1)University Schema

classroom(*building, room_number*, *capacity*)
department(*dept_name*, *building*, *budget*)
course(*course id*, *title*, *dept_name*, *credits*)
instructor(*iID*, *name*, *dept_name*, *salary*)
section(*course_id, sec_id, semester, year*, *building*, *room_number*, *time_slot_id*)
teaches(*iID, course_id, sec_id, semester, year*)
student(*sID*, *name*, *dept_name*, *tot_cred*)
takes(*sID, course_id, sec_id, semester, year*, *grade*)
advisor(*sID, iID*)
time_slot(*time_slot_id, day, start_time*, *end_time*)
prereq(*course_id, prere_id*)

Write the following queries in SQL, using the university schema. (We suggest you actually run these queries on a database, using the sample data that has been provided on the Web site of the book, db-book.com. Instructions for setting up a database, and loading sample data, are provided on the above Web site.)

1. Find the titles of courses in the COE department that have 3 credits.

2. Find the highest salary of any instructor.

3. Find all instructors earning the highest salary (there may be more than one with the same salary).

4. Find the maximum enrollment, across all sections, in Autumn 2016.

5. Find the enrollment of each section that was offered in Autumn 2009.

6. Find the IDs and names of all students who have not taken any course offering before Spring 2013.

7. Find the lowest, across all departments, of the per-department maximum salary computed by the preceding query.

8. Create a new course "CS-001", titled "Weekly Seminar",with 0 credits.

9. Delete the course CS-001. What will happen if you run this delete statement without first deleting offerings (sections) of this course.

10. Display the list of all course sections offered in Spring 2015, along with the names of the instructors teaching the section. If a section has more than one instructor, it should appear as many times in the result as it has instructors. If it does not have any instructor, it should still appear in the result with the instructor name set to "-".

11**.** Find the instructor ID, name, dept name, and salary for instructors whose salary
is greater than $80,000.

12. Find the names of all instructors in the EDM department together with the course id of all courses they teach.

13. Find the set of all courses taught in the Fall 2016 semester, the Spring 2016 semester, or both.

14. Find the names of all instructors whose department is in the 'Academics' building.

15. Find the set of all courses taught in the Fall 2016 semester, or in the Spring 2015 semester, or both.

16. Find the set of all courses taught in the Fall 2014 semester, but not in the Spring 2010 semester.

17. Find the IDs of all students who were taught by an instructor named Einstein; make sure there are no duplicates in the result.

18. Find the names of all studentswho have taken at least one Comp. Sci.course; make sure there are no duplicate names in the result.

19. For each department, find the maximum salary of instructors in that department. You may assume that every department has at least one instructor.

20. Display a list of all instructors, showing their ID, name, and the number of sections that they have taught. Make sure to show the number of sections as 0 for instructors who have not taught any section. Your query should use an outerjoin, and should not use scalar subqueries.

21.Write the same query as above, but using a scalar subquery, without outerjoin.

22. Find all students who have taken all courses offered in the Biology department.

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1)Flight schema

Flights(flno: integer, from: string, to: string, distance: integer, Departs:time, arrives:time, price:integer)
Aircraft(aid: integer, aname: string, cruisingrange: integer)
Certified(eid: integer, aid: integer)
Employees(eid: integer, ename: string, salary: integer)

Note: Every pilot is certified for some aircraft, and only pilots are certified to fly.
cruisingrange *means the maximum distance an aircraft can fly without landing say, 10000 miles. Aircraft Id(aid) is the company id of the aircraft e.g. Aircraft(101, Boeing, 1000). Employess include pilots along with Airlines(Aircraft) staff.* Write the following Queries in SQL.

1.Find the names of aircraft such that all pilots certified to operate them earn more than $80,000.

2. For each pilot who is certified for more than three aircraft, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified.

3. Find the names of pilots whose salary is less than the price of the cheapest route from Los Angeles to Honolulu.

4. For all aircraft with cruisingrange over 1000 miles, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

5. Find the names of pilot/s certified for some Boeing aircraft who drove the maximum distance on all flights departing from Hyderabad.

6. Find the aids of all aircraft that can be used on routes from Los Angeles to Chicago.

7. Identify the routes that can be piloted by every pilot who makes more than $100,000.

8. Print the enames of pilots who can operate planes with cruisingrange greater than 3000 miles but are not certified on any Boeing aircraft.

9. Compute the difference between the average salary of a pilot and the average salary of all employees (including pilots).

