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Roll Number: 23K-0914

FOR TABLES

```
-- DEPARTMENT TABLE
CREATE TABLE DEPARTMENT (
   DEPARTMENT_ID   NUMBER PRIMARY KEY,
   DEPT_NAME       VARCHAR2(100) NOT NULL
);

-- PROGRAM TABLE
CREATE TABLE PROGRAM (
   PROGRAM_ID      NUMBER PRIMARY KEY,
   PROGRAM_NAME    VARCHAR2(100) NOT NULL,
   DEPARTMENT_ID   NUMBER,
   CONSTRAINT FK_PROGRAM_DEPARTMENT
      FOREIGN KEY (DEPARTMENT_ID) REFERENCES DEPARTMENT(DEPARTMENT_ID)
);

-- STUDENT TABLE
CREATE TABLE STUDENT (
   STUDENT_ID      NUMBER PRIMARY KEY,
   FNAME           VARCHAR2(50) NOT NULL,
   LNAME           VARCHAR2(50) NOT NULL,
   AGE             NUMBER(3) CHECK (AGE > 0),
   FEE             NUMBER(10,2) CHECK (FEE >= 0),
   PROGRAM_ID      NUMBER,
   CONSTRAINT FK_STUDENT_PROGRAM
      FOREIGN KEY (PROGRAM_ID) REFERENCES PROGRAM(PROGRAM_ID)
);

-- FACULTY TABLE
CREATE TABLE FACULTY (
   FACULTY_ID      NUMBER PRIMARY KEY,
   NAME            VARCHAR2(100) NOT NULL,
   JOB_TITLE       VARCHAR2(50),
   SALARY          NUMBER(10,2) CHECK (SALARY >= 0),
   DEPARTMENT_ID   NUMBER,
   CONSTRAINT FK_FACULTY_DEPARTMENT
      FOREIGN KEY (DEPARTMENT_ID) REFERENCES DEPARTMENT(DEPARTMENT_ID)
);

-- COURSE TABLE
CREATE TABLE COURSE (
   COURSE_ID       NUMBER PRIMARY KEY,
   COURSE_NAME     VARCHAR2(100) NOT NULL,
   CREDIT          NUMBER(2) CHECK (CREDIT > 0),
   DEP_ID          NUMBER,
   FACULTY_ID      NUMBER,
```

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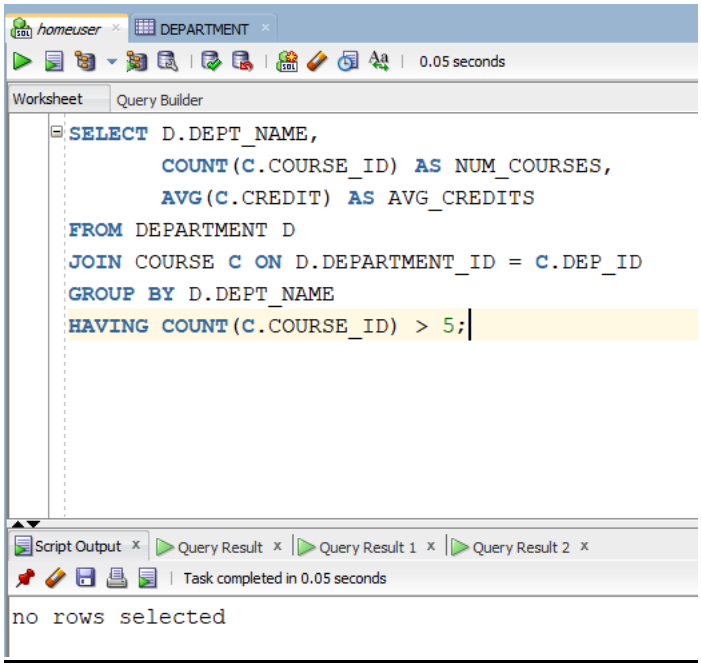
```
   CONSTRAINT FK_COURSE_DEPARTMENT
      FOREIGN KEY (DEP_ID) REFERENCES DEPARTMENT(DEPARTMENT_ID),
   CONSTRAINT FK_COURSE_FACULTY
      FOREIGN KEY (FACULTY_ID) REFERENCES FACULTY(FACULTY_ID)
);

-- ENROLL TABLE
CREATE TABLE ENROLL (
   ENROLL_ID      NUMBER PRIMARY KEY,
   STUDENT_ID     NUMBER,
   COURSE_ID      NUMBER,
   SEMESTER       VARCHAR2(20),
   GRADE          CHAR(2),
   CONSTRAINT FK_ENROLL_STUDENT
      FOREIGN KEY (STUDENT_ID) REFERENCES STUDENT(STUDENT_ID),
   CONSTRAINT FK_ENROLL_COURSE
      FOREIGN KEY (COURSE_ID) REFERENCES COURSE(COURSE_ID)
);
```

