

- DATABASE INITIALIZATION AND SCHEMA DESIGN:

```
CREATE DATABASE IF NOT EXISTS LabSQL;
```

```
USE LabSQL;
```

```
CREATE TABLE STUDIES (
    PNAME    VARCHAR(20),
    INSTITUTE VARCHAR(20),
    COURSE   VARCHAR(10),
    COURSEFEE INT
);
```

```
INSERT INTO STUDIES (PNAME, INSTITUTE, COURSE, COURSEFEE) VALUES
('ANAND', 'SABHARI', 'PGDCA', 4500),
('ALTAF', 'COIT', 'DCA', 7200),
('JULIANA', 'BITS', 'MCA', 22000),
('KAMALA', 'PRAGATHI', 'DCP', 5000),
('MARY', 'SABHARI', 'PGDCA', 4500),
('NELSON', 'PRAGATHI', 'DAP', 6200),
('PATRICK', 'PRAGATHI', 'DCAP', 5200),
('QADIR', 'APPLE', 'HDCP', 14000),
('RAMESH', 'SABHARI', 'PGDCA', 4500),
('RESECCA', 'BRILLIANT', 'DCAP', 11000),
('REMITHA', 'BDPS', 'DCS', 6000),
('VIJAYA', 'BDPS', 'DCA', 48000);
```

```
SELECT * FROM STUDIES;
```

PNAME	INSTITUTE	COURSE	COURSEFEE
ANAND	SABHARI	PGDCA	4500
ALTAF	COIT	DCA	7200
JULIANA	BITS	MCA	22000
KAMALA	PRAGATHI	DCP	5000
MARY	SABHARI	PGDCA	4500
NELSON	PRAGATHI	DAP	6200
PATRICK	PRAGATHI	DCAP	5200
QADIR	APPLE	HDCP	14000
RAMESH	SABHARI	PGDCA	4500
RESECCA	BRILLIANT	DCAP	11000
REMITHA	BDPS	DCS	6000
VIJAYA	BDPS	DCA	48000

```
CREATE TABLE SOFTWARE (
```

```
    PNAME VARCHAR(20),
```

```
    TITLE VARCHAR(30),
```

```
    DEV_IN VARCHAR(15),
```

```
    SCOST DECIMAL(10,2),
```

```
    DCOST DECIMAL(10,2),
```

```
    SOLD INT
```

```
);
```

```
INSERT INTO SOFTWARE VALUES
```

```
('MARY','README','CPP',100.00,1200,84),  
(ANAND','PARACHUTES','BASIC',399.95,6000,43),  
(ANAND','VIDEOTITLING','PASCAL',7500.00,16000,9),  
(JULIANA','INVENTORY','COBOL',3000.00,3500,0),  
(KAMALA','PAYROLLPRG','DBASE',9000.00,20000,7),  
(MARY','FINANCIALACC','ORACLE',18000.00,85000,4),  
(MARY','CODEGENRRATOP','C',4500.00,20000,23),  
(PATRICK','README','CPP',300.00,1200,84),  
(QADIR','BOMBSAWAY','ASSEMBLY',750.00,5000,11),  
(QADIR','VACCINES','C',1900.00,3400,21),  
(RAMESH','HOTLIMGMT','DBASE',12000.00,35000,4),  
(RAMESH','DEADLEE','PASCAL',599.95,4500,73),  
(REMITHA','PCUTILITIES','C',725.00,5000,51),  
(REMITHA','TSRHELPPKG','ASSEMBLY',2500.00,6000,7),  
(REVATHI','HOSPITALMGMT','PASCAL',1100.00,75000,2),  
(VIJAYA','TSREDITOR','C',900.00,700,6);
```

```
SELECT * FROM SOFTWARE;
```

PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
MARY	README	CPP	100.00	1200.00	84
ANAND	PARACHUTES	BASIC	399.95	6000.00	43
ANAND	VIDEOTITLING	PASCAL	7500.00	16000.00	9
JULIANA	INVENTORY	COBOL	3000.00	3500.00	0
KAMALA	PAYROLLPRG	DBASE	9000.00	20000.00	7
MARY	FINANCIALACC	ORACLE	18000.00	85000.00	4
MARY	CODEGENRRATOP	C	4500.00	20000.00	23
PATRICK	README	CPP	300.00	1200.00	84
QADIR	BOMBSAWAY	ASSEMBLY	750.00	5000.00	11
QADIR	VACCINES	C	1900.00	3400.00	21
RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
RAMESH	DEADLEE	PASCAL	599.95	4500.00	73
REMITHA	PCUTILITIES	C	725.00	5000.00	51
REMITHA	TSRHELPPKG	ASSEMBLY	2500.00	6000.00	7
REVATHI	HOSPITALMGMT	PASCAL	1100.00	75000.00	2
VIJAYA	TSREDITOR	C	900.00	700.00	6

```

CREATE TABLE PROGRAMMER (
    PNAME  VARCHAR(20),
    DOB    DATE,
    DOJ   DATE,
    SEX   CHAR(1),
    PROF1  VARCHAR(15),
    PROF2  VARCHAR(15),
    SALARY INT
);

