```sql
/*
      Query 1:
      Find the id and title of all courses which do not require any  prerequisites.
*/

select course.course_id, title
from course left join prereq on course.course_id = prereq.course_id
where prereq.course_id is NULL
;

/*
      OUTPUT:-
      +-----------+-----------------------------+
      | course_id | title                       |
      +-----------+-----------------------------+
      | BIO-101   | Intro. to Biology           |
      | CS-101    | Intro. to Computer Science  |
      | FIN-201   | Investment Banking          |
      | HIS-351   | World History               |
      | MU-199    | Music Video Production      |
      | PHY-101   | Physical Principles         |
      +-----------+-----------------------------+
      6 rows in set (0.00 sec)
*/

/*
      Query 2:
      Find the names of students who have not taken any biology dept courses
*/

(select name
from  (select distinct ID
       from takes left join (select course_id
                             from course
                             where dept_name = 'Biology') as x on takes.course_id = x.course_id
       where x.course_id is NULL) as y natural join student)
union
(select name
from student left join takes on student.id = takes.id
where takes.id is NULL)
;

/*
      OUTPUT:-
      +----------+
      | name     |
      +----------+
      | Zhang    |
      | Shankar  |
      | Levy     |
      | Williams |
      | Brown    |
      | Bourikas |
      | Aoi      |
      | Chavez   |
      | Brandt   |
      | Sanchez  |
      | Peltier  |
      | Snow     |
      +----------+
      12 rows in set (0.00 sec)
*/

/*
      Query 3:
      1. Give a 10% hike to all instructors.
*/

update instructor
set salary = 1.1 * salary
;
```

```
/*
      OUTPUT:-
      Query OK, 13 rows affected (0.11 sec)
      Rows matched: 13  Changed: 13  Warnings: 0

      Table changes to :-

      mysql> select * from instructor;
      +-------+-----------+------------+-----------+
      | ID    | name      | dept_name  | salary    |
      +-------+-----------+------------+-----------+
      | 10000 | success   | Elec. Eng. |  88000.00 |
      | 10101 | Srinivasan| Comp. Sci. |  71500.00 |
      | 12121 | Wu        | Finance    |  99000.00 |
      | 15151 | Mozart    | Music      |  44000.00 |
      | 22222 | Einstein  | Physics    | 104500.00 |
      | 32343 | El Said   | History    |  66000.00 |
      | 33456 | Gold      | Physics    |  95700.00 |
      | 45565 | Katz      | Comp. Sci. |  82500.00 |
      | 58583 | Califieri | History    |  68200.00 |
      | 76543 | Singh     | Finance    |  88000.00 |
      | 76766 | Crick     | Biology    |  79200.00 |
      | 83821 | Brandt    | Comp. Sci. | 101200.00 |
      | 98345 | Kim       | Elec. Eng. |  88000.00 |
      +-------+-----------+------------+-----------+
      13 rows in set (0.00 sec)
*/


/*
      Query 4:
      2. Increase the tot_creds of all students who have taken the course titled "Genetics"  by the
number of credits associated with       that course.
*/

update student, (select ID, credits
                from takes natural join course
                where title = 'Genetics') as x
set tot_cred = tot_cred + x.credits
where student.ID = x.ID
;

/*
      OUTPUT:-
      Query OK, 1 row affected (0.11 sec)
      Rows matched: 1  Changed: 1  Warnings: 0

      Relation changes to:-
      mysql> select * from student;
      +-------+----------+------------+----------+
      | ID    | name     | dept_name  | tot_cred |
      +-------+----------+------------+----------+
      | 00128 | Zhang    | Comp. Sci. |      102 |
      | 12345 | Shankar  | Comp. Sci. |       32 |
      | 19991 | Brandt   | History    |       80 |
      | 23121 | Chavez   | Finance    |      110 |
      | 44553 | Peltier  | Physics    |       56 |
      | 45678 | Levy     | Physics    |       46 |
      | 54321 | Williams | Comp. Sci. |       54 |
      | 55739 | Sanchez  | Music      |       38 |
      | 70557 | Snow     | Physics    |        0 |
      | 76543 | Brown    | Comp. Sci. |       58 |
      | 76653 | Aoi      | Elec. Eng. |       60 |
      | 98765 | Bourikas | Elec. Eng. |       98 |
      | 98988 | Tanaka   | Biology    |      124 |
      +-------+----------+------------+----------+
      13 rows in set (0.00 sec)
*/


/*
      Query 5:
      3. For all instructors who are advisors of atleast 2 students, increase their salary by 50000.
*/
```

```sql
update instructor, (select i_id
                      from (select i_id, count(s_id) as cnt
                            from advisor
                            group by i_id) as x
                      where cnt >= 2)  as y
set salary = salary + 50000
where instructor.id = y.i_id
;
```

```
/*
      OUTPUT:-
      Query OK, 3 rows affected (0.07 sec)
      Rows matched: 3  Changed: 3  Warnings: 0

      Table before:-
      mysql> select * from instructor;
      +-------+-----------+------------+-----------+
      | ID    | name      | dept_name  | salary    |
      +-------+-----------+------------+-----------+
      | 10000 | success   | Elec. Eng. |  88000.00 |
      | 10101 | Srinivasan | Comp. Sci. |  71500.00 |
      | 12121 | Wu        | Finance    |  99000.00 |
      | 15151 | Mozart    | Music      |  44000.00 |
      | 22222 | Einstein  | Physics    | 104500.00 |
      | 32343 | El Said   | History    |  66000.00 |
      | 33456 | Gold      | Physics    |  95700.00 |
      | 45565 | Katz      | Comp. Sci. |  82500.00 |
      | 58583 | Califieri | History    |  68200.00 |
      | 76543 | Singh     | Finance    |  88000.00 |
      | 76766 | Crick     | Biology    |  79200.00 |
      | 83821 | Brandt    | Comp. Sci. | 101200.00 |
      | 98345 | Kim       | Elec. Eng. |  88000.00 |
      +-------+-----------+------------+-----------+
      13 rows in set (0.00 sec)

      Table after:-
      mysql> select * from instructor;
      +-------+-----------+------------+-----------+
      | ID    | name      | dept_name  | salary    |
      +-------+-----------+------------+-----------+
      | 10000 | success   | Elec. Eng. |  88000.00 |
      | 10101 | Srinivasan | Comp. Sci. |  71500.00 |
      | 12121 | Wu        | Finance    |  99000.00 |
      | 15151 | Mozart    | Music      |  44000.00 |
      | 22222 | Einstein  | Physics    | 154500.00 |
      | 32343 | El Said   | History    |  66000.00 |
      | 33456 | Gold      | Physics    |  95700.00 |
      | 45565 | Katz      | Comp. Sci. | 132500.00 |
      | 58583 | Califieri | History    |  68200.00 |
      | 76543 | Singh     | Finance    |  88000.00 |
      | 76766 | Crick     | Biology    |  79200.00 |
      | 83821 | Brandt    | Comp. Sci. | 101200.00 |
      | 98345 | Kim       | Elec. Eng. | 138000.00 |
      +-------+-----------+------------+-----------+
      13 rows in set (0.00 sec)
*/
```

```
/*
      Query 6:
      4. Set the  credits to 2 for all courses which have less than 5 students taking them (across all
sections for the course, across all                years/semesters).
*/
```

```sql
update course, (select x.course_id
                from (select course.course_id, count(distinct ID) as cnt
                      from course left join takes on course.course_id = takes.course_id
                      group by course.course_id) as x
                where cnt < 5) as y
set credits = 2
where course.course_id = y.course_id
;
```

```
/*
     OUTPUT:-

     Query OK, 12 rows affected (0.11 sec)
     Rows matched: 12  Changed: 12  Warnings: 0

     Table before:-
     mysql> select * from course order by course_id;
     +-----------+---------------------------+------------+---------+
     | course_id | title                     | dept_name  | credits |
     +-----------+---------------------------+------------+---------+
     | BIO-101   | Intro. to Biology         | Biology    |       4 |
     | BIO-301   | Genetics                  | Biology    |       4 |
     | BIO-399   | Computational Biology     | Biology    |       3 |
     | CS-101    | Intro. to Computer Science | Comp. Sci. |      4 |
     | CS-190    | Game Design               | Comp. Sci. |       4 |
     | CS-315    | Robotics                  | Comp. Sci. |       3 |
     | CS-319    | Image Processing          | Comp. Sci. |       3 |
     | CS-347    | Database System Concepts  | Comp. Sci. |       3 |
     | EE-181    | Intro. to Digital Systems | Elec. Eng. |       3 |
     | FIN-201   | Investment Banking        | Finance    |       3 |
     | HIS-351   | World History             | History    |       3 |
     | MU-199    | Music Video Production     | Music      |      3 |
     | PHY-101   | Physical Principles       | Physics    |       4 |
     +-----------+---------------------------+------------+---------+
     13 rows in set (0.00 sec)

     Table after:-
     mysql> select * from course order by course_id;
     +-----------+---------------------------+------------+---------+
     | course_id | title                     | dept_name  | credits |
     +-----------+---------------------------+------------+---------+
     | BIO-101   | Intro. to Biology         | Biology    |       2 |
     | BIO-301   | Genetics                  | Biology    |       2 |
     | BIO-399   | Computational Biology     | Biology    |       2 |
     | CS-101    | Intro. to Computer Science | Comp. Sci. |      4 |
     | CS-190    | Game Design               | Comp. Sci. |       2 |
     | CS-315    | Robotics                  | Comp. Sci. |       2 |
     | CS-319    | Image Processing          | Comp. Sci. |       2 |
     | CS-347    | Database System Concepts  | Comp. Sci. |       2 |
     | EE-181    | Intro. to Digital Systems | Elec. Eng. |       2 |
     | FIN-201   | Investment Banking        | Finance    |       2 |
     | HIS-351   | World History             | History    |       2 |
     | MU-199    | Music Video Production     | Music      |      2 |
     | PHY-101   | Physical Principles       | Physics    |       2 |
     +-----------+---------------------------+------------+---------+
     13 rows in set (0.00 sec)
*/
```