LAB#05 – TASK#01



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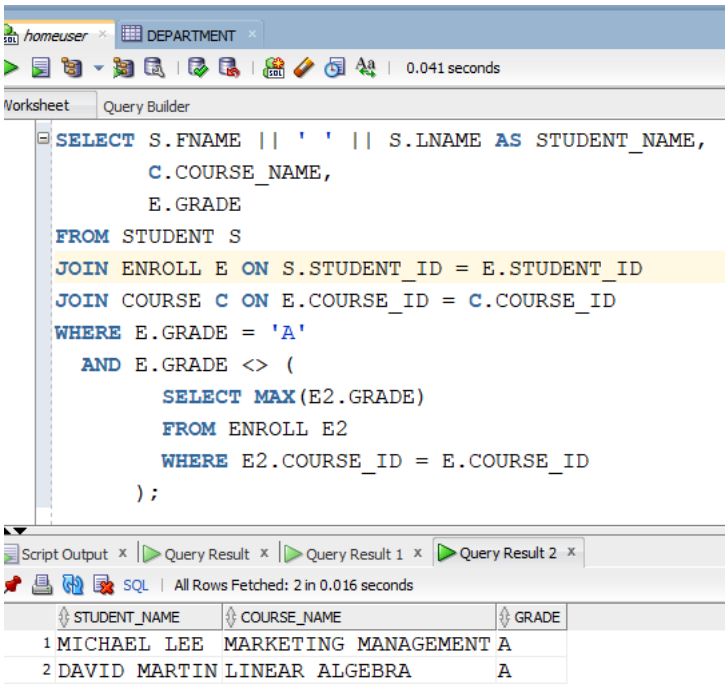
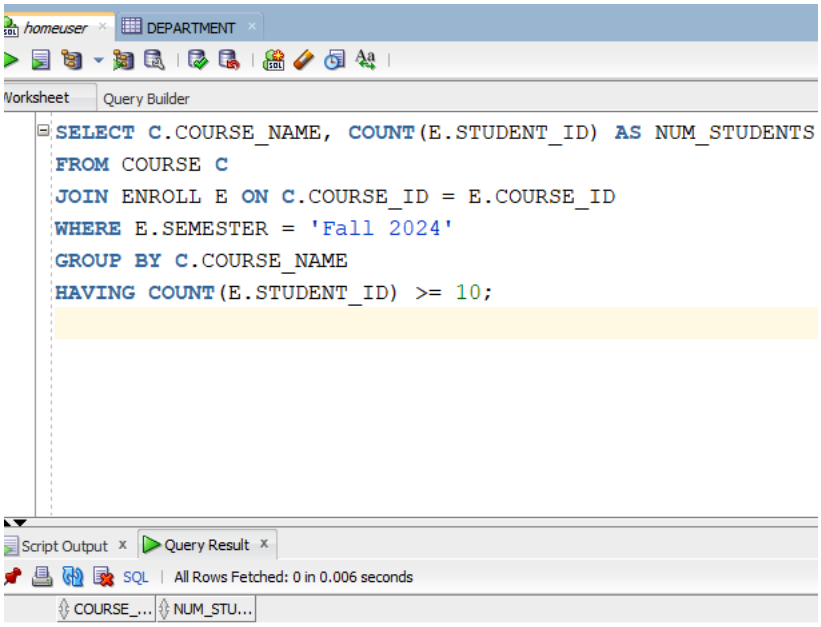
LAB#05 – TASK#02