```

```

INSERT INTO PROGRAMMER VALUES
('ANAND','1966-04-12','1992-04-21','M','PASCAL','BASIC',3200),
('ALTAF','1964-07-02','1990-11-13','M','CLIPPER','COBOL',2800),
('JULIANA','1960-01-31','1990-04-21','F','COBOL','DBASE',3000),
('KAMALA','1968-10-30','1992-01-02','F','C','DBASE',2900),
('MARY','1970-06-24','1991-02-01','F','CPP','ORACLE',4500),
('NELSON','1965-09-11','1989-03-11','M','COBOL','DBASE',2500),
('PATRICK','1965-11-10','1990-04-21','M','PASCAL',NULL,2800),
('QADIR','1965-08-31','1990-04-21','M','ASSEMBLY','C',3000),
('RAMESH','1967-05-03','1991-02-26','M','PASCAL','DBASE',3200),
('REBECCA','1967-01-01','1990-12-01','F','BASIC','COBOL',2500),
('REMITHA','1970-04-19','1993-04-20','F','C','ASSEMBLY',3000),
('REVATHI','1969-12-02','1992-01-02','F','PASCAL','BASIC',3200),
('VIJAYA','1965-12-14','1992-05-02','F','FOXPRO','C',4500);

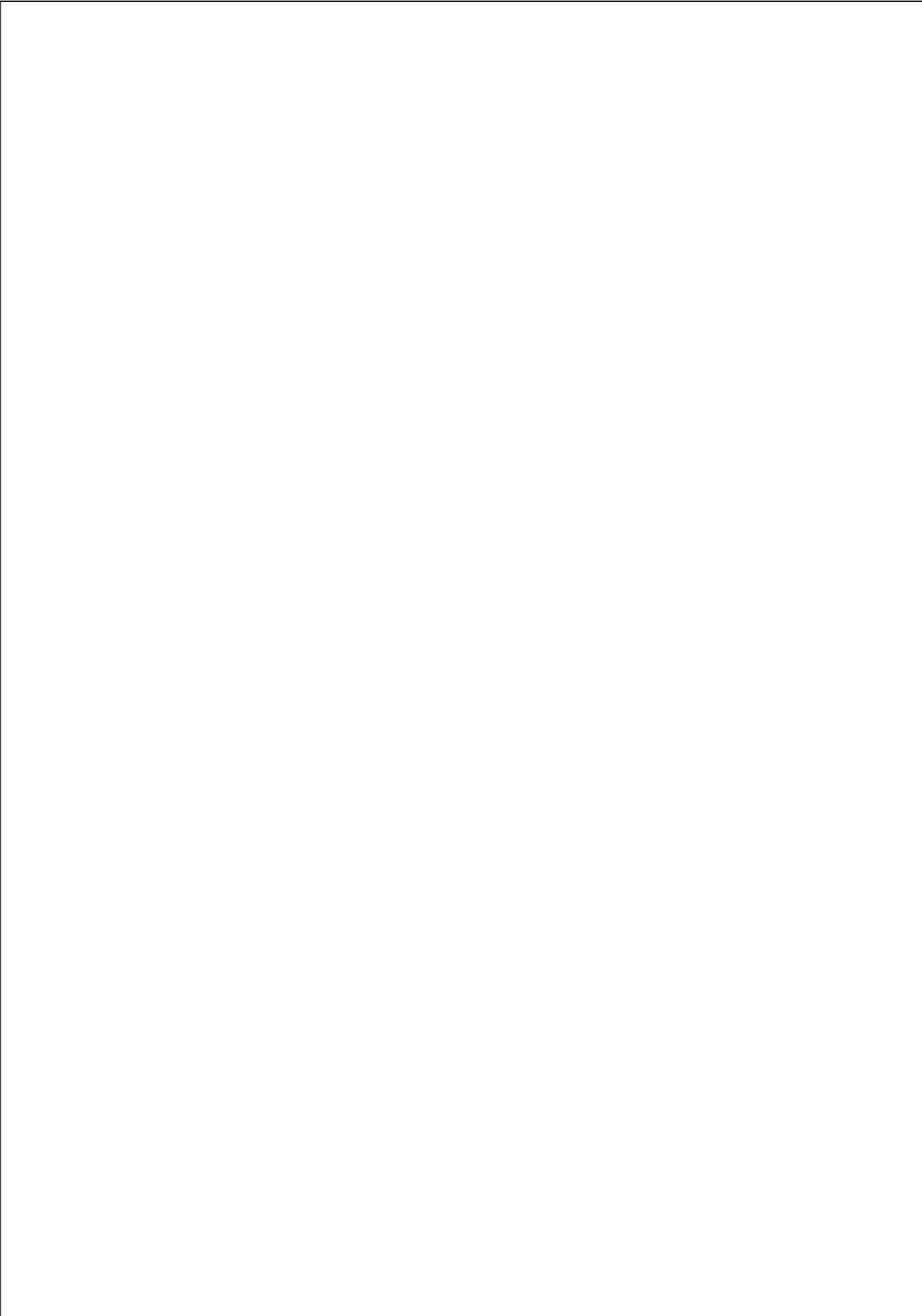
```

```

SELECT * FROM PROGRAMMER;

```

PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
ANAND	1966-04-12	1992-04-21	M	PASCAL	BASIC	3200
ALTAF	1964-07-02	1990-11-13	M	CLIPPER	COBOL	2800
JULIANA	1960-01-31	1990-04-21	F	COBOL	DBASE	3000
KAMALA	1968-10-30	1992-01-02	F	C	DBASE	2900
MARY	1970-06-24	1991-02-01	F	CPP	ORACLE	4500
NELSON	1965-09-11	1989-03-11	M	COBOL	DBASE	2500
PATRICK	1965-11-10	1990-04-21	M	PASCAL	NULL	2800
QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
RAMESH	1967-05-03	1991-02-26	M	PASCAL	DBASE	3200
REBECCA	1967-01-01	1990-12-01	F	BASIC	COBOL	2500
REMITHA	1970-04-19	1993-04-20	F	C	ASSEM...	3000
REVATHI	1969-12-02	1992-01-02	F	PASCAL	BASIC	3200
VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500



A. QUESTIONS

1. Find out the selling average cost for packages developed in PASCAL.

```
SELECT AVG(SCOST) AS FROM SOFTWARE WHERE DEV_IN = 'PASCAL';
```

	AVG(SCOST)
▶	3066.650000

2. Display the Names and ages of all programmers

```
SELECT PNAME, TIMESTAMPDIFF(YEAR, DOB, CURDATE()) AS AGE FROM PROGRAMMER;
```

	PNAME	AGE
▶	ANAND	59
	ALTAF	61
	JULIANA	65
	KAMALA	57
	MARY	55
	NELSON	60
	PATRICK	60
	QADIR	60
	RAMESH	58
	REBECCA	59
	REMITHA	55
	REVATHI	56
	VIJAYA	60

3. Display the names of those who have done the DAP course.

```
SELECT PNAME FROM STUDIES WHERE COURSE = 'DAP';
```

	PNAME
▶	NELSON

4. Display the names and dates of birth of all programmers born in January

```
SELECT PNAME, DOB FROM PROGRAMMER WHERE MONTH(DOB) = 1;
```

	PNAME	DOB
▶	JULIANA	1960-01-31
	REBECCA	1967-01-01

5. What is the highest number of copies sold by a package.

```
SELECT MAX(SOLD) FROM SOFTWARE;
```

	MAX(SOLD)
▶	84

6. Display the lowest course fee.

```
SELECT MIN(COURSEFEE) FROM STUDIES;
```

	MIN(COURSEFEE)
▶	4500

7. How many programmers have done the PGDCA course.

SELECT COUNT(*) FROM STUDIES WHERE COURSE = 'PGDCA';

	COUNT(*)
▶	3

8. How much revenue has been earned through sales of packages developed in C

SELECT SUM(SCOST * SOLD) AS TOTAL_REVENUE
FROM SOFTWARE
WHERE DEV_IN = 'C';

	TOTAL_REVENUE
▶	185775.00

9. Display the details of the software developed by Ramesh.

SELECT * FROM SOFTWARE WHERE PNAME = 'RAMESH';

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
	RAMESH	DEADLEE	PASCAL	599.95	4500.00	73

10. How many programmers studied at Sabhari.

SELECT COUNT(*) FROM STUDIES WHERE INSTITUTE = 'SABHARI';

	COUNT(*)
▶	3

11. Display details of packages whose sales crossed the 2000 mark.

SELECT * FROM SOFTWARE WHERE SCOST * SOLD > 2000;

