American International University- Bangladesh

Faculty of Science and Technology

Department of Computer Science

Title: MID TERM PROJECT

ADVANCE DATABASE MANAGEMENT SYSTEM

Section: A

Mid Term Project

FALL 22-23

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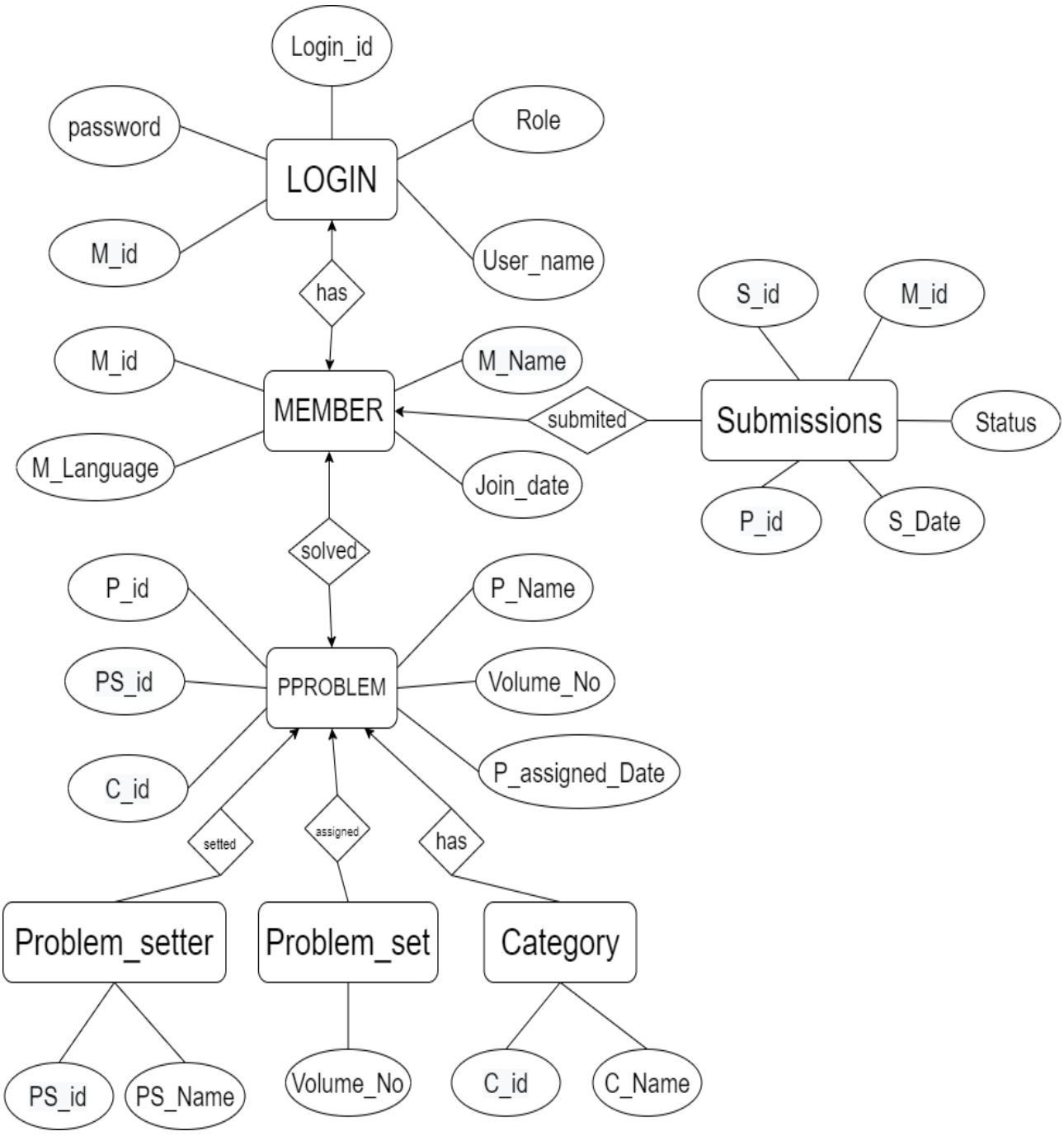
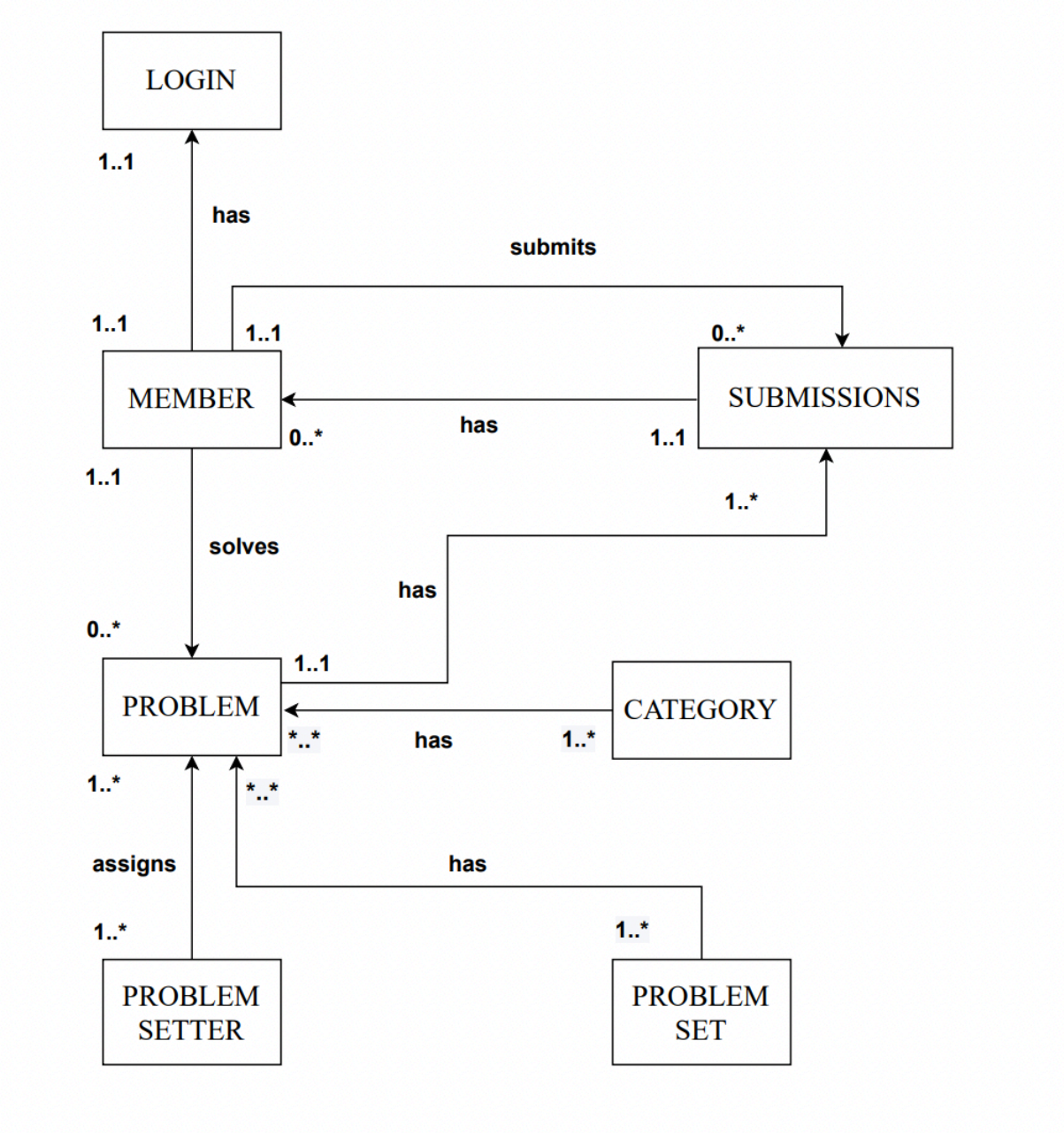
System summary:

