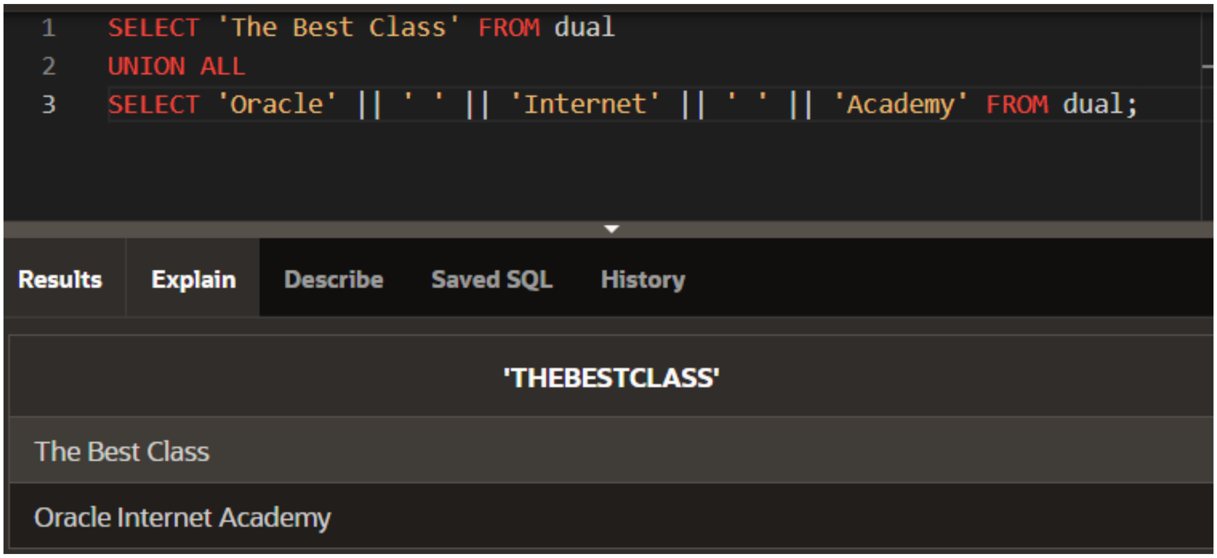
Database Programming with SQL

4-1: Case and Character Manipulation

1. Using the three separate words “Oracle”, “Internet”, and “Academy”, use one command to produce the following output:

The Best Class
Oracle Internet Academy

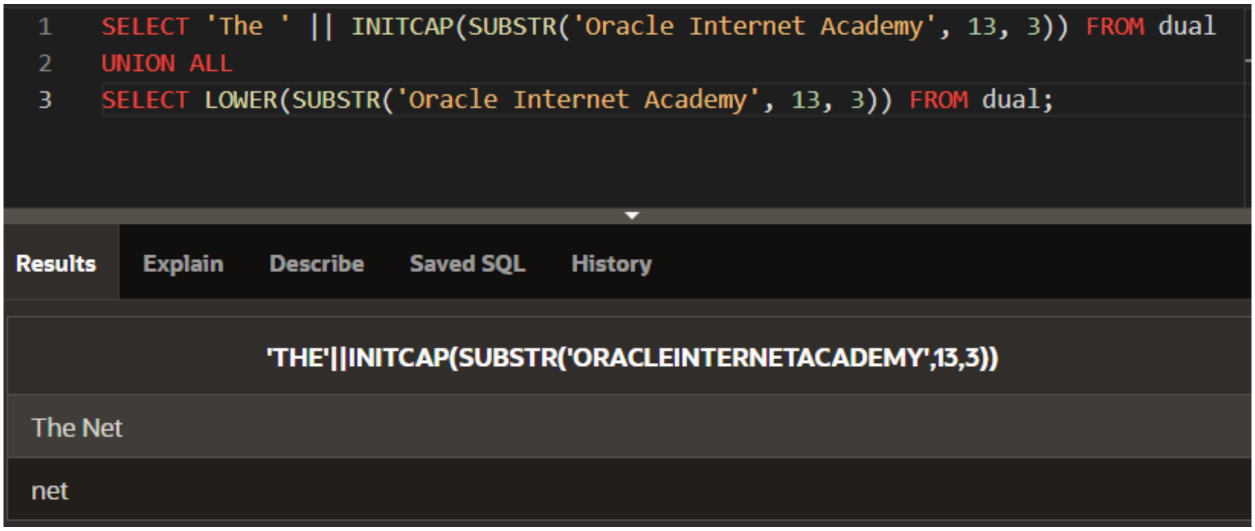


```sql
SELECT 'The Best Class' FROM dual
UNION ALL
SELECT 'Oracle' || ' ' || 'Internet' || ' ' || 'Academy' FROM dual;
```

```
'THEBESTCLASS'
The Best Class
Oracle Internet Academy
```