LAB#05 – TASK#03



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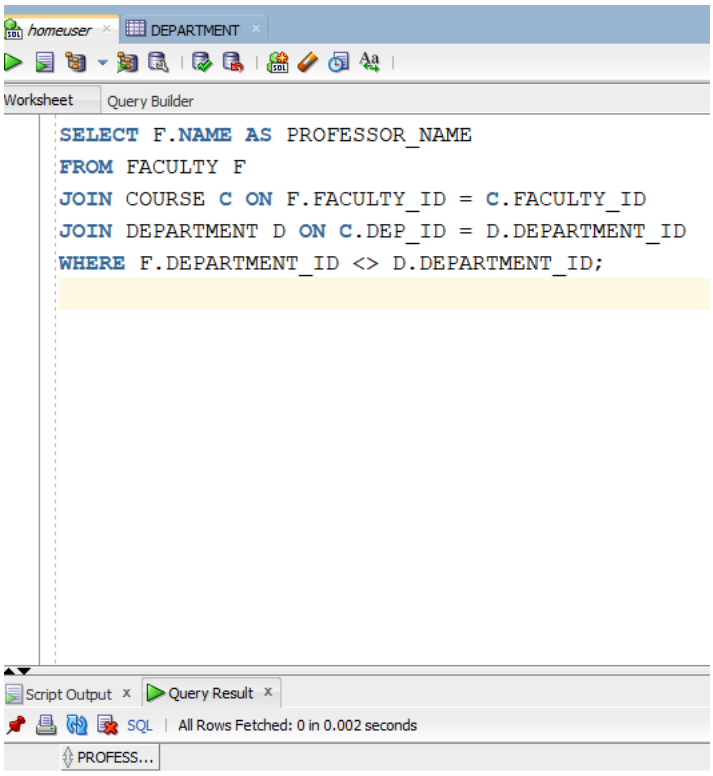
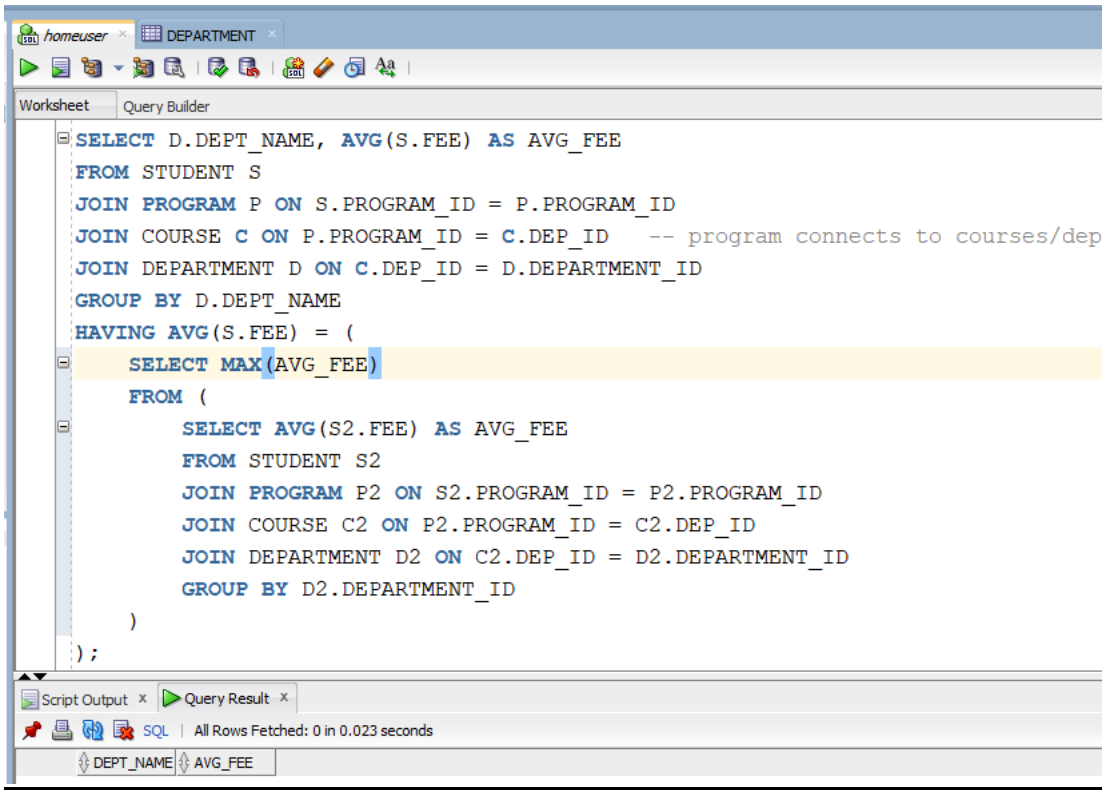
LAB#05 – TASK#04