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	MARY	README	CPP	100.00	1200.00	84
	ANAND	PARACHUTES	BASIC	399.95	6000.00	43
	ANAND	VIDEOTITLING	PASCAL	7500.00	16000.00	9
	KAMALA	PAYROLLPRG	DBASE	9000.00	20000.00	7
	MARY	FINANCIALACC	ORACLE	18000.00	85000.00	4
	MARY	CODEGENRATOP	C	4500.00	20000.00	23
	PATRICK	README	CPP	300.00	1200.00	84
	QADIR	BOMBSAWAY	ASSEMBLY	750.00	5000.00	11
	QADIR	VACCINES	C	1900.00	3400.00	21
	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
	RAMESH	DEADLEE	PASCAL	599.95	4500.00	73
	REMITHA	PCUTILITIES	C	725.00	5000.00	51
	REMITHA	TSRHELPPKG	ASSEMBLY	2500.00	6000.00	7
	REVATHI	HOSPITALMGMT	PASCAL	1100.00	75000.00	2
	VIJAYA	TSREDITOR	C	900.00	700.00	6

12. Find out the number of copies which should be sold in order to recover development cost.

SELECT TITLE, CEIL(DCOST / SCOST) AS copies_needed FROM SOFTWARE;

	TITLE	copies_needed
▶	README	12
	PARACHUTES	16
	VIDEOTITLING	3
	INVENTORY	2
	PAYROLLPRG	3
	FINANCIALACC	5
	CODEGENRATOP	5
	README	4
	BOMBSAWAY	7
	VACCINES	2
	HOTLIMGMT	3
	DEADLEE	8
	PCUTILITIES	7
	TSRHELPPKG	3
	HOSPITALMGMT	69
	TSREDITOR	1

13. Display the details of packages for which development cost has been recovered.

SELECT * FROM SOFTWARE WHERE SOLD * SCOST >= DCOST;

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	MARY	README	CPP	100.00	1200.00	84
	ANAND	PARACHUTES	BASIC	399.95	6000.00	43
	ANAND	VIDEOTITLING	PASCAL	7500.00	16000.00	9
	KAMALA	PAYROLLPRG	DBASE	9000.00	20000.00	7
	MARY	CODEGENRRATOP	C	4500.00	20000.00	23
	PATRICK	README	CPP	300.00	1200.00	84
	QADIR	BOMBSAWAY	ASSEMBLY	750.00	5000.00	11
	QADIR	VACCINES	C	1900.00	3400.00	21
	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
	RAMESH	DEADLEE	PASCAL	599.95	4500.00	73
	REMITHA	PCUTILITIES	C	725.00	5000.00	51
	REMITHA	TSRHELPPKG	ASSEMBLY	2500.00	6000.00	7
	VIJAYA	TSREDITOR	C	900.00	700.00	6

14. What is the cost of the costliest software developed in BASIC.

SELECT MAX(DCOST) AS max_dev_cost FROM SOFTWARE
WHERE DEV_IN = 'BASIC';

	max_dev_cost
▶	6000.00

15. How many packages were developed in DBASE.

SELECT COUNT(*) FROM SOFTWARE WHERE DEV_IN = 'DBASE';

	COUNT(*)
▶	2

16. How many programmers studied in Pragathi.

SELECT COUNT(*) FROM STUDIES WHERE INSTITUTE = 'PRAGATHI';

	COUNT(*)
▶	3

17. How many programmers paid between 5000 and 10000 for their studies.

SELECT COUNT(*) FROM STUDIES WHERE COURSEFEE BETWEEN 5000 AND 10000;

	COUNT(*)
▶	5

18. What is the average course fee.

SELECT AVG(COURSEFEE) FROM STUDIES;

	AVG(COURSEFEE)
▶	11508.3333

19. Display the details of programmers knowing C.

SELECT * FROM PROGRAMMER WHERE PROF1 = 'C' OR PROF2 = 'C';

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	KAMALA	1968-10-30	1992-01-02	F	C	DBASE	2900
	QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
	REMITHA	1970-04-19	1993-04-20	F	C	ASSEMBLY	3000
	VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500

20. How many programmers know either COBOL or PASCAL.

```
SELECT COUNT(*) AS total_programmers FROM PROGRAMMER  
WHERE PROF1 IN ('COBOL', 'PASCAL')  
OR PROF2 IN ('COBOL', 'PASCAL');
```

	total_programmers
▶	8

21. How many programmers don't know PASCAL and C.

```
SELECT COUNT(*) FROM PROGRAMMER  
WHERE PROF1 NOT IN ('PASCAL','C') AND PROF2 NOT IN ('PASCAL','C');
```

	COUNT(*)
▶	5

22. How old is the oldest male programmer.

```
SELECT MAX(TIMESTAMPDIFF(YEAR, DOB, CURDATE())) AS OLDEST_MALE  
FROM PROGRAMMER WHERE SEX = 'M';
```

	OLDEST_MALE
▶	61

23. Calculate the experience in years for each programmer and display along with names in descending order.

```
SELECT PNAME, TIMESTAMPDIFF(YEAR, DOJ, CURDATE()) AS EXPERIENCE  
FROM PROGRAMMER  
ORDER BY EXPERIENCE DESC;
```

	PNAME	EXPERIENCE
▶	NELSON	36
	ALTAF	35
	JULIANA	35
	PATRICK	35
	QADIR	35
	REBECCA	35
	KAMALA	34
	MARY	34
	RAMESH	34
	REVATHI	34
	ANAND	33
	VIJAYA	33
	REMITHA	32

24. Who are the programmers who celebrate their birthdays during the current month.

```
SELECT * FROM PROGRAMMER WHERE MONTH(DOB) = MONTH(CURDATE());
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	JULIANA	1960-01-31	1990-04-21	F	COBOL	DBASE	3000
	REBECCA	1967-01-01	1990-12-01	F	BASIC	COBOL	2500

25. How many female programmers are there.

```
SELECT COUNT(*) FROM PROGRAMMER WHERE SEX = 'F';
```

	COUNT(*)
▶	7

26. What are the languages known by male programmers.

SELECT PNAME, PROF1, PROF2 FROM PROGRAMMER WHERE SEX = 'M';

	PNAME	PROF1	PROF2
▶	ANAND	PASCAL	BASIC
	ALTAF	CLIPPER	COBOL
	NELSON	COBOL	DBASE
	PATRICK	PASCAL	NULL
	QADIR	ASSEMBLY	C
	RAMESH	PASCAL	DBASE

27. What is the average salary.

SELECT AVG(SALARY) FROM PROGRAMMER;

	AVG(SALARY)
▶	3161.5385

28. How many people draw salary between 2000 and 4000.

SELECT COUNT(*) FROM PROGRAMMER WHERE SALARY BETWEEN 2000 AND 4000;

	COUNT(*)
▶	11

29. Display the details of those who don't know CLIPPER, COBOL or PASCAL.

SELECT * FROM PROGRAMMER

WHERE PROF1 NOT IN ('CLIPPER','COBOL','PASCAL')

AND PROF2 NOT IN ('CLIPPER','COBOL','PASCAL');

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	KAMALA	1968-10-30	1992-01-02	F	C	DBASE	2900
	MARY	1970-06-24	1991-02-01	F	CPP	ORACLE	4500
	QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
	REMITHA	1970-04-19	1993-04-20	F	C	ASSEMBLY	3000
	VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500

30. Display the cost of packages developed by each programmer.

SELECT P.PNAME, S.TITLE, S.DCOST

FROM PROGRAMMER P

JOIN SOFTWARE S ON P.PNAME = S.PNAME;

	PNAME	TITLE	DCOST
▶	MARY	README	1200.00
	ANAND	PARACHUTES	6000.00
	ANAND	VIDEOTITLING	16000.00
	JULIANA	INVENTORY	3500.00
	KAMALA	PAYROLLPRG	20000.00
	MARY	FINANCIALACC	85000.00
	MARY	CODEGENRRATOP	20000.00
	PATRICK	README	1200.00
	QADIR	BOMBSAWAY	5000.00
	QADIR	VACCINES	3400.00
	RAMESH	HOTLIMGMT	35000.00
	RAMESH	DEADLEE	4500.00
	REMITHA	PCUTILITIES	5000.00
	REMITHA	TSRHELPPKG	6000.00
	REVATHI	HOSPITALMGMT	75000.00
	VIJAYA	TSREDITOR	700.00

31. Display the sales values of the packages developed by each programmer.

