 18 was SUCCESSFUL 6. Request 19 was SUCCESSFUL 7. Request 20 was SUCCESSFUL |

1. Provide evidence of testing i.e. screenshot of script file and output which must be cross referenced to the correct test number.

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| ---Refer to the attached folder named DatabaseScreenshots |