2. Use the string “Oracle Internet Academy” to produce the following output:

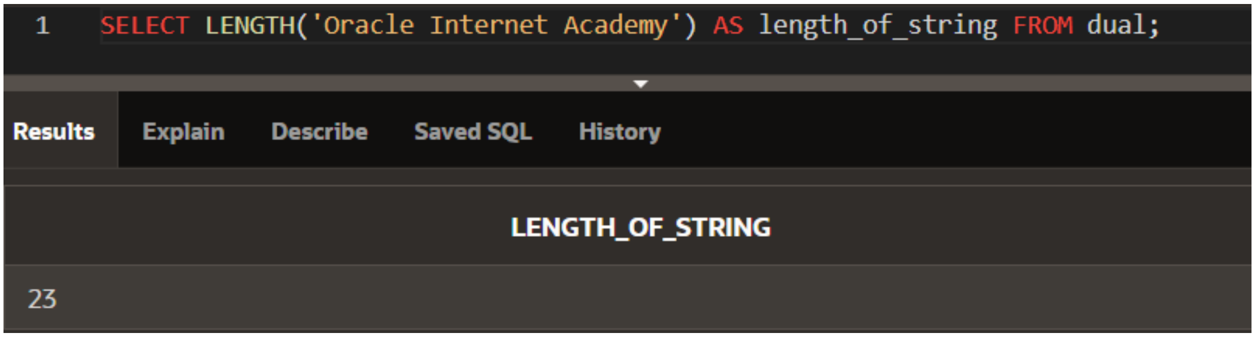
The Net
net



```sql
SELECT 'The ' || INITCAP(SUBSTR('Oracle Internet Academy', 13, 3)) FROM dual
UNION ALL
SELECT LOWER(SUBSTR('Oracle Internet Academy', 13, 3)) FROM dual;
```

```
'THE'||INITCAP(SUBSTR('ORACLEINTERNETACADEMY',13,3))
The Net
net
```

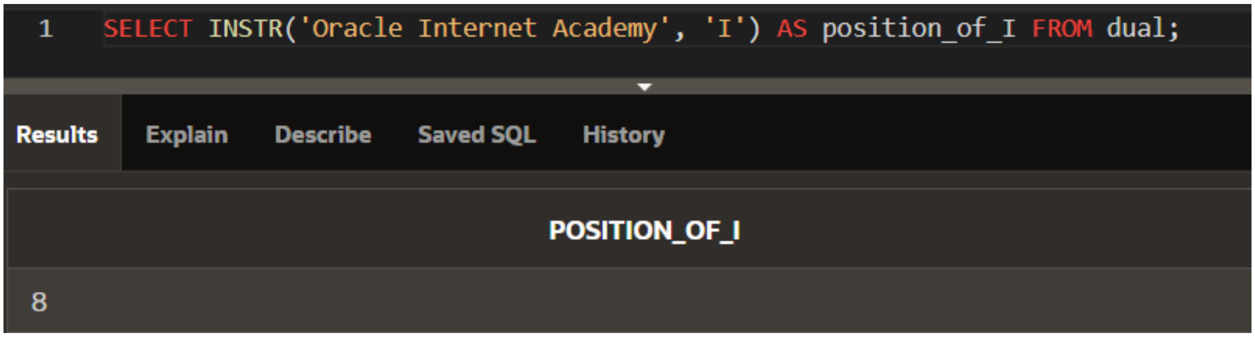
3. What is the length of the string “Oracle Internet Academy”?



```
SELECT LENGTH('Oracle Internet Academy') AS length_of_string FROM dual;
```

```
LENGTH_OF_STRING
23
```

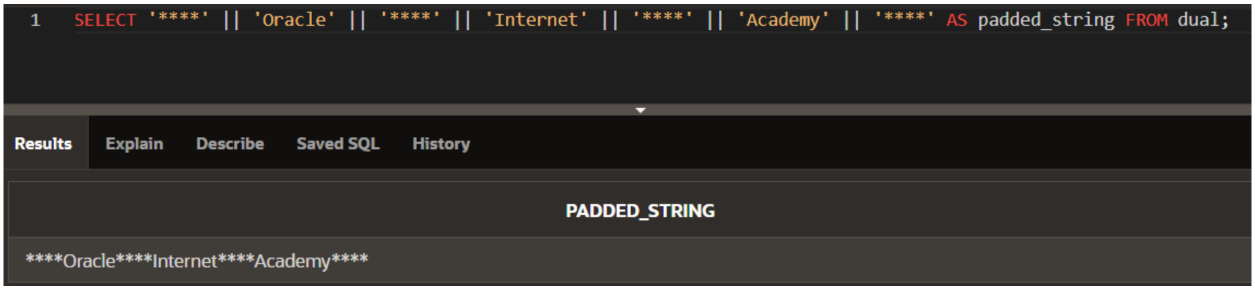
4. What’s the position of “I” in “Oracle Internet Academy”?



```
SELECT INSTR('Oracle Internet Academy', 'I') AS position_of_I FROM dual;
```

```
POSITION_OF_I
8
```

