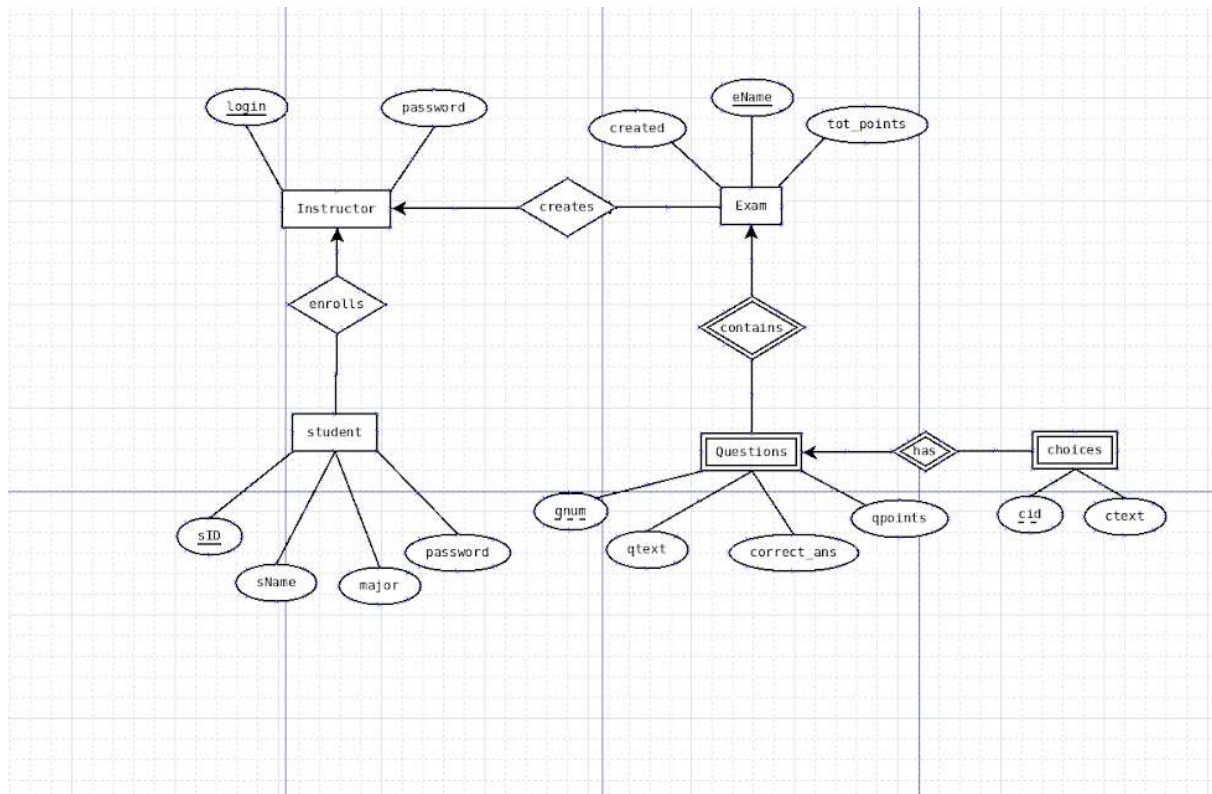


1.

ER Diagram:



Schema:

teacher(login,pass)

student(sID,name,major,password)

exam(eName,createdon,tpoints)

questions(qnum,qtext,qpoints,correctans,eName)

FK: eName references exam(eName)

choice(cid,qnum,eName,ctext)

FK: qnum references questions(qnum), eName references exam(eName)

gradedexam(sID,eName,qnum,stu_answer,cor_answer,pearned)

FK: sID references student(sID), eName references exam(eName),

qnum references questions(qnum)

2.

SQL Schema:

```
create table teacher(  
login char(20) PRIMARY KEY,  
pass char(20)  
);  
insert into teacher values ("teacher9000","teachpass");
```

```
create table exam(  
eName char(20) PRIMARY KEY,  
createdon datetime,  
totalpoint int default 0  
);
```

```
create table questions(  
qnum int,  
qtext char(50),  
qpoints int,  
correctans char(50),  
eName char(20),  
PRIMARY KEY(qnum, eName)  
);
```

```
create table choice(  
cid char(5),  
qnum char(5),  
eName char(20),  
ctext char(50),  
PRIMARY KEY(cid, qnum, eName)  
);
```

```
create table student(  
sID char(5) PRIMARY KEY,  
sname char(15) not null,  
major char(10),  
password char(25) default "spass"  
);
```

```
create table gradedexam(  
sID char(5),  
eName char(20),  
qnum int,  
s_answer char(50),
```

```
c_answer char(50),
points int default 0,
PRIMARY KEY(sID, eName, qnum)
);
```

