

Exercise 3

Q1	Find the names of all people who work in the Consulting department. Solve it two ways: 1) using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN) 2) with CROSS JOIN.
	<pre>SELECT DISTINCT(FIRSTNAME + ' ' + LASTNAME) AS NAME FROM EMPLOYEES E,DEPARTMENTS D WHERE E.DEPTCODE= D.CODE AND D.NAME='Consulting';</pre> <pre>SELECT DISTINCT(E.FIRSTNAME + ' ' + E.LASTNAME) AS NAME FROM EMPLOYEES E CROSS JOIN DEPARTMENTS D WHERE E.DEPTCODE= D.CODE AND D.NAME='Consulting';</pre>
Q2	Find the names of all people who work in the Consulting department and who spend more than 20% of their time on the project with ID ADT4MFIA. Solve two ways: 1) Using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN), 2) using JOIN.
	<pre>SELECT DISTINCT(FIRSTNAME + ' ' + LASTNAME) AS NAME FROM EMPLOYEES E,DEPARTMENTS D , WORKSON W, (SELECT W.EMPLOYEEID,W.PROJECTID, (W.ASSIGNEDTIME/SATIME.SAT)*100 AS SAT FROM WORKSON W, (SELECT SUM(ASSIGNEDTIME) AS SAT, EMPLOYEEID FROM WORKSON GROUP BY EMPLOYEEID) SATIME WHERE W.EMPLOYEEID=SATIME.EMPLOYEEID) ASSIGN WHERE E.DEPTCODE= D.CODE AND D.NAME='Consulting' AND E.EMPLOYEEID = W.EMPLOYEEID AND W.PROJECTID='ADT4MFIA' AND ASSIGN.EMPLOYEEID=E.EMPLOYEEID AND ASSIGN.SAT>20;</pre> <pre>SELECT DISTINCT(FIRSTNAME + ' ' + LASTNAME) AS NAME FROM EMPLOYEES E JOIN DEPARTMENTS D ON E.DEPTCODE=D.CODE JOIN WORKSON W ON E.EMPLOYEEID = W.EMPLOYEEID JOIN (SELECT W.EMPLOYEEID,W.PROJECTID, (W.ASSIGNEDTIME/SATIME.SAT)*100 AS SAT FROM WORKSON W, (SELECT SUM(ASSIGNEDTIME) AS SAT, EMPLOYEEID FROM WORKSON GROUP BY EMPLOYEEID) SATIME WHERE W.EMPLOYEEID=SATIME.EMPLOYEEID) ASSIGN ON ASSIGN.EMPLOYEEID=E.EMPLOYEEID WHERE D.NAME='Consulting' AND W.PROJECTID='ADT4MFIA'AND ASSIGN.SAT>20;</pre>
Q3	Find the total percentage of time assigned to employee Abe Advice. Solve it two ways: 1) using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN) and 2) using some form of JOIN.

	<pre> SELECT (SATIME.SAT/ TOTALASSIGN.TOTAL)*100 AS PERCENTAGE FROM (SELECT SUM(ASSIGNEDTIME)AS TOTAL FROM WORKSON) TOTALASSIGN, (SELECT SUM(ASSIGNEDTIME) AS SAT FROM WORKSON W, EMPLOYEES E WHERE W.EMPLOYEEID=E.EMPLOYEEID AND E.FIRSTNAME='Abe' AND E.LASTNAME='Advice' GROUP BY W.EMPLOYEEID) SATIME; SELECT (SATIME.SAT/ TOTALASSIGN.TOTAL)*100 AS PERCENTAGE FROM (SELECT SUM(ASSIGNEDTIME)AS TOTAL FROM WORKSON) TOTALASSIGN, (SELECT SUM(ASSIGNEDTIME) AS SAT FROM WORKSON W JOIN EMPLOYEES E ON E.EMPLOYEEID = W.EMPLOYEEID WHERE E.FIRSTNAME='Abe' AND E.LASTNAME='Advice' GROUP BY W.EMPLOYEEID) SATIME; </pre>
Q4	<p>Find the descriptions of all projects that require more than 70% of an employee's time. Solve it two ways: 1) using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN) and 2) using some form of JOIN.</p>
	<pre> SELECT DISTINCT DESCRIPTION FROM PROJECTS P, (SELECT PROJECTID, W.EMPLOYEEID, ((W.ASSIGNEDTIME/AST.ASSIGN)*100) AS AST1 FROM WORKSON W, (SELECT SUM(ASSIGNEDTIME) AS ASSIGN ,EMPLOYEEID FROM WORKSON GROUP BY EMPLOYEEID) AST WHERE W.EMPLOYEEID=AST.EMPLOYEEID) PRJ WHERE PRJ.PROJECTID=P.PROJECTID AND PRJ.AST1>70; OR SELECT DISTINCT DESCRIPTION FROM PROJECTS P JOIN (SELECT PROJECTID, W.EMPLOYEEID, ((W.ASSIGNEDTIME/AST.ASSIGN)*100) AS AST1 FROM WORKSON W JOIN (SELECT SUM(ASSIGNEDTIME) AS ASSIGN ,EMPLOYEEID FROM WORKSON GROUP BY EMPLOYEEID) AST ON W.EMPLOYEEID=AST.EMPLOYEEID) PRJ ON PRJ.PROJECTID=P.PROJECTID WHERE PRJ.AST1>70; </pre>
Q5	<p>For each employee, list the employee ID, number of projects, and the total percentage of time for the current projects to which she is assigned. Include employees not assigned to any project.</p>
	<pre> SELECT E.EMPLOYEEID, COUNT(W.PROJECTID) AS "NUMBER OF PROJECTS", SUM(ASSIGNEDTIME)*100 AS "TOTAL PERCENTAGE OF TIME" FROM EMPLOYEES E LEFT JOIN WORKSON W ON E.EMPLOYEEID=W.EMPLOYEEID JOIN PROJECTS P ON W.PROJECTID=P.PROJECTID WHERE P.ENDDATE >GETDATE() OR P.ENDDATE IS NULL GROUP BY E.EMPLOYEEID; </pre>
Q6	<p>Find the description of all projects with no employees assigned to them.</p>