```
SELECT P.PNAME, S.TITLE, (S.SOLD * S.SCOST) AS SALES_VALUE  
FROM PROGRAMMER P  
JOIN SOFTWARE S ON P.PNAME = S.PNAME;
```

PNAME	TITLE	SALES_VALUE
MARY	README	8400.00
ANAND	PARACHUTES	17197.85
ANAND	VIDEOTITLING	67500.00
JULIANA	INVENTORY	0.00
KAMALA	PAYROLLPRG	63000.00
MARY	FINANCIALACC	72000.00
MARY	CODEGENRRATOP	103500.00
PATTRICK	README	25200.00
QADIR	BOMBSAWAY	8250.00
QADIR	VACCINES	39900.00
RAMESH	HOTLIMGMT	48000.00
RAMESH	DEADLEE	43796.35
REMITHA	PCUTILITIES	36975.00
REMITHA	TSRHELPPKG	17500.00
REVATHI	HOSPITALMGMT	2200.00

32. Display the sales cost of the packages developed by each programmer.

```
SELECT P.PNAME, SUM(S.SOLD) AS TOTAL_PACKAGES SOLD  
FROM PROGRAMMER P  
JOIN SOFTWARE S ON P.PNAME = S.PNAME  
GROUP BY P.PNAME;
```

PNAME	TOTAL_PACKAGES_SOLD
MARY	111
ANAND	52
JULIANA	0
KAMALA	7
PATTRICK	84
QADIR	32
RAMESH	77
REMITHA	58
REVATHI	2
VIJAYA	6

33. Display the sales cost of the packages developed by each programmer language-wise.

```
SELECT S.PNAME, S.DEV_IN, SUM(S.SOLD * S.SCOST) AS TOTAL_SALES_COST  
FROM SOFTWARE S  
GROUP BY S.PNAME, S.DEV_IN;
```

PNAME	TOTAL_SALES_CO
MARY	183900.00
ANAND	84697.85
JULIANA	0.00
KAMALA	63000.00
PATTRICK	25200.00
QADIR	48150.00
RAMESH	91796.35
REMITHA	54475.00
REVATHI	2200.00
VIJAYA	5400.00

34. Display the sales cost of the packages developed by each programmer language-wise.

```
SELECT S.PNAME, S.DEV_IN, SUM(S.SOLD * S.SCOST) AS TOTAL_SALES_COST  
FROM SOFTWARE S  
GROUP BY S.PNAME, S.DEV_IN;
```

PNAME	DEV_IN	TOTAL_SALES_COST
MARY	CPP	8400.00
ANAND	BASIC	17197.85
ANAND	PASCAL	67500.00
JULIANA	COBOL	0.00
KAMALA	DBASE	63000.00
MARY	ORACLE	72000.00
MARY	C	103500.00
PATRICK	CPP	25200.00
QADIR	ASSEMBLY	8250.00
QADIR	C	39900.00
RAMESH	DBASE	48000.00
RAMESH	PASCAL	43796.35
REMITHA	C	36975.00
REMITHA	ASSEMBLY	17500.00
REVATHI	PASCAL	2200.00
VIJAYA	C	5400.00

35. Display each language with average development cost, average selling cost, and average price per copy.

```
SELECT DEV_IN,  
       AVG(DCOST) AS AVG_DEVELOPMENT_COST,  
       AVG(SCOST) AS AVG_SELLING_COST,  
       AVG(DCOST / SCOST) AS AVG_PRICE_PER_COPY  
FROM SOFTWARE  
GROUP BY DEV_IN;
```

DEV_IN	AVG_DEVELOPMENT_COST	AVG_SELLING_COST	AVG_PRICE_PER_COPY
CPP	1200.000000	200.000000	8.0000000000
BASIC	6000.000000	399.950000	15.0018750000
PASCAL	31833.333333	3066.650000	25.9385920000
COBOL	3500.000000	3000.000000	1.1666670000
DBASE	27500.000000	10500.000000	2.5694445000
ORACLE	85000.000000	18000.000000	4.7222220000
C	7275.000000	2006.250000	3.4770620000
ASSEMBLY	5500.000000	1625.000000	4.5333335000

36. Display each programmer's name with the costliest and cheapest packages developed.

```
SELECT S.PNAME,  
       MAX(S.DCOST) AS COSTLIEST_PACKAGE,  
       MIN(S.DCOST) AS CHEAPEST_PACKAGE  
FROM SOFTWARE S  
GROUP BY S.PNAME;
```

PNAME	COSTLIEST_PACKAGE	CHEAPEST_PACKAGE
MARY	85000.00	1200.00
ANAND	16000.00	6000.00
JULIANA	3500.00	3500.00
KAMALA	20000.00	20000.00
PATRICK	1200.00	1200.00
QADIR	5000.00	3400.00
RAMESH	35000.00	4500.00
REMITHA	6000.00	5000.00
REVATHI	75000.00	75000.00
VIJAYA	700.00	700.00

37. Display each institute with number of courses and average cost per course.

```
SELECT INSTITUTE,  
       COUNT(*) AS NO_OF_COURSES,  
       AVG(COURSEFEE) AS AVG_COURSE_FEE  
FROM STUDIES  
GROUP BY INSTITUTE;
```

INSTITUTE	NO_OF_COURSES	AVG_COURSE_FEE
SABHARI	3	4500.0000
COIT	1	7200.0000
BITS	1	22000.0000
PRAGATHI	3	5466.6667
APPLE	1	14000.0000
BRILLIANT	1	11000.0000
BDPS	2	27000.0000

38. Display each institute with number of students.

```
SELECT INSTITUTE,  
       COUNT(*) AS NO_OF_STUDENTS  
FROM STUDIES  
GROUP BY INSTITUTE;
```

INSTITUTE	NO_OF_STUDENTS
SABHARI	3
COIT	1
BITS	1
PRAGATHI	3
APPLE	1
BRILLIANT	1
BDPS	2

39. Display names of male and female programmers along with sex.

```
SELECT PNAME, SEX FROM PROGRAMMER;
```

PNAME	SEX
ANAND	M
ALTAF	M
JULIANA	F
KAMALA	F
MARY	F
NELSON	M
PATTRICK	M
QADIR	M
RAMESH	M
REBECCA	F
REMITHA	F
REVATHI	F
VIJAYA	F

40. Display the names of programmers and their packages.