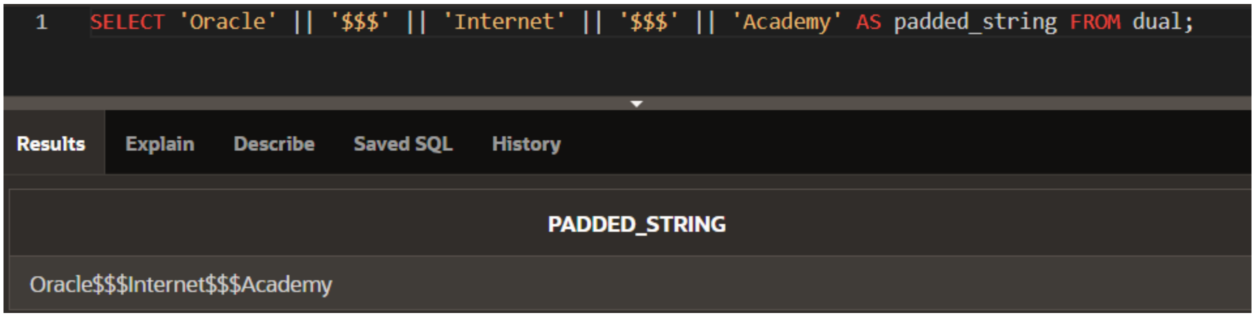
5. Starting with the string “Oracle Internet Academy”, pad the string to create ****Oracle****Internet****Academy****



```
SELECT '****' || 'Oracle' || '****' || 'Internet' || '****' || 'Academy' || '****' AS padded_string FROM dual;
```

```
PADDED_STRING
****Oracle****Internet****Academy****
```

6. Starting with the string “Oracle Internet Academy”, pad the string to produce: Oracle$$$Internet$$$Academy

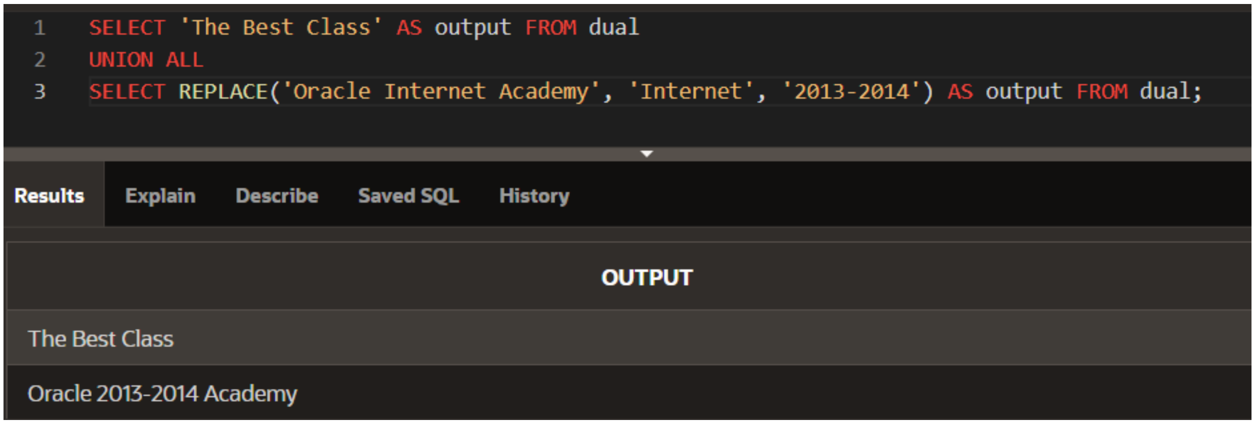


```
SELECT 'Oracle' || '$$$' || 'Internet' || '$$$' || 'Academy' AS padded_string FROM dual;
```

```
PADDED_STRING
Oracle$$$Internet$$$Academy
```

