CS 440 - Assignment 1

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1: Relational Model and SQL (10 points)
All queries tested on the osu phpmyadmin class cs440

(a) Return the did and dname of the departments with at least one half-time (50%) employee. (1 point)

```sql
select did, dname from dept where did in (select did from works where pct_time = 50)
```

	did	dname
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(b) Print the names of every employee who works in "Hardware", "Software", and "Research" departments. (1 point)

```sql
select ename from emp where eid in
(SELECT eid FROM works w left join
(select * from dept where (dname = 'Hardware' or dname = 'Software' or
dname = 'Research')) d
on w.did=d.did
group by eid
having count(*) = 3)
```

	ename
Edit Copy Delete	Shirish Ossenbruggen

(c) Return the names of every department without any employee. (1 point)

```sql
select dname from dept where did not in
(SELECT did FROM works)
```

←T→   dname

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(d) Print the managerids of managers who manage only departments with budgets greater than $1.5 million. (1 point)

```
select distinct managerid from dept d1 where 1500000 < ALL
(select d2.budget from dept d2 where d2.managerid = d1.managerid)
```

←T→   **managerid**

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(e) Print the name of employees whose salary is less than or equal to the salary of every employee. (1 point)

```
select ename from emp where salary <= all
(select salary from emp)
```

Options

←T→   ename

☐   Edit   Copy   ⊖ Delete   Antonio Lavante

(f) Print the enames of managers who manage the departments with the largest budget. (1 point) The answer on the sample database is:

```
select ename from emp where eid in
(select managerid from dept where budget =
(select max(d2.budget) from dept d2))
```

←T→   ename

☐   Edit   Copy   ⊖ Delete   Tonny Butterworth

(g) Print the name of every department and the average salary of the employees of that department. The department must have a budget more than or equal to $50. (1 point)

```
select d.dname, avg(e.salary) as 'average employee salary' from dept d, emp
e, works w where d.budget >= 50 and w.did = d.did and w.eid = e.eid group
by d.dname desc
```

←T→				dname	average employee salary
☐	Edit	Copy	Delete	Software	48291
☐	Edit	Copy	Delete	Research	490439.6666666667
☐	Edit	Copy	Delete	Human Resources	717092.5
☐	Edit	Copy	Delete	Hardware	61842.125
☐	Edit	Copy	Delete	Customer Service	40000

(h) Print the managerids of managers who control the largest amount of total budget. As an example, if a manager manages two departments, the amount of total budget for him will be the sum of budgets of two departments. We want to find managers that have max total budget. (1 point)

```
select managerid from dept group by managerid having sum(budget) = (select
max(bud.b) from (select sum(budget) b from dept group by managerid) bud )
```

←T→			managerid
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(i) Print the name of every employee whose salary is less than or equal to the average salary of all employees in his/her departments. (1 point)

```
(select distinct(emp.ename) from works left join (select avg(emp.salary)
av, did from works left join emp on works.eid = emp.eid group by did) aveg
on works.did = aveg.did left join emp on works.eid=emp.eid where salary <=
av)
```

ename
Alex Dalas
Antonio Lavante
Tonny Conner
Shirish Ossenbruggen
DeForest Hagimont
Tonny Butterworth
Shigehito Kropatsch

(j) Print the name of every employee who works only in "Hardware" department. (1 point)

```sql
select ename from works left join dept on works.did=dept.did left join emp
on works.eid=emp.eid where dept.dname='Hardware' and emp.eid in (select eid
from works left join dept on works.did=dept.did group by eid having
count(works.did) = 1)
```

ename
Alex Dalas
Sergio Ravarez
Antonio Lavante
Tonny Conner
Gladys Cooper
Rodney Ferreri
Arie Staelin