LAB#05 – TASK#05



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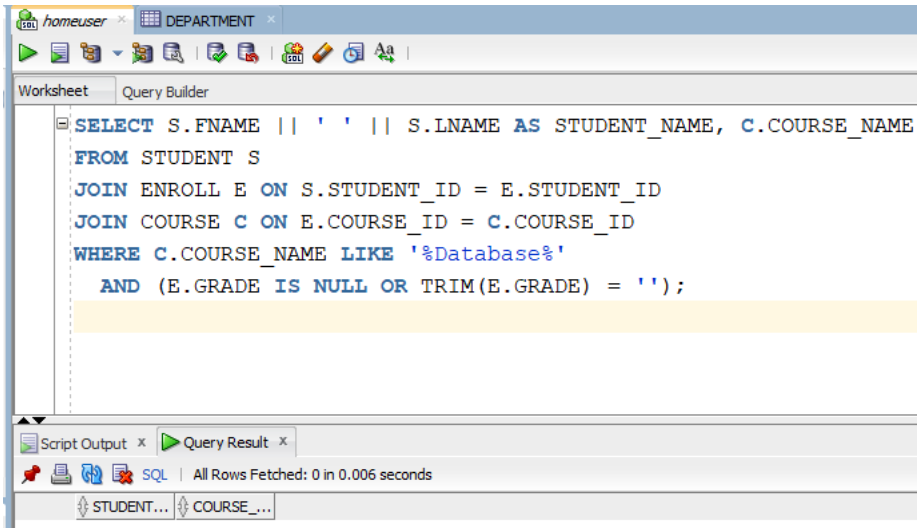
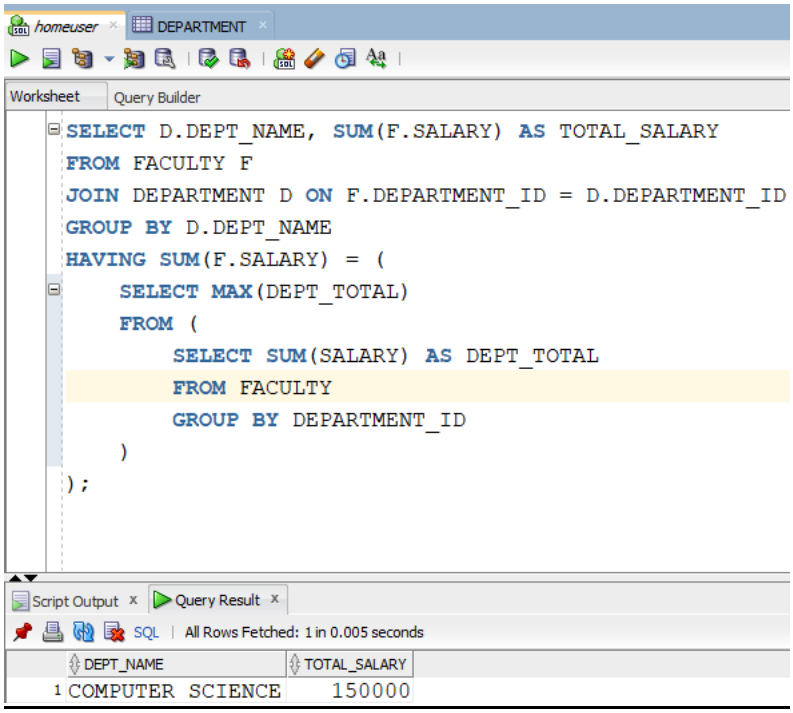
LAB#05 – TASK#06