7. Using the string ‘Oracle Internet Academy’, produce the output shown using the REPLACE function.

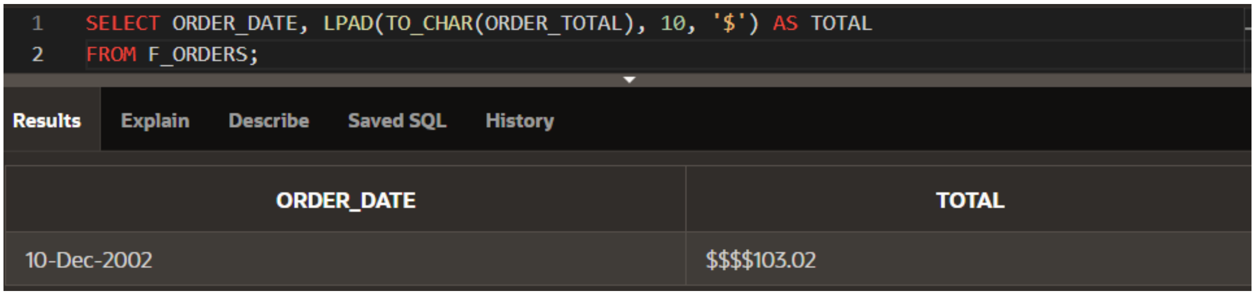
The Best Class
Oracle 2013-2014 Academy



```
SELECT 'The Best Class' AS output FROM dual
UNION ALL
SELECT REPLACE('Oracle Internet Academy', 'Internet', '2013-2014') AS output FROM dual;
```

OUTPUT
The Best Class
Oracle 2013-2014 Academy

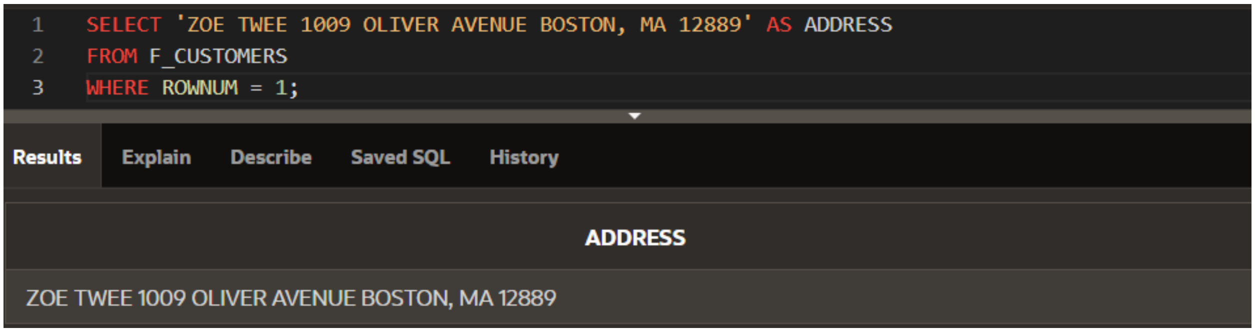
8. List the order date and the order total from the Global Fast Foods F_ORDERS table. Name the order total as TOTAL, and fill in the empty spaces to the left of the order total with $.



```
SELECT ORDER_DATE, LPAD(TO_CHAR(ORDER_TOTAL), 10, '$') AS TOTAL
FROM F_ORDERS;
```

ORDER_DATE	TOTAL
10-Dec-2002	$$$$103.02

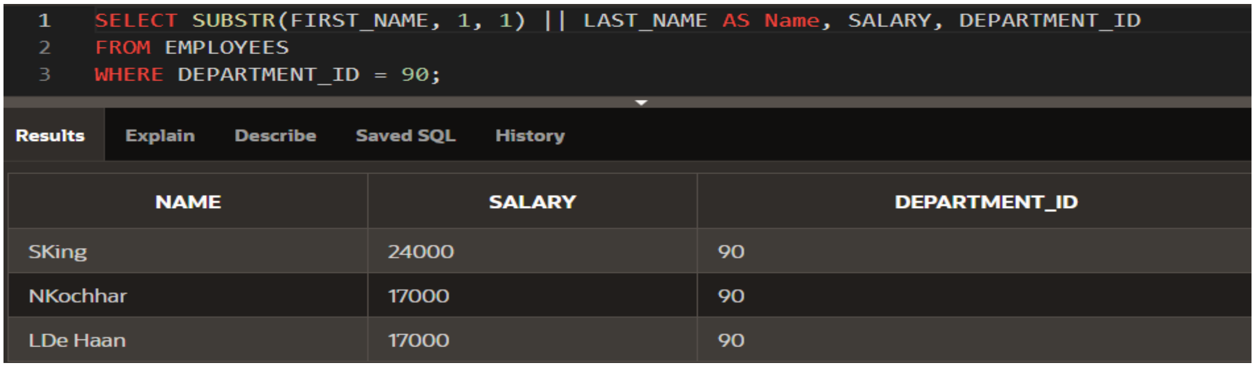
9. Write a query that will output a column called “ADDRESS” which has the following information: ZOE TWEE 1009 OLIVER AVENUE BOSTON, MA 12889. Use the Global Fast Foods F_CUSTOMERS table.



```
SELECT 'ZOE TWEE 1009 OLIVER AVENUE BOSTON, MA 12889' AS ADDRESS
FROM F_CUSTOMERS
WHERE ROWNUM = 1;
```