```
SELECT P.PNAME, S.TITLE  
FROM PROGRAMMER P  
JOIN SOFTWARE S  
ON P.PNAME = S.PNAME;
```

PNAME	TITLE
MARY	README
ANAND	PARACHUTES
ANAND	VIDEOTITLING
JULIANA	INVENTORY
KAMALA	PAYOUTLPRG
MARY	FINANCIALACC
MARY	CODEGENRATOR
PATTRICK	README
QADIR	BOMBSAWAY
QADIR	VACCINES
RAMESH	HOTLIMGMT
RAMESH	DEADLEE
REMITHA	PCUTILITIES
REMITHA	TSRHELPPKG
REVATHI	HOSPITALMGMT
VIJAYA	TSREDITOR

41. Display the number of packages in each language except C and C++.

```
SELECT DEV_IN AS LANGUAGE,
       COUNT(*) AS NO_OF_PACKAGE
  FROM SOFTWARE
 WHERE DEV_IN NOT IN ('C', 'CPP')
 GROUP BY DEV_IN;
```

LANGUAGE	NO_OF_PACKAGE
BASIC	1
PASCAL	3
COBOL	1
DBASE	2
ORACLE	1
ASSEMBLY	2

42. Display the number of packages in each language where development cost < 1000

```
SELECT DEV_IN, COUNT(*)
  FROM SOFTWARE
 WHERE DCOST < 1000
 GROUP BY DEV_IN;
```

DEV_IN	COUNT(*)
C	1

43. Display the average difference between selling cost and development cost

```
SELECT AVG(SCOST - DCOST) AS AVG_DIFFERENCE
  FROM SOFTWARE;
```

AVG_DIFFERENCE
14014.068750

44. Display total SCOST, DCOST, and amount to be recovered for programmers whose cost is not recovered

```
SELECT PNAME,
       SUM(SCOST*SOLD) AS TOTAL_SCOST,
       SUM(DCOST) AS TOTAL_DCOST,
       SUM(DCOST - SCOST*SOLD) AS AMOUNT_TO_RECOVER
  FROM SOFTWARE
 GROUP BY PNAME
 HAVING SUM(SCOST*SOLD) < SUM(DCOST);
```

PNAME	TOTAL_SCOST	TOTAL_DCOST	AMOUNT_TO_RECOVER
JULIANA	0.00	3500.00	3500.00
REVATHI	2200.00	75000.00	72800.00

45. Display highest, lowest, and average salaries for those earning more than 2000.

```
SELECT MAX(SALARY), MIN(SALARY), AVG(SALARY)  
FROM PROGRAMMER  
WHERE SALARY > 2000;
```

	MAX(SALARY)	MIN(SALARY)	AVG(SALARY)
▶	4500	2500	3161.5385

46. Who is the highest paid C programmer.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE PROF1='C' OR PROF2='C'  
ORDER BY SALARY DESC  
LIMIT 1;
```

	PNAME
▶	VIJAYA

47. Who is the highest paid female COBOL programmer.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE SEX='F' AND (PROF1='COBOL' OR PROF2='COBOL')  
ORDER BY SALARY DESC  
LIMIT 1;
```

	PNAME
▶	JULIANA

48. Display the highest paid programmer for each language.

```
SELECT PROF, MAX(SALARY)  
FROM (  
    SELECT PROF1 AS PROF, SALARY FROM PROGRAMMER  
    UNION ALL  
    SELECT PROF2, SALARY FROM PROGRAMMER  
) X  
GROUP BY PROF;
```

	PROF	MAX(SALARY)
▶	PASCAL	3200
	CLIPPER	2800
	COBOL	3000
	C	4500
	CPP	4500
	ASSEMBLY	3000
	BASIC	3200
	FOXPRO	4500
	DBASE	3200
	ORACLE	4500
	NULL	2800

49. Who is the least experienced programmer

```
SELECT PNAME  
FROM PROGRAMMER  
ORDER BY DOJ DESC  
LIMIT 1;
```

	PNAME
▶	REMITHA

50. Who is the most experienced male programmer knowing PASCAL.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE SEX='M' AND (PROF1='PASCAL' OR PROF2='PASCAL')  
ORDER BY DOJ  
LIMIT 1;
```

	PNAME
▶	PATRICK

51. Which language is known by only one programmer.

```
SELECT PROF  
FROM (  
    SELECT PROF1 AS PROF FROM PROGRAMMER  
    UNION ALL  
    SELECT PROF2 FROM PROGRAMMER  
) X  
GROUP BY PROF  
HAVING COUNT(*) = 1;
```

	PROF
▶	CLIPPER
	CPP
	FOXPRO
	ORACLE
	NULL

52. Who is the programmer referred to in question 51.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE PROF1 IN (  
    SELECT PROF1 FROM PROGRAMMER GROUP BY PROF1 HAVING COUNT(*)=1  
)  
OR PROF2 IN (  
    SELECT PROF2 FROM PROGRAMMER GROUP BY PROF2 HAVING COUNT(*)=1);
```

	PNAME
▶	ALTAF
	MARY
	QADIR
	REBECCA
	REMITHA
	VIJAYA

53. Who is the youngest programmer knowing DBASE.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE PROF1='DBASE' OR PROF2='DBASE'  
ORDER BY DOB DESC  
LIMIT 1;
```

	PNAME
▶	KAMALA

54. Which female programmer earning more than 3000 does not know C, C++, ORACLE, or DBASE.

```
SELECT *  
FROM PROGRAMMER  
WHERE SEX='F' AND SALARY>3000  
AND PROF1 NOT IN ('C','CPP','ORACLE','DBASE')  
AND PROF2 NOT IN ('C','CPP','ORACLE','DBASE');
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	REVATHI	1969-12-02	1992-01-02	F	PASCAL	BASIC	3200

55. Which institute has the most number of students.

```
SELECT INSTITUTE  
FROM STUDIES  
GROUP BY INSTITUTE  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	INSTITUTE
▶	SABHARI

56. What is the costliest course.

```
SELECT COURSE  
FROM STUDIES  
ORDER BY COURSEFEE DESC  
LIMIT 1;
```

	COURSE
▶	DCA

57. Which course has been done by the most students.

```
SELECT COURSE  
FROM STUDIES  
GROUP BY COURSE  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	COURSE
▶	PGDCA

58. Which course has been done by the most students.

```
SELECT COURSE  
FROM STUDIES  
GROUP BY COURSE  
HAVING COUNT(*) = (  
    SELECT MAX(cnt)  
    FROM (  
        SELECT COUNT(*) AS cnt  
        FROM STUDIES  
        GROUP BY COURSE  
    ) AS t  
);
```

	COURSE
▶	PGDCA

59. Which institute conducts the costliest course.

```
SELECT INSTITUTE  
FROM STUDIES  
ORDER BY COURSEFEE DESC  
LIMIT 1;
```

	INSTITUTE
▶	BDPS

60. Display institute and course with below average course fee.