LAB#05 – TASK#07



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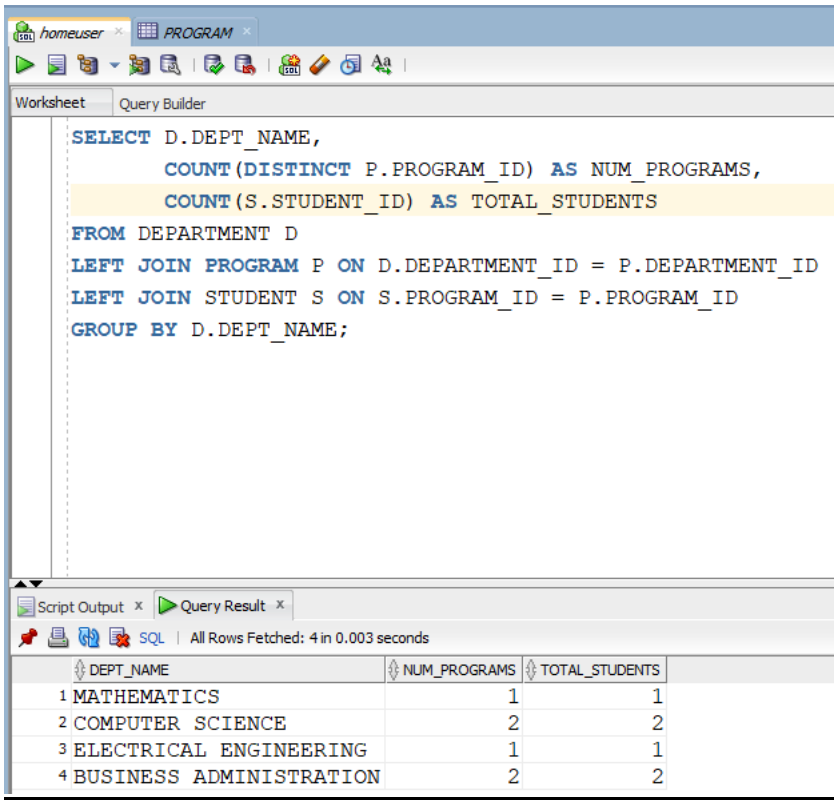
LAB#05 – TASK#08