An online judge database system is a management system that acts for compiling, executing and evaluating programs submitted by users. Each member needs an account to login. A new member has to register an account. Admin will accept registration process. And then the member needs to log in their account, which is verified by system. If the entered password is incorrect, system requests for the password and the member enters password again. If the entered password is correct, the member gets access in this system. After login, a member can solve multiple problems. A member can select the problems from the problem sets and category-wise. There will be some problem setters, who will set, update, delete and check the problems and submissions. Each problem setter can set multiple problems. Different problem-set and categories have different problems. A member can submit multiple submissions. A problem has been submitted by many members. Finally, if the admin accepts the submission, that problem will be accepted as solved.

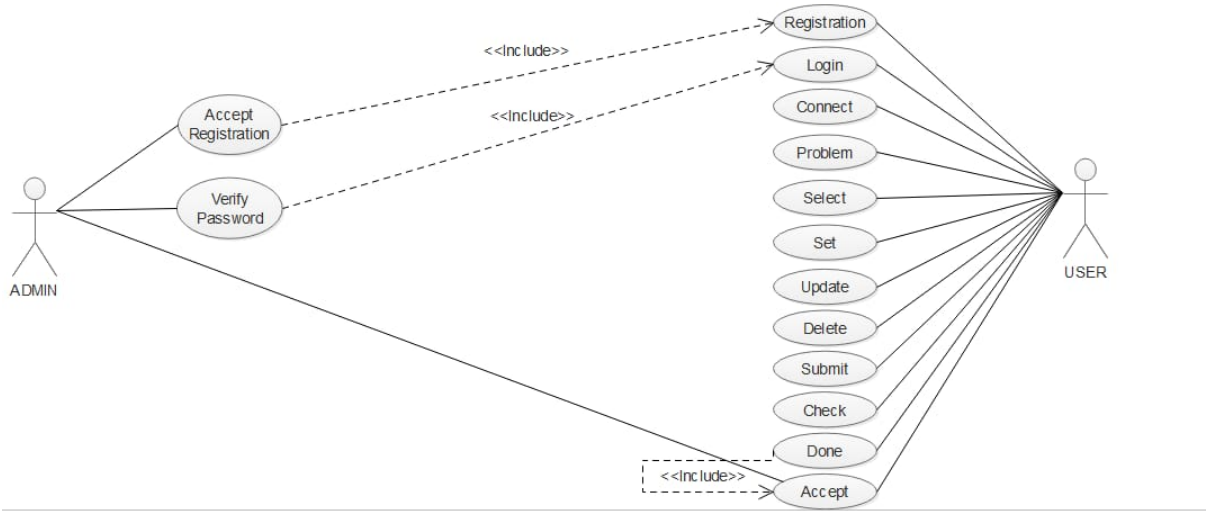
An ERD diagram:



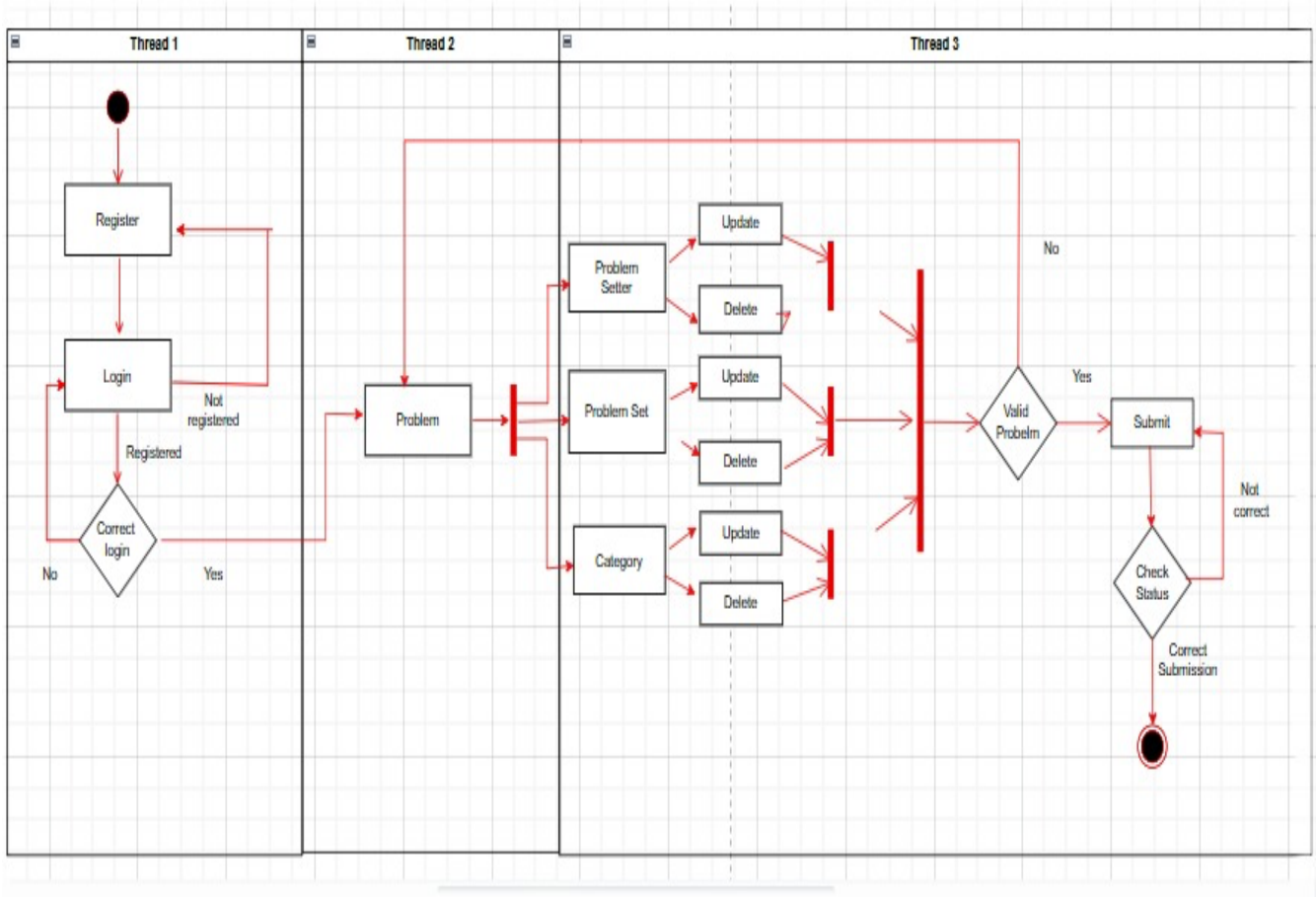
Class diagram:



Use Case diagram:



Activity diagram:



Database schema diagram:

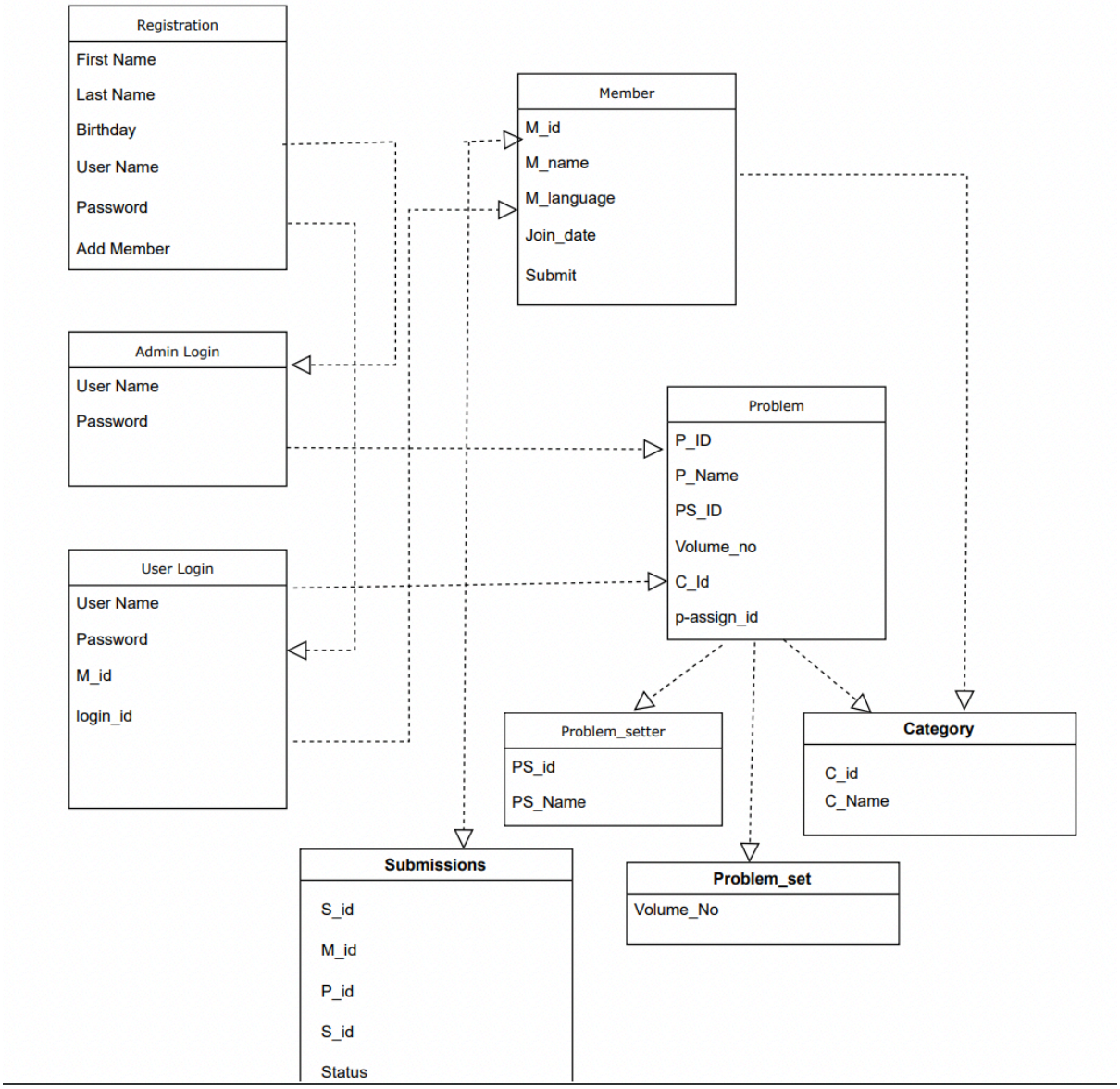


Table Creation:

```
CREATE TABLE member
      (m_id NUMBER(2) CONSTRAINT PK_member PRIMARY KEY,
       m_language VARCHAR2(14) ,
       m_name VARCHAR2(17),
           join_date DATE) ;



CREATE TABLE U_login
      (login_id NUMBER(2) CONSTRAINT PK_login PRIMARY KEY,
       user_name VARCHAR2(14) ,
       password VARCHAR2(17),
           role VARCHAR2(14),
      m_id NUMBER(2) CONSTRAINT FK_m_id REFERENCES member ) ;



//sequence for member_id

CREATE SEQUENCE m_id_seq
   INCREMENT BY 1;


//sequence for login id

CREATE SEQUENCE l_id_seq
   INCREMENT BY 1;



CREATE TABLE Category
      (C_id NUMBER(2) CONSTRAINT PK_Category PRIMARY KEY,
       Cname VARCHAR2(14)
       ) ;


CREATE TABLE PROBLEM_SET(VOLUME_NO NUMBER) ;

//sequence for volume

CREATE SEQUENCE VOL_seq
   INCREMENT BY 1;
```

```
CREATE TABLE PROBLEM_SETTER (
PS_id NUMBER(2) CONSTRAINT PK_PROBLEM_SETTER PRIMARY KEY,
        PS_NAME VARCHAR2(14)
        ) ;


CREATE TABLE problem
      (p_id NUMBER(2) CONSTRAINT PK_problem PRIMARY KEY,
       volume_no number,
      PS_id NUMBER(2) CONSTRAINT FK_ps_id REFERENCES Problem_setter ,
      c_id number(2)  CONSTRAINT FK_c_id REFERENCES category,
      P_assigned_date date, p_NAME VARCHAR2(50)
                  ) ;



CREATE TABLE submission
      (s_id NUMBER(2) CONSTRAINT PK_submission PRIMARY KEY,
       M_id number(2),
      p_id number(2)  CONSTRAINT FK_p_id REFERENCES problem,
      s_date date,
      status number(2)
                  ) ;
```

Screen shots of sample data:

U_Login:

LOGIN_ID	U_NAME	U_PASS	U_ROLE	M_ID
5	gorila	5678	user	15
7	advds	1234	user	17
3	abid	1234	user	13
4	shovon	4321	user	14
9	tanim	3456	user	19
6	labib	5678	user	16
8	emon	1234	user	18