```
SELECT INSTITUTE, COURSE  
FROM STUDIES  
WHERE COURSEFEE < (SELECT AVG(COURSEFEE) FROM STUDIES);
```

	INSTITUTE	COURSE
▶	SABHARI	PGDCA
	COIT	DCA
	PRAGATHI	DCP
	SABHARI	PGDCA
	PRAGATHI	DAP
	PRAGATHI	DCAP
	SABHARI	PGDCA
	BRILLIANT	DCAP
	BDPS	DCS

61. Display names of courses whose fees are within ±1000 of the average fee.

```
SELECT COURSE  
FROM STUDIES  
WHERE COURSEFEE BETWEEN  
(SELECT AVG(COURSEFEE)-1000 FROM STUDIES)  
AND  
(SELECT AVG(COURSEFEE)+1000 FROM STUDIES);
```

	COURSE
▶	DCAP

62. Which package has the highest development cost.

```
SELECT TITLE  
FROM SOFTWARE  
ORDER BY DCOST DESC  
LIMIT 1;
```

	TITLE
▶	FINANCIALACC

63. Which course has below average number of students.

```
SELECT COURSE  
FROM STUDIES  
GROUP BY COURSE  
HAVING COUNT(*) <  
(  
    SELECT AVG(cnt)  
    FROM (SELECT COUNT(*) cnt FROM STUDIES GROUP BY COURSE) X  
);
```

	COURSE
▶	MCA
	DCP
	DAP
	HDCP
	DCS

64. Which package has the lowest selling cost.

```
SELECT TITLE  
FROM SOFTWARE  
ORDER BY SCOST  
LIMIT 1;
```

	TITLE
▶	README

65. Who developed the package that sold the least number of copies.

```
SELECT PNAME  
FROM SOFTWARE  
ORDER BY SOLD  
LIMIT 1;
```

	PNAME
▶	JULIANA

66. Which language was used to develop the package with the highest sales amount.

```
SELECT DEV_IN  
FROM SOFTWARE  
ORDER BY SCOST*SOLD DESC  
LIMIT 1;
```

	DEV_IN
▶	C

67. How many copies of the package with least difference between development and selling cost were sold.

```
SELECT SOLD  
FROM SOFTWARE  
ORDER BY ABS(DCOST - SCOST)  
LIMIT 1;
```

	SOLD
▶	6

68. Which is the costliest package developed in PASCAL.

```
SELECT TITLE  
FROM SOFTWARE  
WHERE DEV_IN='PASCAL'  
ORDER BY DCOST DESC  
LIMIT 1;
```

	TITLE
▶	HOSPITALMGMT

69. Which language was used to develop the most number of packages.

```
SELECT DEV_IN  
FROM SOFTWARE  
GROUP BY DEV_IN  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	DEV_IN
▶	C

70. Which programmer developed the highest number of packages.

```
SELECT PNAME  
FROM SOFTWARE  
GROUP BY PNAME  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	PNAME
▶	MARY

71. Display names of packages sold less than the average number of copies.

```
SELECT TITLE  
FROM SOFTWARE  
WHERE SOLD < (SELECT AVG(SOLD) FROM SOFTWARE);
```

TITLE
► VIDEOTITLING
INVENTORY
PAYROLLPRG
FINANCIALACC
CODEGENRRATOP
BOMBSAWAY
VACCINES
HOTLIMGMT
TSRHELPPKG
HOSPITALMGMT
TSREDITOR

72. Who are the authors of packages that recovered more than double the development cost.

```
SELECT PNAME  
FROM SOFTWARE  
WHERE SCOST*SOLD > 2*DCOST;
```

PNAME
► MARY
ANAND
ANAND
KAMALA
MARY
PATTRICK
QADIR
RAMESH
REMITHA
REMITHA
VIJAYA

73. Display programmer names and cheapest packages developed by them in each language.

```
SELECT PNAME, DEV_IN, MIN(DCOST)  
FROM SOFTWARE  
GROUP BY PNAME, DEV_IN;
```

PNAME	DEV_IN	MIN(DCOST)
► MARY	CPP	1200.00
ANAND	BASIC	6000.00
ANAND	PASCAL	16000.00
JULIANA	COBOL	3500.00
KAMALA	DBASE	20000.00
MARY	ORACLE	85000.00
MARY	C	20000.00
PATTRICK	CPP	1200.00
QADIR	ASSEMBLY	5000.00
QADIR	C	3400.00
RAMESH	DBASE	35000.00
RAMESH	PASCAL	4500.00
REMITHA	C	5000.00
REMITHA	ASSEMBLY	6000.00
REVATHI	PASCAL	75000.00
VIJAYA	C	700.00

74. Display the language used by each programmer to develop highest and lowest selling packages.

```
SELECT PNAME, DEV_IN, SOLD  
FROM SOFTWARE  
WHERE SOLD IN (  
    SELECT MAX(SOLD) FROM SOFTWARE  
    UNION  
    SELECT MIN(SOLD) FROM SOFTWARE  
);
```

	PNAME	DEV_IN	SOLD
▶	MARY	CPP	84
	JULIANA	COBOL	0
	PATTRICK	CPP	84

75. Who is the youngest male programmer born in 1965.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE SEX='M' AND YEAR(DOB)=1965  
ORDER BY DOB DESC  
LIMIT 1;
```

	PNAME
▶	PATTRICK

76. Who is the oldest female programmer who joined in 1992.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE SEX='F' AND YEAR(DOJ)=1992  
ORDER BY DOB  
LIMIT 1;
```

	PNAME
▶	VIJAYA

77. In which year were the most programmers born.

```
SELECT YEAR(DOB)  
FROM PROGRAMMER  
GROUP BY YEAR(DOB)  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	YEAR(DOB)
▶	1965

78. In which month did the most programmers join.

```
SELECT MONTH(DOJ)
FROM PROGRAMMER
GROUP BY MONTH(DOJ)
ORDER BY COUNT(*) DESC
LIMIT 1;
```

	MONTH(DOJ)
▶	4

79. In which language are most programmers proficient.

```
SELECT PROF
FROM (
    SELECT PROF1 AS PROF FROM PROGRAMMER
    UNION ALL
    SELECT PROF2 FROM PROGRAMMER
) X
GROUP BY PROF
ORDER BY COUNT(*) DESC
LIMIT 1;
```

	PROF
▶	PASCAL

80. Who are the male programmers earning below the average salary of female programmers.

```
SELECT *
FROM PROGRAMMER
WHERE SEX='M' AND SALARY <
(SELECT AVG(SALARY) FROM PROGRAMMER WHERE SEX='F');
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	ANAND	1966-04-12	1992-04-21	M	PASCAL	BASIC	3200
	ALTAF	1964-07-02	1990-11-13	M	CLIPPER	COBOL	2800
	NELSON	1965-09-11	1989-03-11	M	COBOL	DBASE	2500
	PATTRICK	1965-11-10	1990-04-21	M	PASCAL	NULL	2800
	QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
	RAMESH	1967-05-03	1991-02-26	M	PASCAL	DBASE	3200

81. Who are the female programmers earning more than the highest paid male programmer.