	SELECT DISTINCT (DESCRIPTION) FROM PROJECTS P,WORKSON W WHERE P.PROJECTID NOT IN (SELECT PROJECTID FROM WORKSON); OR SELECT DISTINCT (P.DESCRPTION) FROM PROJECTS P LEFT JOIN WORKSON W ON P.PROJECTID=W.PROJECTID WHERE W.EMPLOYEEID IS NULL;
Q7	For each project, find the greatest percentage of time assigned to one employee. Solve it two ways: 1) using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN) and 2) using some form of JOIN.
	SELECT PROJECTID, MAX (ASSIGNEDTIME) FROM EMPLOYEES E , WORKSON W WHERE E.EMPLOYEEID=W.EMPLOYEEID GROUP BY W.PROJECTID; SELECT PROJECTID, MAX (ASSIGNEDTIME) FROM EMPLOYEES E JOIN WORKSON W ON E.EMPLOYEEID=W.EMPLOYEEID GROUP BY W.PROJECTID;
Q8	For each employee ID, find the last name of all employees making more money than that employee. Solve it two ways: 1) using only WHERE-based join (i.e., no INNER/OUTER/CROSS JOIN) and 2) using some form of JOIN.
	SELECT E1.EMPLOYEEID, E2.LASTNAME FROM EMPLOYEES E1, EMPLOYEES E2 WHERE E2.SALARY>E1.SALARY; SELECT E1.EMPLOYEEID, E2.LASTNAME FROM EMPLOYEES E1 CROSS JOIN EMPLOYEES E2 WHERE E2.SALARY>E1.SALARY;

Exercise 4

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.

	<pre> SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES,WORKSON WHERE EMPLOYEES.EMPLOYEEID=WORKSON.EMPLOYEEID AND WORKSON.PROJECTID='ROBOSPSE' INTERSECT SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES WHERE DEPTCODE='HDWRE'; </pre>
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.
	<pre> SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES, WORKSON WHERE EMPLOYEES.EMPLOYEEID=WORKSON.EMPLOYEEID AND WORKSON.PROJECTID='ROBOSPSE' EXCEPT SELECT FIRSTNAME, LASTNAME FROM EMPLOYEES WHERE DEPTCODE='HDWRE'; </pre>
Q4	Find the first and last name of all employees who work on the Download Client project but not the Robotic Spouse project.
	<pre> SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRPTION='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.DESCRPTION='Robotic Spouse'; </pre>
Q5	Find the first and last name of all employees who work on the Download Client project and the Robotic Spouse project.
	<pre> SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRPTION='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.DESCRPTION='Robotic Spouse'; </pre>
Q6	Find the first and last name of all employees who work on either the Download Client project or the Robotic Spouse project.

	<pre> SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRPTION='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.DESCRPTION='Robotic Spouse'; </pre>
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.
	<pre> (SELECT FIRSTNAME, LASTNAME FROM PROJECTS P JOIN WORKSON W on P.PROJECTID = W.PROJECTID JOIN EMPLOYEES E ON W.EMPLOYEEID =W.EMPLOYEEID WHERE P.DESCRPTION='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.DESCRPTION='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.DESCRPTION='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.DESCRPTION='Robotic Spouse'); </pre>
Q8	Using EXCEPT, find all of the departments without any projects.
	<pre> SELECT NAME FROM DEPARTMENTS EXCEPT SELECT NAME FROM DEPARTMENTS D JOIN PROJECTS P ON D.CODE=P.DEPTCODE; </pre>

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.