LAB 3 SOLUTIONS

Exercise 1

Q1	Find the ID of the vendor who supplies grape.
	`SELECT VENDORID FROM VENDORS WHERE REPLNAME='Grape';`
Q2	Find all of the ingredients from the fruit food group with an inventory greater than 100.
	`SELECT NAME FROM INGREDIENTS WHERE FOODGROUP='Fruit' AND INVENTORY>100;`
Q3	Display all the food groups from ingredients, in which 'grape' is not a member.
	`SELECT FOODGROUP FROM INGREDIENTS WHERE NAME!='Grape' GROUP BY FOODGROUP HAVING FOODGROUP IS NOT NULL;`
Q4	Find the ingredients, unit price supplied by 'VGRUS' (vendor ID) order by unit price (asc).
	`SELECT NAME , UNITPRICE FROM INGREDIENTS WHERE VENDORID='VGRUS' ORDER BY UNITPRICE ASC;`
Q5	Find the date on which the last item was added.
	`SELECT MAX(DATEADDED) FROM ITEMS;`
Q6	Find the number of vendors each vendor referred, and only report the vendors referring more than one.
	`SELECT COUNT(VENDORID),REFERREDBY FROM VENDORS GROUP BY REFERREDBY HAVING COUNT(VENDORID)>1;`

Exercise 2

Q1	Find the average salary for all employees.
	`SELECT AVG(SALARY) FROM EMPLOYEES;`
Q2	Find the average salary of employees in every department.
	`SELECT DEPTCODE, AVG(SALARY) AS 'AVG SAL' FROM EMPLOYEES GROUP BY DEPTCODE;`
Q3	Find the minimum and maximum project revenue for all active projects that make money.
	`SELECT MIN(REVENUE), MAX(REVENUE) FROM PROJECTS WHERE (ENDDATE IS NULL OR ENDDATE> GETDATE()) AND REVENUE!=0;`
Q4	Find the number of projects that are completed. You may not use a WHERE clause.
	`SELECT COUNT(PROJECTID)FROM PROJECTS GROUP BY ENDDATE HAVING COUNT(ENDDATE)>0;`
Q5	Find the last name of the employee whose last name is last in dictionary order.
	`SELECT MAX(LASTNAME) FROM EMPLOYEES;`
Q6	Compute the employee salary standard deviation. As a reminder, the formula for the population standard deviation is as follows: $\sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i-\overline{x})^2}$
	`SELECT STDEV(SALARY) FROM EMPLOYEES;`
Q7	Find the number of employees who are assigned to some department. You may not use a WHERE clause.
	`SELECT COUNT(DEPTCODE) FROM EMPLOYEES;`
Q8	For each department, list the department code and the number of employees in the department.
	`SELECT COUNT(EMPLOYEEID), DEPTCODE FROM EMPLOYEES GROUP BY DEPTCODE ;`
Q9	For each department that has a project, list the department code and report the average revenue and count of all of its projects.
	`SELECT COUNT(PROJECTID),DEPTCODE,AVG(REVENUE) FROM PROJECTS GROUP BY DEPTCODE HAVING COUNT(DEPTCODE)>0;`

Q10	Calculate the salary cost for each department with employees that don't have a last name ending in "re" after giving everyone a 10% raise.
	`SELECT SUM(SALARY+(0.10*SALARY)), DEPTCODE FROM EMPLOYEES WHERE LASTNAME NOT LIKE '%re' GROUP BY DEPTCODE ;`

Exercise 3

Q1	Find all dates on which projects either started or ended. Eliminate any duplicate or NULL dates. Sort your results in descending order.
	`SELECT DISTINCT(STARTDATE) AS DATES FROM PROJECTS WHERE STARTDATE IS NOT NULL UNION SELECT DISTINCT(ENDDATE) AS DATES FROM PROJECTS WHERE ENDDATE IS NOT NULL ORDER BY DATES DESC;`
Q2	Use INTERSECT to find the first and last name of all employees who both work on the Robotic Spouse and for the Hardware department.
	`SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES,WORKSON WHERE EMPLOYEES.EMPLOYEEID=WORKSON.EMPLOYEEID AND WORKSON.PROJECTID='ROBOSPSE' INTERSECT SELECT FIRSTNAME,LASTNAME FROM EMPLOYEES WHERE DEPTCODE='HDWRE';`
Q3	Use EXCEPT to find the first and last name of all employees who work on the Robotic Spouse but not for the Hardware department.
	`SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES, WORKSON WHERE EMPLOYEES.EMPLOYEEID=WORKSON.EMPLOYEEID AND WORKSON.PROJECTID='ROBOSPSE' EXCEPT SELECT FIRSTNAME,LASTNAME FROM EMPLOYEES WHERE DEPTCODE='HDWRE';`
Q4	Find the first and last name of all employees who work on the Download Client project but not the Robotic Spouse project.
	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID`

	`WHERE P.DESCRIPTION='Download Client'`
	`EXCEPT`
	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRIPTION='Robotic Spouse';`

Q5	Find the first and last name of all employees who work on the Download Client project and the Robotic Spouse project.

	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID`
	`WHERE P.DESCRIPTION='Download Client'`
	`INTERSECT`
	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID`
	`WHERE P.DESCRIPTION='Robotic Spouse';`

Q6	Find the first and last name of all employees who work on either the Download Client project or the Robotic Spouse project.

	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID`
	`WHERE P.DESCRIPTION='Download Client'`
	`UNION`
	`SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRIPTION='Robotic Spouse';`

Q7	Find the first and last name of all employees who work on either the Download Client project or the Robotic Spouse project but not both.

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(SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on
P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID
=W.EMPLOYEEID WHERE P.DESCRIPTION='Download Client'
UNION
SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on
P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID
=W.EMPLOYEEID  WHERE P.DESCRIPTION='Robotic Spouse')
EXCEPT
(SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on
P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID
=W.EMPLOYEEID WHERE P.DESCRIPTION='Download Client'
INTERSECT
SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on
P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID
=W.EMPLOYEEID  WHERE P.DESCRIPTION='Robotic Spouse');
```

Note: Solutions provided are for your own reference and may have other possible variations or interpretations. In case of any query, kindly contact your lab instructors.