

Problem Statement 8: Sub queries in MySQL

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```
CREATE TABLE `employees` (  
  `EMPLOYEE_ID` decimal(6,0) NOT NULL DEFAULT '0',  
  `FIRST_NAME` varchar(20) DEFAULT NULL,  
  `LAST_NAME` varchar(25) NOT NULL,  
  `EMAIL` varchar(25) NOT NULL,  
  `PHONE_NUMBER` varchar(20) DEFAULT NULL,  
  `HIRE_DATE` date NOT NULL,  
  `JOB_ID` varchar(10) NOT NULL,  
  `SALARY` decimal(8,2) DEFAULT NULL,  
  `COMMISSION_PCT` decimal(2,2) DEFAULT NULL,  
  `MANAGER_ID` decimal(6,0) DEFAULT NULL,  
  `DEPARTMENT_ID` decimal(4,0) DEFAULT NULL,  
  PRIMARY KEY (`EMPLOYEE_ID`),  
  UNIQUE KEY `EMP_EMAIL_UK` (`EMAIL`),  
  KEY `EMP_DEPARTMENT_IX` (`DEPARTMENT_ID`),  
  KEY `EMP_JOB_IX` (`JOB_ID`),  
  KEY `EMP_MANAGER_IX` (`MANAGER_ID`),  
  KEY `EMP_NAME_IX` (`LAST_NAME`, `FIRST_NAME`)  
);
```

```
CREATE TABLE `departments` (  
  `DEPARTMENT_ID` decimal(4,0) NOT NULL DEFAULT '0',  
  `DEPARTMENT_NAME` varchar(30) NOT NULL,  
  `MANAGER_ID` decimal(6,0) DEFAULT NULL,  
  `LOCATION_ID` decimal(4,0) DEFAULT NULL,  
  PRIMARY KEY (`DEPARTMENT_ID`),  
  KEY `DEPT_MGR_FK` (`MANAGER_ID`),
```

```
KEY `DEPT_LOCATION_IX` (`LOCATION_ID`  
);
```

```
CREATE TABLE `locations` (  
  `LOCATION_ID` decimal(4,0) NOT NULL DEFAULT '0',  
  `STREET_ADDRESS` varchar(40) DEFAULT NULL,  
  `POSTAL_CODE` varchar(12) DEFAULT NULL,  
  `CITY` varchar(30) NOT NULL,  
  `STATE_PROVINCE` varchar(25) DEFAULT NULL,  
  `COUNTRY_ID` varchar(2) DEFAULT NULL,  
  PRIMARY KEY (`LOCATION_ID`),  
  KEY `LOC_CITY_IX` (`CITY`),  
  KEY `LOC_COUNTRY_IX` (`COUNTRY_ID`),  
  KEY `LOC_STATE_PROVINCE_IX` (`STATE_PROVINCE`)  
);
```

```
CREATE TABLE `jobs` (  
  `JOB_ID` varchar(10) NOT NULL DEFAULT "",  
  `JOB_TITLE` varchar(35) NOT NULL,  
  `MIN_SALARY` decimal(6,0) DEFAULT NULL,  
  `MAX_SALARY` decimal(6,0) DEFAULT NULL,  
  PRIMARY KEY (`JOB_ID`)  
);
```