```
SELECT *
FROM PROGRAMMER
WHERE SEX='F' AND SALARY >
(SELECT MAX(SALARY) FROM PROGRAMMER WHERE SEX='M');
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	MARY	1970-06-24	1991-02-01	F	CPP	ORACLE	4500
	VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500

82. Which language has been stated as PROF by most programmers.

```
SELECT PROF  
FROM (  
    SELECT PROF1 AS PROF FROM PROGRAMMER  
    UNION ALL  
    SELECT PROF2 FROM PROGRAMMER  
) X  
GROUP BY PROF  
ORDER BY COUNT(*) DESC  
LIMIT 1;
```

	PROF
▶	PASCAL

83. Display details of programmers drawing the same salary.

```
SELECT *  
FROM PROGRAMMER  
WHERE SALARY IN (  
    SELECT SALARY FROM PROGRAMMER GROUP BY SALARY HAVING COUNT(*)>1  
)
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	ANAND	1966-04-12	1992-04-21	M	PASCAL	BASIC	3200
	ALTAF	1964-07-02	1990-11-13	M	CLIPPER	COBOL	2800
	JULIANA	1960-01-31	1990-04-21	F	COBOL	DBASE	3000
	MARY	1970-06-24	1991-02-01	F	CPP	ORACLE	4500
	NELSON	1965-09-11	1989-03-11	M	COBOL	DBASE	2500
	PATTRICK	1965-11-10	1990-04-21	M	PASCAL	NULL	2800
	QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
	RAMESH	1967-05-03	1991-02-26	M	PASCAL	DBASE	3200
	REBECCA	1967-01-01	1990-12-01	F	BASIC	COBOL	2500
	REMITHA	1970-04-19	1993-04-20	F	C	ASSEMBLY	3000
	REVATHI	1969-12-02	1992-01-02	F	PASCAL	BASIC	3200
	VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500

84. Display details of software developed by male programmers earning more than 3000.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
WHERE P.SEX='M' AND P.SALARY>3000;
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	ANAND	PARACHUTES	BASIC	399.95	6000.00	43
	ANAND	VIDEOTITLING	PASCAL	7500.00	16000.00	9
	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
	RAMESH	DEADLEE	PASCAL	599.95	4500.00	73

85. Display details of packages developed in PASCAL by female programmers.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
WHERE S.DEV_IN='PASCAL' AND PSEX='F';
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	REVATHI	HOSPITALMGMT	PASCAL	1100.00	75000.00	2

86. Display details of programmers who joined before 1990.

```
SELECT *  
FROM PROGRAMMER  
WHERE DOJ<'1990-01-01';
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	NELSON	1965-09-11	1989-03-11	M	COBOL	DBASE	2500

87. Display details of software developed in C by female programmers of Pragathi.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
JOIN STUDIES ST ON P.PNAME=ST.PNAME  
WHERE S.DEV_IN='C' AND PSEX='F' AND ST.INSTITUTE='PRAGATHI';
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶						

88. Display number of packages, copies sold, and sales value of each programmer institute-wise.

```
SELECT ST.INSTITUTE,  
       COUNT(S.TITLE),  
       SUM(S.SOLD),  
       SUM(S.SOLD*S.SCOST)  
  FROM STUDIES ST  
 JOIN SOFTWARE S ON ST.PNAME=S.PNAME  
 GROUP BY ST.INSTITUTE;
```

	INSTITUTE	COUNT(S.TITLE)	SUM(S.SOLD)	SUM(S.SOLD*S.SCOST)
▶	SABHARI	7	240	360394.20
	BITS	1	0	0.00
	PRAGATHI	1	7	63000.00
	APPLE	2	32	48150.00
	BDPS	3	64	59875.00

89. Display details of software developed in DBASE by male programmers from the institute with most students.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
JOIN STUDIES ST ON P.PNAME=ST.PNAME  
WHERE S.DEV_IN='DBASE'  
AND PSEX='M'  
AND ST.INSTITUTE =  
(  
    SELECT INSTITUTE FROM STUDIES GROUP BY INSTITUTE ORDER BY COUNT(*) DESC LIMIT 1  
);
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4

90. Display software developed by male programmers born before 1965 and female programmers born after 1975.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
WHERE (PSEX='M' AND YEAR(P.DOB)<1965)  
OR (PSEX='F' AND YEAR(P.DOB)>1975);
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶						

91. Display software developed in languages not listed in PROF1 or PROF2 of the programmer.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
WHERE S.DEV_IN NOT IN (P.PROF1, P.PROF2);
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	MARY	CODEGENRRATOP	C	4500.00	20000.00	23

92. Display software developed by male students of Sabhari.

```
SELECT S.*  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
JOIN STUDIES ST ON P.PNAME=ST.PNAME  
WHERE PSEX='M' AND ST.INSTITUTE='SABHARI';
```

	PNAME	TITLE	DEV_IN	SCOST	DCOST	SOLD
▶	ANAND	PARACHUTES	BASIC	399.95	6000.00	43
	ANAND	VIDEOTITLING	PASCAL	7500.00	16000.00	9
	RAMESH	HOTLIMGMT	DBASE	12000.00	35000.00	4
	RAMESH	DEADLEE	PASCAL	599.95	4500.00	73

93. Display names of programmers who have not developed any packages.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE PNAME NOT IN (SELECT DISTINCT PNAME FROM SOFTWARE);
```

	PNAME
▶	ALTAF
	NELSON
	REBECCA

94. What is the total cost of software developed by programmers of Apple.

```
SELECT SUM(S.DCOST)  
FROM SOFTWARE S  
JOIN STUDIES ST ON S.PNAME=ST.PNAME  
WHERE ST.INSTITUTE='APPLE';
```

	SUM(S.DCOST)
▶	8400.00

95. Display names of programmers who have not developed any packages.

```
SELECT PNAME  
FROM PROGRAMMER  
WHERE PNAME NOT IN (  
    SELECT DISTINCT PNAME  
    FROM SOFTWARE  
);
```

	PNAME
▶	ALTAF
	NELSON
	REBECCA

96. Who are the programmers having the same PROF2.

```
SELECT *  
FROM PROGRAMMER  
WHERE PROF2 IN (  
    SELECT PROF2 FROM PROGRAMMER GROUP BY PROF2 HAVING COUNT(*)>1  
);
```

	PNAME	DOB	DOJ	SEX	PROF1	PROF2	SALARY
▶	ANAND	1966-04-12	1992-04-21	M	PASCAL	BASIC	3200
	ALTAF	1964-07-02	1990-11-13	M	CLIPPER	COBOL	2800
	JULIANA	1960-01-31	1990-04-21	F	COBOL	DBASE	3000
	KAMALA	1968-10-30	1992-01-02	F	C	DBASE	2900
	NELSON	1965-09-11	1989-03-11	M	COBOL	DBASE	2500
	QADIR	1965-08-31	1990-04-21	M	ASSEMBLY	C	3000
	RAMESH	1967-05-03	1991-02-26	M	PASCAL	DBASE	3200
	REBECCA	1967-01-01	1990-12-01	F	BASIC	COBOL	2500
	REVATHI	1969-12-02	1992-01-02	F	PASCAL	BASIC	3200
	VIJAYA	1965-12-14	1992-05-02	F	FOXPRO	C	4500

97. Display total sales value of software institute-wise.