ADDRESS
ZOE TWEE 1009 OLIVER AVENUE BOSTON, MA 12889

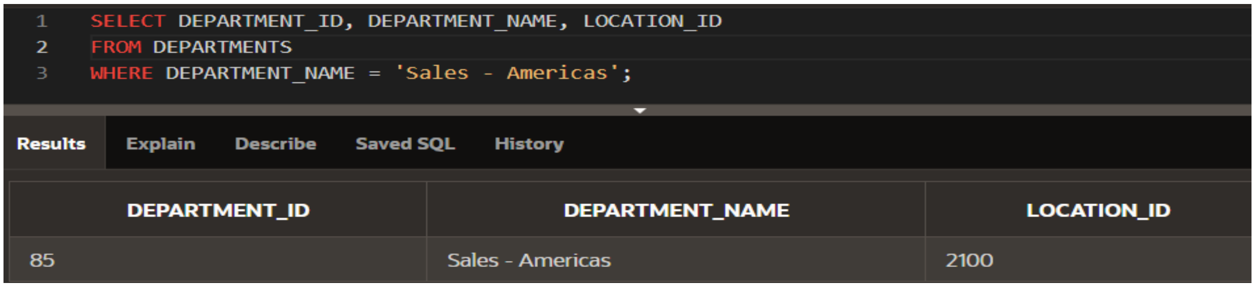
10. Write a query to return the first character of the first name concatenated to the last_name, the salary, and the department id for employees working in department 20. Give the first expression an alias of Name. Use the EMPLOYEES table. Change the query to use a substitution variable instead of the hard coded value 20 for department id. Run the query for department 30 and 50 without changing the original where-clause in your statement.



```
SELECT SUBSTR(FIRST_NAME, 1, 1) || LAST_NAME AS Name, SALARY, DEPARTMENT_ID
FROM EMPLOYEES
WHERE DEPARTMENT_ID = 90;
```

NAME	SALARY	DEPARTMENT_ID
SKing	24000	90
NKochhar	17000	90
LDe Haan	17000	90

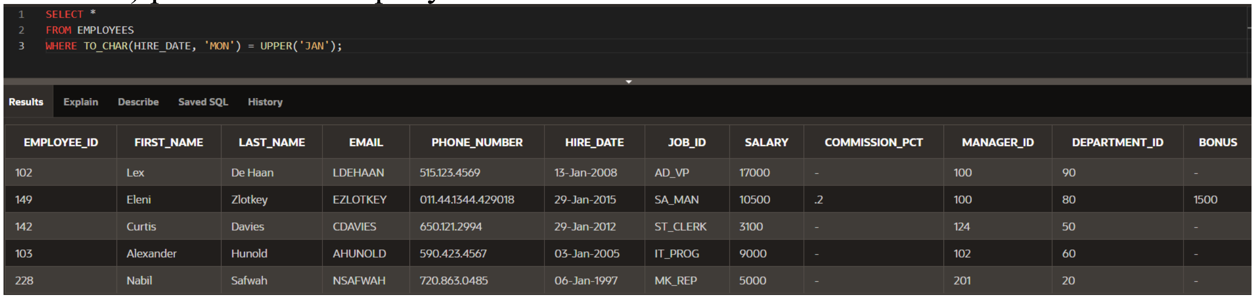
11. Using a substitution variable for the department name, write a query listing department id, department name, and location id for departments located in the_department_of_your_choice. Use the DEPARTMENTS table. Note: All substitution variables in OAE are treated as character strings, so no quotes (‘ ‘) are needed.



```
SELECT DEPARTMENT_ID, DEPARTMENT_NAME, LOCATION_ID
FROM DEPARTMENTS
WHERE DEPARTMENT_NAME = 'Sales - Americas';
```

DEPARTMENT_ID	DEPARTMENT_NAME	LOCATION_ID
85	Sales - Americas	2100

12. Write a query that returns all the employee data depending on the month of their hire date. Use the EMPLOYEES table. The statement should return the month part of the hiredate which is then compared to an abbreviated month (JAN, FEB, MAR) passed into the query via a substitution variable.