3. (teacher functions in MySQL, student functions in php)

```
delimiter //
create procedure addStudents(id char(5), name char(15), major
char(10))
begin
insert into student values(
id, name, major, default
);
end//

create procedure addExam(name char(20), tpoints int)
begin
insert into exam values(
name, now(), tpoints
);
end//

create procedure addQuestion(qnum int, qtext char(50), qpoints int,
correctans char(50), ename char(20)
)
begin
insert into questions values(
qnum, qtext, qpoints, correctans, ename
);
end//

create procedure addChoice(ch char(5), qnum int, ename char(20), text
char(50))
begin
insert into choice values(
ch, qnum, ename, text
);
end//

create procedure setAns(answer char(50), num int, examname char(20))
begin
update questions set correctans = answer
```

```
where qnum = num and eName = examname;
end//
```

```
create procedure grade (id char(5), ex char(20), num int, sans
char(5), cans char(5))
begin
IF(sans=cans) THEN
insert into gradedexam values (id, ex, num, sans, cans, (select
qpoints from questions where qnum=num and eName=ex));
ELSE
insert into gradedexam values (id, ex, num, sans, cans, 0);
end if;
end//
```

```
create function checkgrade(id char(5), ex char(20))
returns int
begin
declare totalscore int;
select SUM(points) into totalscore from gradedexam where sID = id
and eName = ex
GROUP BY eName;
return totalscore;
end//
```

```
grant execute on function checkgrade to 'cs3425gr'@'%';
grant execute on procedure setAns to 'cs3425gr'@'%';
grant execute on procedure addChoice to 'cs3425gr'@'%';
grant execute on procedure addExam to 'cs3425gr'@'%';
grant execute on procedure addQuestion to 'cs3425gr'@'%';
grant execute on procedure addStudents to 'cs3425gr'@'%';
grant execute on procedure grade to 'cs3425gr'@'%';
```

3.

i.

a.

in database: call addStudents('S05', 'Alice', 'cs');
(default pass='spass')

b.

will insert into data table student with values ('S05', 'Alice', 'cs', default)

c.

```
MariaDB [ahegg]> select * from student;
```

```
+-----+-----+-----+-----+
| sID | sname | major | password |
+-----+-----+-----+-----+
| S01 | jumy  | cs    | password |
| S02 | Alice | CS    | spass    |
| S03 | bub   | cs    | spass    |
| S04 | bub   | cs    | password |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
MariaDB [ahegg]> call addStudents('S05','Alice','cs');
Query OK, 1 row affected (0.01 sec)
```

```
MariaDB [ahegg]> select * from student;
```

```
+-----+-----+-----+-----+
| sID | sname | major | password |
+-----+-----+-----+-----+
| S01 | jumy  | cs    | password |
| S02 | Alice | CS    | spass    |
| S03 | bub   | cs    | spass    |
| S04 | bub   | cs    | password |
| S05 | Alice | cs    | spass    |
+-----+-----+-----+-----+
5 rows in set (0.01 sec)
```

ii.

a.

in database: call addExam('QuizF18',10);

b.

can see in select * from exam that QuizF18 has been added with 10 possible points and has time it was created

c.

```
MariaDB [ahegg]> select * from exam;
Empty set (0.00 sec)
```

```
MariaDB [ahegg]> call addExam('QuizF18',10);
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> select * from exam;
+-----+-----+-----+
| eName   | createdon           | totalpoint |
+-----+-----+-----+
| QuizF18 | 2019-12-17 15:39:09 | 10         |
+-----+-----+-----+
1 row in set (0.00 sec)
```

iii,

a.

in database: call addQuestion(1, 'question text', 3, 'C', 'QuizF18');
repeat for question 2 and 3
then: call addChoice('A',1,'QuizF18','choice text');
repeat for choices B-D and questions 2-3

b.

```
MariaDB [ahegg]> select * from questions;
+-----+-----+-----+-----+-----+
| qnum | qtext                                     | qpoints | correctans | eName   |
+-----+-----+-----+-----+-----+
| 1    | what command is used to execute a procedure? | 3       | C          | QuizF18 |
| 2    | what command is used to execute a function? | 4       | D          | QuizF18 |
| 3    | what does the drop command do?              | 3       | C          | QuizF18 |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
MariaDB [ahegg]> select * from choice;
+-----+-----+-----+-----+
| cid | qnum | eName   | ctext           |
+-----+-----+-----+-----+
| A   | 1    | QuizF18 | choice a        |
| A   | 2    | QuizF18 | choice a        |
| A   | 3    | QuizF18 | choice a        |
| B   | 1    | QuizF18 | choice b        |
| B   | 2    | QuizF18 | choice b        |
```