```
SELECT ST.INSTITUTE, SUM(S.SCOST*S.SOLD)
FROM STUDIES ST
JOIN SOFTWARE S ON ST.PNAME=S.PNAME
GROUP BY ST.INSTITUTE;
```

	INSTITUTE	SUM(S.SCOST*S.SOLD)
►	SABHARI	360394.20
	BITS	0.00
	PRAGATHI	63000.00
	APPLE	48150.00
	BDPS	59875.00

98. In which institute did the person who developed the costliest package study.

```
SELECT ST.INSTITUTE
FROM STUDIES ST
JOIN SOFTWARE S ON ST.PNAME=S.PNAME
ORDER BY S.DCOST DESC
LIMIT 1;
```

	INSTITUTE
►	SABHARI

99. Which language listed in PROF1 or PROF2 has not been used to develop any package.

```
SELECT DISTINCT PROF
FROM (
    SELECT PROF1 AS PROF FROM PROGRAMMER
    UNION
    SELECT PROF2 FROM PROGRAMMER
) X
WHERE PROF NOT IN (SELECT DISTINCT DEV_IN FROM SOFTWARE);
```

	PROF
►	CLIPPER
	FOXPRO

100. How much does the person who developed the highest selling package earn and which course did they undergo.

```
SELECT P.SALARY, ST.COURSE
FROM SOFTWARE S
JOIN PROGRAMMER P ON S.PNAME=P.PNAME
JOIN STUDIES ST ON P.PNAME=ST.PNAME
ORDER BY S.SCOST*S.SOLD DESC
LIMIT 1;
```

	SALARY	COURSE
►	4500	PGDCA

101. How many months will it take for each programmer to recover the course fee.

```
SELECT ST.PNAME,
       CEIL(ST.COURSEFEE / (S.SCOST*S.SOLD/12)) AS RECOVER_MN
  FROM STUDIES ST
 JOIN SOFTWARE S ON ST.PNAME=S.PNAME;
```

	PNAME	RECOVER_MN
▶	MARY	7
	ANAND	4
	ANAND	1
	JULIANA	NULL
	KAMALA	1
	MARY	1
	MARY	1
	QADIR	21
	QADIR	5
	RAMESH	2
	RAMESH	2
	REMITHA	2
	REMITHA	5
	VIJAYA	107

102. Which is the costliest package by a person with under 3 years experience.

```
SELECT S.TITLE
  FROM SOFTWARE S
 JOIN PROGRAMMER P ON S.PNAME=P.PNAME
 WHERE TIMESTAMPDIFF(YEAR,P.DOJ,CURDATE())<3
 ORDER BY S.DCOST DESC
 LIMIT 1;
```

	TITLE

103. What is the average salary of programmers whose software sales exceed 50,000.

```
SELECT AVG(P.SALARY)
  FROM PROGRAMMER P
 JOIN SOFTWARE S ON P.PNAME=S.PNAME
 GROUP BY P.PNAME
 HAVING SUM(S.SCOST*S.SOLD)>50000;
```

	AVG(P.SALARY)
▶	4500.0000
	3200.0000
	2900.0000
	3200.0000
	3000.0000

104. How many packages were developed by students from the institute charging the lowest course fee.

```
SELECT COUNT(*)  
FROM SOFTWARE  
WHERE PNAME IN (  
    SELECT PNAME  
    FROM STUDIES  
    WHERE COURSEFEE = (SELECT MIN(COURSEFEE) FROM STUDIES)  
);
```

	COUNT(*)
▶	7

105. How many packages were developed by the person who developed the cheapest package and where did they study.

```
SELECT COUNT(*), ST.INSTITUTE  
FROM SOFTWARE S  
JOIN STUDIES ST ON S.PNAME=ST.PNAME  
WHERE S.SCOST=(SELECT MIN(SCOST) FROM SOFTWARE)  
GROUP BY ST.INSTITUTE;
```

	COUNT(*)	INSTITUTE
▶	1	SABHARI

106. How many packages were developed by female programmers earning more than the highest paid male programmer.

```
SELECT COUNT(*)  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
WHERE PSEX='F' AND PSALARY>  
(SELECT MAX(SALARY) FROM PROGRAMMER WHERE SEX='M');
```

	COUNT(*)
▶	4

107. How many packages were developed by the most experienced programmers from BDPS.

```
SELECT COUNT(*)  
FROM SOFTWARE S  
JOIN PROGRAMMER P ON S.PNAME=P.PNAME  
JOIN STUDIES ST ON P.PNAME=ST.PNAME  
WHERE ST.INSTITUTE='BDPS'  
AND P.DOJ=(SELECT MIN(DOJ) FROM PROGRAMMER);
```

	COUNT(*)
▶	0

108. List programmers and institutes they studied, including those who developed no packages.

```
SELECT P.PNAME, ST.INSTITUTE  
FROM PROGRAMMER P
```

LEFT JOIN STUDIES ST ON P.PNAME=ST.PNAME;

	PNAME	INSTITUTE
▶	ANAND	SABHARI
	ALTAF	COIT
	JULIANA	BITS
	KAMALA	PRAGATHI
	MARY	SABHARI
	NELSON	PRAGATHI
	PATTRICK	NULL
	QADIR	APPLE
	RAMESH	SABHARI
	REBECCA	NULL
	REMITHA	BDPS
	REVATHI	NULL
	VIJAYA	BDPS

109. List each PROF with number of programmers having that PROF and number of packages in that PROF.

```
SELECT PROF,  
       COUNT(DISTINCT PNAME),  
       COUNT(TITLE)  
  FROM (  
        SELECT P.PNAME, P.PROF1 AS PROF, S.TITLE  
          FROM PROGRAMMER P LEFT JOIN SOFTWARE S ON P.PNAME=S.PNAME  
        UNION ALL  
        SELECT P.PNAME, P.PROF2, S.TITLE  
          FROM PROGRAMMER P LEFT JOIN SOFTWARE S ON P.PNAME=S.PNAME  
) X  
 GROUP BY PROF;
```

	PROF	COUNT(DISTINCT PNAME)	COUNT(TITLE)
▶	NULL	1	1
	ASSEMBLY	2	4
	BASIC	3	3
	C	4	6
	CLIPPER	1	0
	COBOL	4	1
	CPP	1	3
	DBASE	4	4
	FOXPRO	1	1
	ORACLE	1	3
	PASCAL	4	6

110. List programmer names and number of packages each has developed.

```
SELECT PNAME, COUNT(*)
```

FROM SOFTWARE

GROUP BY PNAME;

	PNAME	COUNT(*)
▶	MARY	3
	ANAND	2
	JULIANA	1
	KAMALA	1
	PATTRICK	1
	QADIR	2
	RAMESH	2
	REMITHA	2
	REVATHI	1
	VIJAYA	1