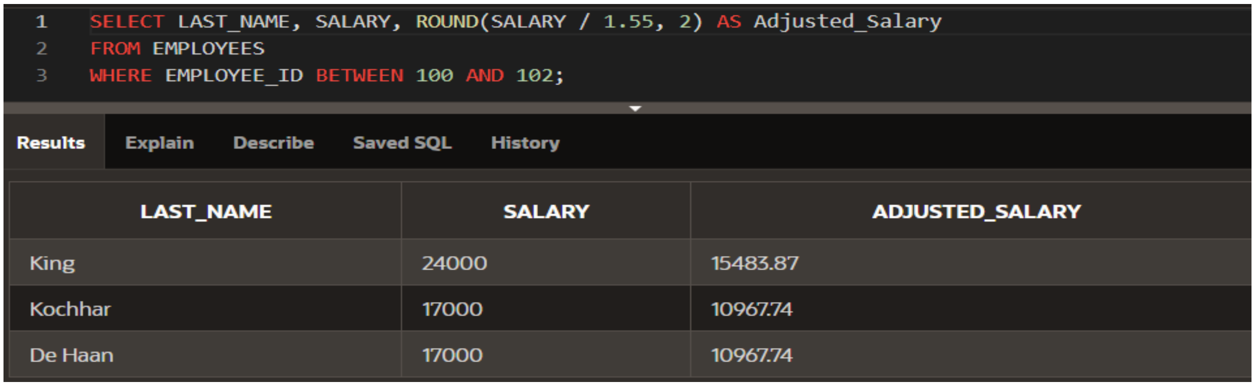


```
SELECT *
FROM EMPLOYEES
WHERE TO_CHAR(HIRE_DATE, 'MON') = UPPER('JAN');
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID	BONUS
102	Lex	De Haan	LDEHAAN	515.123.4569	13-Jan-2008	AD_VP	17000	-	100	90	-
149	Eleni	Zlotkey	EZLOTKEY	011.44.1344.429018	29-Jan-2015	SA_MAN	10500	.2	100	80	1500
142	Curtis	Davies	CDAVIES	650.121.2994	29-Jan-2012	ST_CLERK	3100	-	124	50	-
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-Jan-2005	IT_PROG	9000	-	102	60	-
228	Nabil	Safwah	NSAFWAH	720.863.0485	06-Jan-1997	MK_REP	5000	-	201	20	-

4-2: Number Functions

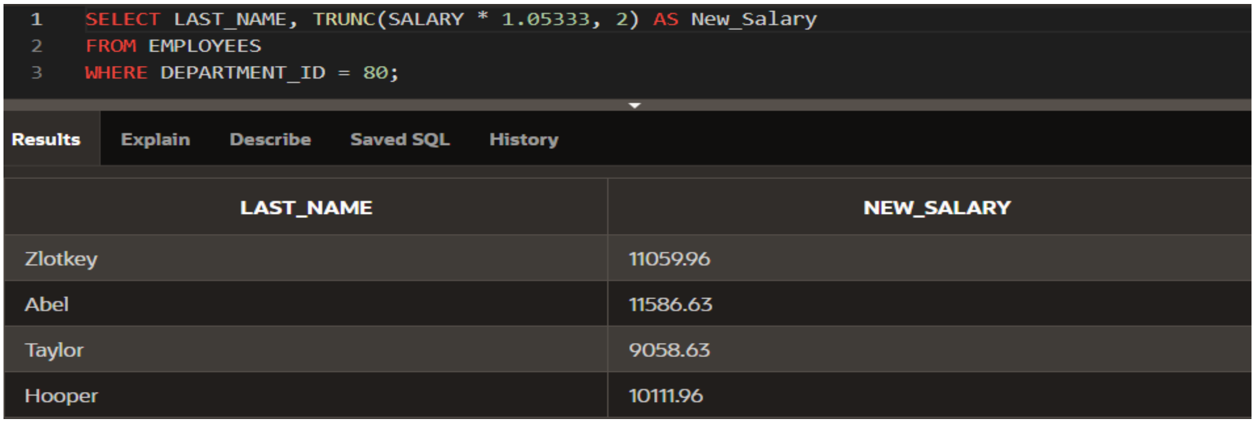
1. Display Oracle database employee last_name and salary for employee_ids between 100 and 102. Include a third column that divides each salary by 1.55 and rounds the result to two decimal places.



```
SELECT LAST_NAME, SALARY, ROUND(SALARY / 1.55, 2) AS Adjusted_Salary
FROM EMPLOYEES
WHERE EMPLOYEE_ID BETWEEN 100 AND 102;
```

LAST_NAME	SALARY	ADJUSTED_SALARY
King	24000	15483.87
Kochhar	17000	10967.74
De Haan	17000	10967.74

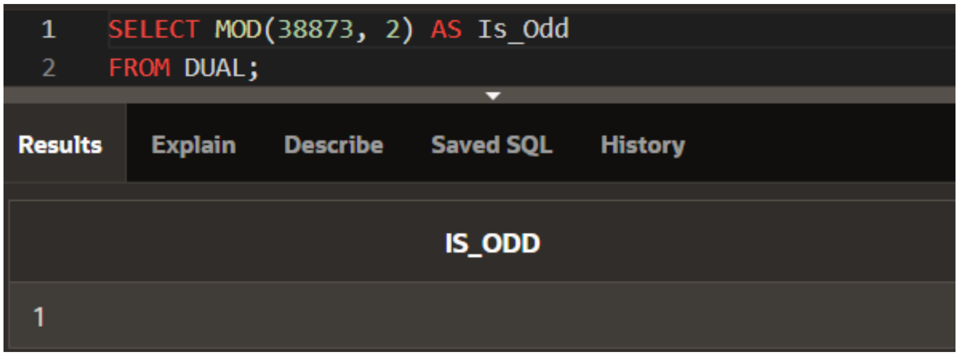
2. Display employee last_name and salary for those employees who work in department 80. Give each of them a raise of 5.333% and truncate the result to two decimal places.