Member:

M_ID	M_LANGUAGE	M_NAME	JOIN_DATE
15	php	shohan	10/31/2022
17	c++	abcd	10/31/2022
13	c#	abid hassan	10/31/2022
14	c++	tahsin hassan	10/31/2022
19	c#	tanim al mahmud	10/31/2022
16	c#	labib ibna	10/31/2022
18	php	zubayer	10/31/2022

Problem:

P_ID	VOLUME_NO	PS_ID	C_ID	P_ASSIGNED_DATE	P_NAME
1	2	31	3	12/17/2021	OPPOSITE TASK
2	3	32	2	12/17/2021	HIGHER MATH
3	1	33	1	04/17/2022	BRUSH
4	2	34	3	10/19/2022	LIFT
5	4	35	1	11/11/2022	HOW COW

Problem_setter:

PS_ID	PS_NAME
31	ABID HASSAN
32	TAHSIN HASAN
33	RUBABA RAHMAN
34	NUBAH SURRAT
35	SARZILA JISHA

Category:

C_ID	CNAME
1	STACK
2	QUEUE
3	SORTING
4	GRAPH
5	TREE

Problem_set:

VOLUME_NO
1
2
4
5
3

Submission:

S_ID	M_ID	P_ID	S_DATE	STATUS
21	19	3	05/13/2021	1
2	13	3	04/17/2022	1
3	14	2	01/12/2022	1
4	15	5	11/11/2022	0
5	13	1	11/09/2022	1
6	14	3	04/11/2022	0

SQL Queries:

1.Find the details of member whose U_name='' and pas=''.

```
select * from U_login l,member m where m.m_id=l.m_id and l.U_name='abid' and
l.U_pass='1234';
```

2.select All problem setted by SARZILA JISHA.

```
select p.P_name,ps.Ps_name from problem p,problem_setter ps where p.ps_id=ps.ps_id and
ps.PS_name='SARZILA JISHA';
```

3.show details of the member who have maximum submissions.

```
select * from member where M_ID in (
select M_ID from submission group by M_ID having count(*)=(
select max(count(*)) from submission group by M_ID));
```

4.Find the category have the most number on problem.

```
select cname from category where c_id in(
select c_id from problem group by c_id having count(*)=(
select max(count(*)) from problem group by c_id));
```

5.select problem setted after abids last submissions.

```
select * from problem where p_assigned_date>(
select max(S_date) from submission s ,member m where s.M_id=m.M_ID and
m.M_NAME='abid hassan') ;
```

6.Show the info of member and problem whose submissions are accepted.

```
select M.M_ID, M.M_NAME, S.P_ID, P.P_NAME FROM MEMBER M, SUBMISSION S,
PROBLEM P
where M.M_ID=S.M_ID AND S.P_ID = P.P_ID AND S.STATUS = 1;
```

7.Find the problem setter and problem info which problem is not solved.

```
select p.p_id,p.p_name, ps.ps_id, ps.ps_name from problem p, problem_setter ps,
submission s
where p.p_id = s.p_id and p.ps_id = ps.ps_id and s.status = 0
group by p.p_id, p.p_name, ps.ps_id, ps.ps_name;
```

8. Find the info of the problems and volume number and member name which is solved by C# or php and problem is accepted.

```
select  p.p_id,p.p_name, ps.volume_no,m.m_name from  submission s,problem p,
problem_set ps ,member m
where p.p_id = s.p_id and ps.VOLUME_NO = p.VOLUME_NO and s.m_id=m.m_id and
m.M_language in ('c#','php') and s.status=1;
```

9. Find the info of member who has successfully solved 'RUBABA RAHMAN's problem.

```
select m.m_id, m.m_name from member m, problem p, submission s, problem_setter ps
where m.m_id = s.m_id and s.p_id = p.p_id and s.status = 1
and p.ps_id = ps.ps_id and ps.ps_name = 'RUBABA RAHMAN';
```

10. count last years total monthly submission.

```
select to_char(S_DATE, 'Month') as MONTH,count(*) as Total_Submissions from
submission
where extract(year from S_DATE)=extract(year from sysdate)
group by to_char(S_DATE, 'Month');
```