```
INSERT INTO `employees` VALUES  
(100,'Steven','King','SKING','515.123.4567','1987-06-17','AD_PRES',24000.00,0.00,0,90),  
(101,'Neena','Kochhar','NKOCHHAR','515.123.4568','1987-06-  
18','AD_VP',17000.00,0.00,100,90),
```

(102,'Lex','De Haan','LDEHAAN','515.123.4569','1987-06-19','AD_VP',17000.00,0.00,100,90),
 (103,'Alexander','Hunold','AHUNOLD','590.423.4567','1987-06-20','IT_PROG',9000.00,0.00,102,60),
 (104,'Bruce','Ernst','BERNST','590.423.4568','1987-06-21','IT_PROG',6000.00,0.00,103,60),
 (105,'David','Austin','DAUSTIN','590.423.4569','1987-06-22','IT_PROG',4800.00,0.00,103,60),
 (106,'Charles','Johnson','CJOHNSON','011.44.1644.429262','1987-09-04','SA_REP',6200.00,0.10,149,80),
 (107,'Winston','Taylor','WTAYLOR','650.507.9876','1987-09-05','SH_CLERK',3200.00,0.00,120,50),
 (108,'Jean','Fleur','JFLEAUR','650.507.9877','1987-09-06','SH_CLERK',3100.00,0.00,120,50),
 (109,'Martha','Sullivan','MSULLIVA','650.507.9878','1987-09-07','SH_CLERK',2500.00,0.00,120,50),
 (110,'Girard','Geoni','GGEONI','650.507.9879','1987-09-08','SH_CLERK',2800.00,0.00,120,50),
 (111,'Jennifer','Whalen','JWHALEN','515.123.4444','1987-09-25','AD_ASST',4400.00,0.00,101,10),
 (112,'Michael','Hartstein','MHARTSTE','515.123.5555','1987-09-26','MK_MAN',13000.00,0.00,100,20),
 (113,'Hermann','Baer','HBAER','515.123.8888','1987-09-29','PR_REP',10000.00,0.00,101,70),
 (114,'Shelley','Higgins','SHIGGINS','515.123.8080','1987-09-30','AC_MGR',12000.00,0.00,101,110),
 (115,'William','Gietz','WGIETZ','515.123.8181','1987-10-01','AC_ACCOUNT',8300.00,0.00,205,110);

INSERT INTO `departments` VALUES

(10,'Administration',200,1700),
 (20,'Marketing',201,1800),
 (30,'Purchasing',114,1700),
 (40,'Human Resources',203,2400),
 (50,'Shipping',121,1500),

(60,'IT',103,1400),
(70,'Public Relations',204,2700),
(80,'Sales',145,2500),
(90,'Executive',100,1700),
(100,'Finance',108,1700);

INSERT INTO `locations` VALUES

(1000,'1297 Via Cola di Rie','989','Roma','IT'),
(1100,'93091 Calle della Testa','10934','Venice','IT'),
(1200,'2017 Shinjuku-ku','1689','Tokyo','Tokyo Prefecture','JP'),
(1300,'9450 Kamiya-cho','6823','Hiroshima','JP'),
(1400,'2014 Jabberwocky Rd','26192','Southlake','Texas','US'),
(1500,'2011 Interiors Blvd','99236','South San Francisco','California','US'),
(1600,'2007 Zagora St','50090','South Brunswick','New Jersey','US'),
(1700,'2004 Charade Rd','98199','Seattle','Washington','US'),
(1800,'147 Spadina Ave','M5V 2L7','Toronto','Ontario','CA'),
(1900,'6092 Boxwood St','YSW 9T2','Whitehorse','Yukon','CA'),
(2000,'40-5-12 Laogianggen','190518','Beijing','CN'),
(2100,'1298 Vileparle (E)','490231','Bombay','Maharashtra','IN'),
(2200,'12-98 Victoria Street','2901','Sydney','New South Wales','AU'),
(2300,'198 Clementi North','540198','Singapore','SG'),
(2400,'8204 Arthur St','London','UK'),
(2500,'Magdalen Centre','The Oxford','OX9 9ZB','Oxford','Ox');

INSERT INTO `jobs` VALUES

('AD_PRES','President',20000,40000),
(('AD_VP','Administration Vice President',15000,30000),
(('AD_ASST','Administration Assistant',3000,6000),
(('FI_MGR','Finance Manager',8200,16000),
(('FI_ACCOUNT','Accountant',4200,9000),

```
('AC_MGR','Accounting Manager',8200,16000),  
( 'AC_ACCOUNT','Public Accountant',4200,9000),  
( 'SA_MAN','Sales Manager',10000,20000),  
( 'SA_REP','Sales Representative',6000,12000),  
( 'PU_MAN','Purchasing Manager',8000,15000),  
( 'PU_CLERK','Purchasing Clerk',2500,5500),  
( 'ST_MAN','Stock Manager',5500,8500),  
( 'ST_CLERK','Stock Clerk',2000,5000),  
( 'SH_CLERK','Shipping Clerk',2500,5500),  
( 'IT_PROG','Programmer',4000,10000),  
( 'MK_MAN','Marketing Manager',9000,15000);
```

```
COMMIT;
```

```
SELECT first_name, last_name, salary  
FROM employees  
WHERE salary > (  
SELECT MAX(salary)  
FROM employees  
WHERE job_id = 'SH_CLERK'  
)  
ORDER BY salary;
```

```
SELECT employees.*  
FROM employees  
JOIN (  
SELECT department_id, AVG(salary) AS avg_salary  
FROM employees  
GROUP BY department_id  
) AS department_avg
```

```
ON employees.department_id = department_avg.department_id
WHERE employees.salary = (
SELECT MAX(avg_salary)
FROM (
SELECT AVG(salary)
FROM employees
GROUP BY department_id
) AS subquery
);
```

```
SELECT *
FROM employees
WHERE JOB_ID = 'IT_PROG' AND SALARY > (SELECT SALARY FROM employees
WHERE EMPLOYEE_ID = 104);
```

```
SELECT employees.EMPLOYEE_ID, employees.FIRST_NAME,
employees.LAST_NAME, departments.DEPARTMENT_NAME
FROM employees
JOIN departments ON employees.DEPARTMENT_ID = departments.DEPARTMENT_ID;
```

```
SELECT DISTINCT SALARY
FROM employees
ORDER BY SALARY ASC
LIMIT 1 OFFSET 3;
```

```
SELECT first_name, last_name, salary
FROM employees
WHERE salary > (
SELECT AVG(salary)
FROM employees
WHERE department_id IN (
```

```
SELECT department_id
FROM departments
WHERE department_name LIKE 'IT%'
)
);
```

```
SELECT first_name, last_name, salary
FROM employees
WHERE salary > (
SELECT salary
FROM employees
WHERE last_name = 'Johnson'
);
```

```
SELECT employees.first_name, employees.last_name
FROM employees
JOIN departments ON employees.department_id = departments.department_id
JOIN locations ON departments.location_id = locations.location_id
WHERE employees.manager_id IS NOT NULL
AND locations.country_id = 'US';
```

```
SELECT first_name, last_name
FROM employees
WHERE employee_id NOT IN (
SELECT DISTINCT manager_id
FROM employees
WHERE manager_id IS NOT NULL
);
```

```
SELECT salary
```

```
FROM employees  
ORDER BY salary DESC  
LIMIT 1 OFFSET 4;
```

```
SELECT department_id, department_name  
FROM departments  
WHERE department_id NOT IN (  
SELECT DISTINCT department_id  
FROM employees  
);
```