```
SELECT LAST_NAME, TRUNC(SALARY * 1.05333, 2) AS New_Salary
FROM EMPLOYEES
WHERE DEPARTMENT_ID = 80;
```

LAST_NAME	NEW_SALARY
Zlotkey	11059.96
Abel	11586.63
Taylor	9058.63
Hooper	10111.96

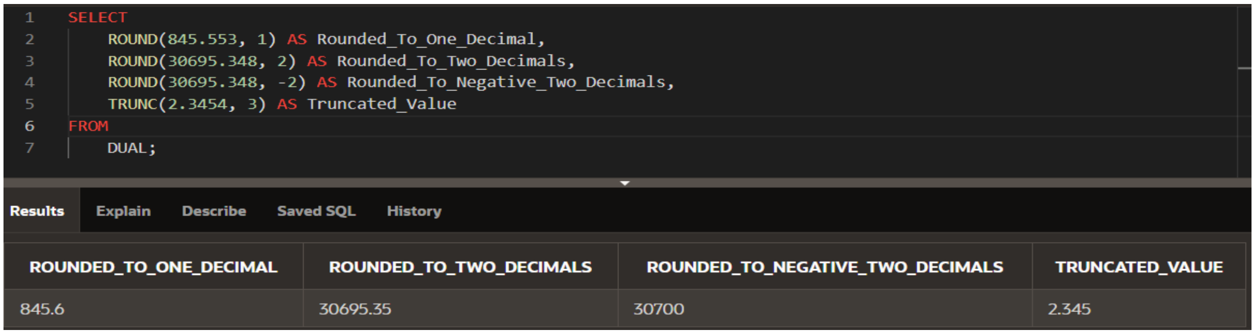
3. Use a MOD number function to determine whether 38873 is an even number or an odd number.



```
SELECT MOD(38873, 2) AS Is_Odd
FROM DUAL;
```

IS_ODD
1

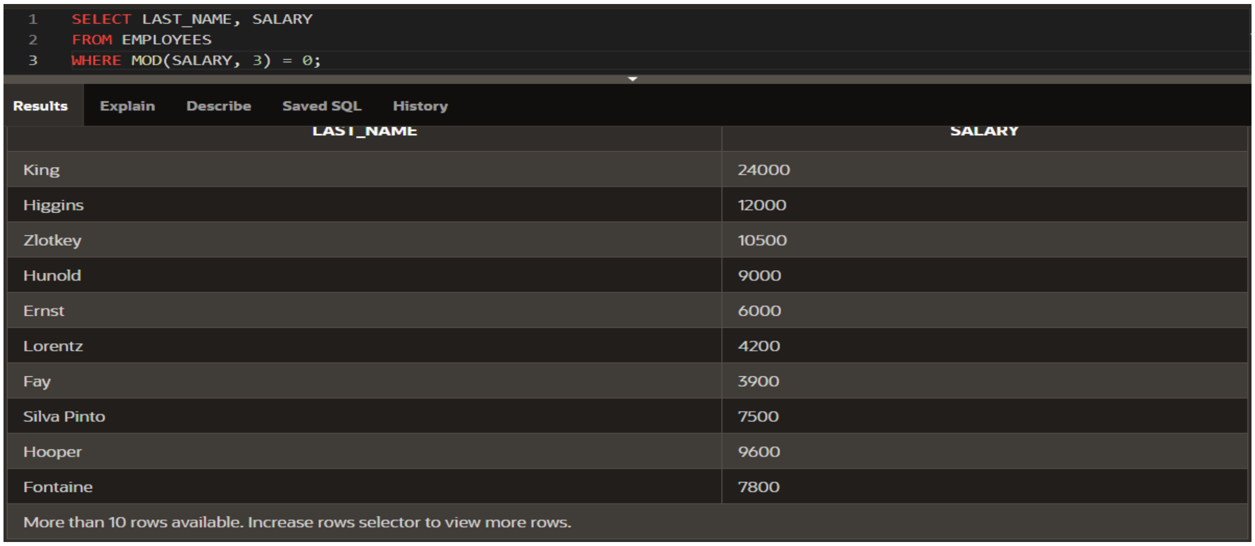
4. Use the DUAL table to process the following numbers: 845.553 - round to one decimal place 30695.348 - round to two decimal places 30695.348 - round to -2 decimal places 2.3454 - truncate the 454 from the decimal place.