B	3	QuizF18	choice b
C	1	QuizF18	call
C	2	QuizF18	choice c
C	3	QuizF18	removes something from DB
D	1	QuizF18	choice d
D	2	QuizF18	select
D	3	QuizF18	choice d

12 rows in set (0.00 sec)

c.

```
MariaDB [ahegg]> select * from questions;
Empty set (0.00 sec)
```

```
MariaDB [ahegg]> call addQuestion(1,'what command is used to execute a
procedure?',3,'C','QuizF18');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> call addQuestion(2,'what command is used to execute a
function?',4,'D','QuizF18');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> call addQuestion(3,'what does the drop command
do?',3,'C','QuizF18');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> select * from questions;
+-----+-----+-----+-----+-----+
| qnum | qtext                                     | qpoints | correctans | eName |
+-----+-----+-----+-----+-----+
| 1 | what command is used to execute a procedure? | 3 | C | QuizF18 |
| 2 | what command is used to execute a function? | 4 | D | QuizF18 |
| 3 | what does the drop command do? | 3 | C | QuizF18 |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
MariaDB [ahegg]> select * from choice where qnum=1;
```

Empty set (0.00 sec)

```
MariaDB [ahegg]> call addChoice('A',1,'QuizF18','choice a');
Query OK, 1 row affected (0.01 sec)
```

```
MariaDB [ahegg]> call addChoice('B',1,'QuizF18','choice b');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> call addChoice('C',1,'QuizF18','call');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> call addChoice('D',1,'QuizF18','choice d');
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB [ahegg]> select * from choice where qnum=1;
```

```
+-----+-----+-----+-----+
| cid | qnum | eName   | ctext   |
+-----+-----+-----+-----+
| A   | 1    | QuizF18 | choice a |
| B   | 1    | QuizF18 | choice b |
| C   | 1    | QuizF18 | call      |
| D   | 1    | QuizF18 | choice d |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

...REPEAT FOR Q 2 AND 3

iv.

a.

on webpage go to studentpage.php and enter login data

b.



A screenshot of a web login interface. It features two input fields: 'username:' with the value 'S05' and 'password:' with masked characters (dots). Below the fields are two buttons labeled 'login' and 'logout'.

redirected to:

LOGGED IN AS S05

take exam:

start exam

view score:

view results

new password (max 25 char):

change password

LOGGED IN AS S05

take exam:

start exam

view score:

view results

new password (max 25 char):

change password

S05 PASSWORD CHANGED - LOG OUT AND BACK IN

return to login page

c.

```
MariaDB [ahegg]> select * from student where sID='S05';
```

```
+-----+-----+-----+-----+
| sID | sname | major | password |
+-----+-----+-----+-----+
| S05 | Alice | cs    | password |
+-----+-----+-----+-----+
```

```
1 row in set (0.00 sec)
```

v.

a.

enter 'QuizF18' into exam name field where it says take exam and click button
then for each question fill answer letter into box and hit submit
when no more questions are left click finished exam

b.

to show answers and grading result,

```
select qnum, s_answer, c_answer, points from gradedexam where sID='S05' and  
eName='QuizF18';
```

to see total score,

```
select checkgrade('S05','QuizF18');
```

c.

```
MariaDB [ahegg]> select qnum, s_answer, c_answer, points from  
gradedexam where sID='S05';
```

qnum	s_answer	c_answer	points
1	A	C	0
2	D	D	4
3	C	C	3

3 rows in set (0.00 sec)

vi.

a.

from studenttools.php type exam name into check results box and click button

b.

LOGGED IN AS S05

take exam:

view score:

new password (max 25 char):

redirects to:

```
1. [student answer]: A  
[SOLUTION]: C  
points earned: 0  
2. [student answer]: D  
[SOLUTION]: D  
points earned: 4  
3. [student answer]: C  
[SOLUTION]: C  
points earned: 3  
TOTAL SCORE: 7
```

c.

should be same as select from v.