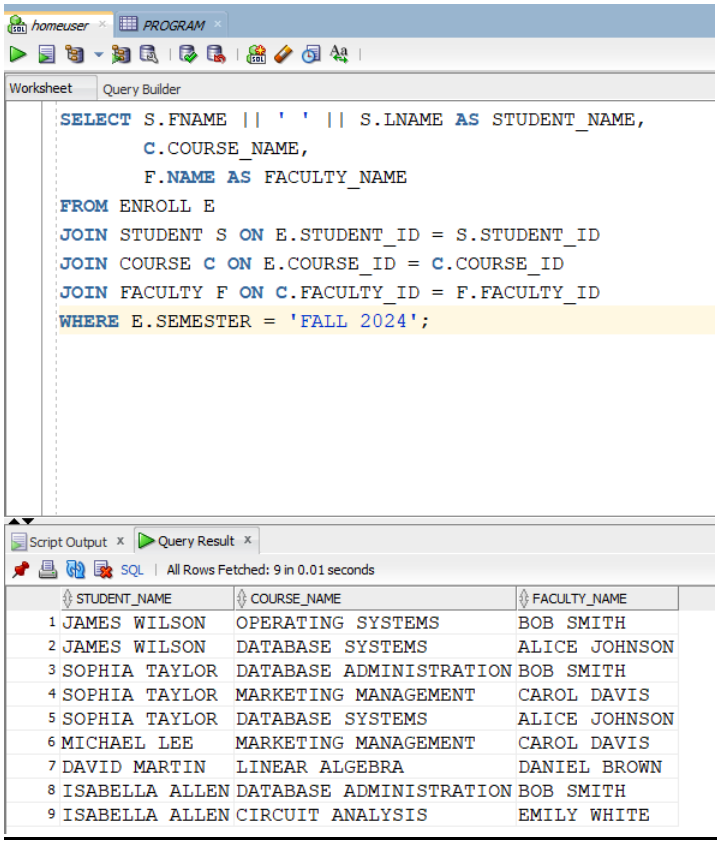


```
SELECT D.DEPT_NAME,
       COUNT(DISTINCT P.PROGRAM_ID) AS NUM_PROGRAMS,
       COUNT(S.STUDENT_ID) AS TOTAL_STUDENTS
FROM DEPARTMENT D
LEFT JOIN PROGRAM P ON D.DEPARTMENT_ID = P.DEPARTMENT_ID
LEFT JOIN STUDENT S ON S.PROGRAM_ID = P.PROGRAM_ID
GROUP BY D.DEPT_NAME;
```

All Rows Fetched: 4 in 0.003 seconds

	DEPT_NAME	NUM_PROGRAMS	TOTAL_STUDENTS
1	MATHEMATICS	1	1
2	COMPUTER SCIENCE	2	2
3	ELECTRICAL ENGINEERING	1	1
4	BUSINESS ADMINISTRATION	2	2

LAB#05 – TASK#09



```
SELECT S.FNAME || ' ' || S.LNAME AS STUDENT_NAME,
       C.COURSE_NAME,
       F.NAME AS FACULTY_NAME
FROM ENROLL E
JOIN STUDENT S ON E.STUDENT_ID = S.STUDENT_ID
JOIN COURSE C ON E.COURSE_ID = C.COURSE_ID
JOIN FACULTY F ON C.FACULTY_ID = F.FACULTY_ID
WHERE E.SEMESTER = 'FALL 2024';
```

All Rows Fetched: 9 in 0.01 seconds

	STUDENT_NAME	COURSE_NAME	FACULTY_NAME
1	JAMES WILSON	OPERATING SYSTEMS	BOB SMITH
2	JAMES WILSON	DATABASE SYSTEMS	ALICE JOHNSON
3	SOPHIA TAYLOR	DATABASE ADMINISTRATION	BOB SMITH
4	SOPHIA TAYLOR	MARKETING MANAGEMENT	CAROL DAVIS
5	SOPHIA TAYLOR	DATABASE SYSTEMS	ALICE JOHNSON
6	MICHAEL LEE	MARKETING MANAGEMENT	CAROL DAVIS
7	DAVID MARTIN	LINEAR ALGEBRA	DANIEL BROWN
8	ISABELLA ALLEN	DATABASE ADMINISTRATION	BOB SMITH
9	ISABELLA ALLEN	CIRCUIT ANALYSIS	EMILY WHITE

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LAB#05 – TASK#10