10. Print the name and salary of every nonpilot whose salary is more than the average salary for pilots.

11. Print the names of employees who are certified only on aircrafts with cruising range longer than 1000 miles.

12. Print the names of employees who are certified only on aircrafts with cruising range shorter than 1000 miles, but on at least two such aircrafts.

13. Print the names of employees who are certified only on aircrafts with cruising range

longer than 1000 miles and who are certified on some Boeing aircraft.

14. Finel the eids of pilots certified for some Boeing aircraft.

15. Find the names of pilots certified for some Boeing aircraft.

16. Find the aids of all aircraft that can be used on non-stop flights from Kolkata to Madras.

17. Identify the flights that can be piloted by every pilot whose salary is more than $100,000.

18. Find the names of pilots who can operate planes with a range greater than 3,000 miles but are not certified on any Boeing aircraft.

19. Find the eids of employees who make the highest salary in every airlines.

20. Find the eids of employees who make the second highest salary.

21. Find the eids of employees who are certified for the largest number of aircraft.

22. Find the eids of employees who are certified for exactly three aircrafts.

23. Find the total amount paid to pilots who drove greater than 500,000 miles together across all their journey on the routes from Chennai to Dublin and return route also. You need to consider all direct flights along with the connecting flights as well.

24. Is there a sequence of flights from Chennai to Frankfurt? Each flight in the sequence is required to depart from the city that is the destination of the previous flight; the first flight must leave Chennai, the last flight must reach Frankfurt, and there is no restriction on the number of intermediate flights. Your query must determine whether a sequence of flights from Chennai to Frankfurt exists for any input Flights relation instance.

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4) Suppliers-Parts-Project database

Supplier(sno: integer, sname:string, status:integer, city: string)
Part(pno:integer, pname:string, color: string, weight:integer, city:string)
Project(jno:integer, jname:string, city:string)
Spj(sno, pno, jno:integer, qty:number)

Write the following Queries in SQL.

1)Get part numbers for parts that either weigh more than 16 pounds or are supplied by supplier S2, or both.

2)Get all supplier-number/part-number/project-number triples such that the indicated supplier, part, and project are all co-located.

3)Get all supplier-number/part-number/project-number triples such that no two of the indicated supplier, part, and project are co-located.

4)Get part numbers for parts supplied by a supplier in London to a project in London.

5)Get part numbers for parts supplied to any project by a supplier in the same city as that project.

6)Get project numbers for projets supplied by at least one supplier not in the same city.

7)Get all pairs of part numbers such that some supplier supplies both the indicated parts.

8)Get the total quantity of part1 supplied by supplier S1.

9)For each part being supplied to a projet, get the part number, the project number, and the corresponding total quantity.

10)Get part names for parts supplied to any project in London.

11)Get supplier numbers of suppliers supplying at least one part supplied by at least one supplier who supplies at least one red part.

12)Get project numbers for projects supplied with part P1 in an average quantity greater than the greatest quantity in which any part is supplied to project J1.

13)Get supplier numbers for suppliers supplying some project with part P1 in a quantity greater than the averages shipment quantity of part P1 for that project.

14)Get project numbers for parts supplied entirely by Supplier S1.

15)Get all paris of supplier numbers such that the suppliers concerned are co-located. (i.e., located in the same city).

16) Get supplier numbers for suppliers who supply at least all those parts supplied by supplier S2.

17) Get the part number and the weight in grams for each part with weight > 10, 000 grams.

18) For each shipment, get full shipment details, including total shipment weight.

19) For each supplier, get the supplier number and the total number of parts supplied.

20) Get part numbers for parts that are supplied either by a London supplier or to a London project.

21) Get all pairs of city names such that a supplier located in the first city supplies a part stored in the second city.

22) Get supplier numbers for suppliers who supply the same part to all projects.

23) Get part numbers for parts supplied to any project by a supplier in the same city as that project.

24) Get supplier names for suppliers who supply at least one red part.

25) Get supplier numbers for suppliers with status less than the current maximum status in the Suppliers table.

26) Get supplier names for suppliers who do not supply part P2 using 'exits' keyword. Do the same query using 'in' keyword.

27) Get all paris of supplier numbers, Sx and Sy say, such that Sx and Sy supply exactly the same set of parts each.

28) Get supplier-number/part-number pairs such that the indicated supplier does not supply the indicated part.

29) Get a "grouped" version of all shipments showing, for each supplier-number/part-number pair, the corresponding project numbers and quantities in the form of a binary relation.