```
SELECT
    ROUND(845.553, 1) AS Rounded_To_One_Decimal,
    ROUND(30695.348, 2) AS Rounded_To_Two_Decimals,
    ROUND(30695.348, -2) AS Rounded_To_Negative_Two_Decimals,
    TRUNC(2.3454, 3) AS Truncated_Value
FROM
    DUAL;
```

ROUNDED_TO_ONE_DECIMAL	ROUNDED_TO_TWO_DECIMALS	ROUNDED_TO_NEGATIVE_TWO_DECIMALS	TRUNCATED_VALUE
845.6	30695.35	30700	2.345

5. Divide each employee’s salary by 3. Display only those employees’ last names and salaries who earn a salary that is a multiple of 3.

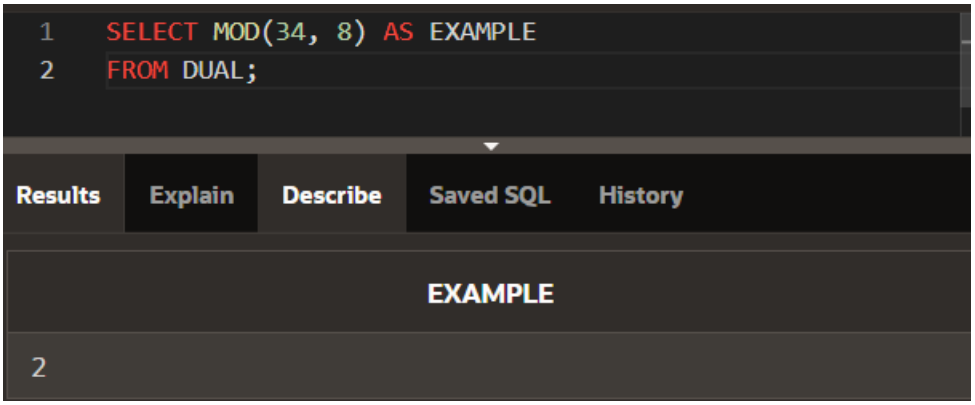


```
SELECT LAST_NAME, SALARY
FROM EMPLOYEES
WHERE MOD(SALARY, 3) = 0;
```

LAST_NAME	SALARY
King	24000
Higgins	12000
Zlotkey	10500
Hunold	9000
Ernst	6000
Lorentz	4200
Fay	3900
Silva Pinto	7500
Hooper	9600
Fontaine	7800

More than 10 rows available. Increase rows selector to view more rows.

6. Divide 34 by 8. Show only the remainder of the division. Name the output as EXAMPLE.



```
SELECT MOD(34, 8) AS EXAMPLE
FROM DUAL;
```

EXAMPLE
2

7. How would you like your paycheck – rounded or truncated? What if your paycheck was calculated to be $565.784 for the week, but you noticed that it was issued for $565.78. The loss of .004 cents would probably make very little difference to you. However, what if this was done to one thousand people, one hundred thousand people, or one million people! Would it make a difference then? How much of a difference?
    - **Rounding** typically adjusts the value to the nearest number based on standard rounding rules.
    - **Truncating** simply cuts off any decimal places beyond certain point resulting in a loss of value.

If 1,000 people are each truncated by $0.004:

- **Total Loss** = 1,000 * $0.004 = $4.00

If applied to 100,000 people:

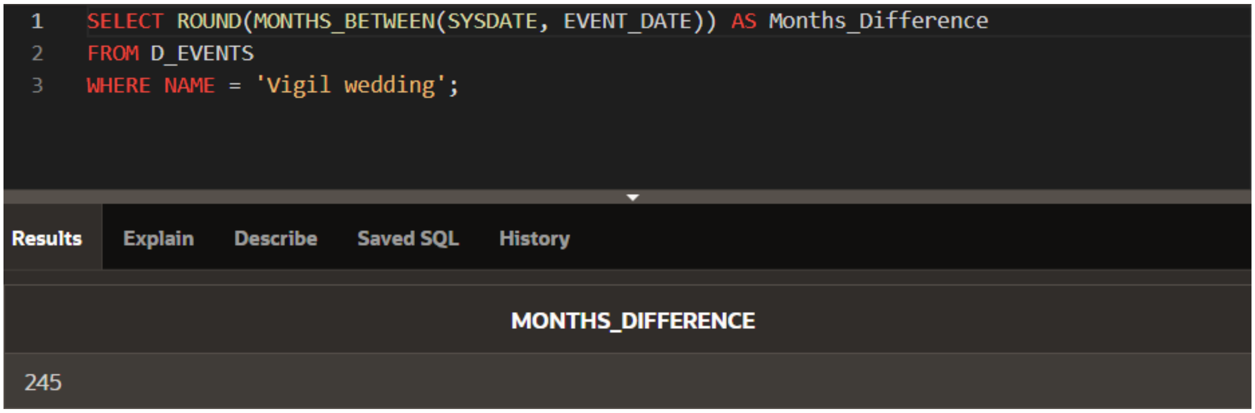
- **Total loss** = 100,000 * $0.004 = $400.00

If applied to 1,000,000 people:

- **Total loss** = 1,000,000 * $0.004 = $4,000.00

4-3: Date Functions

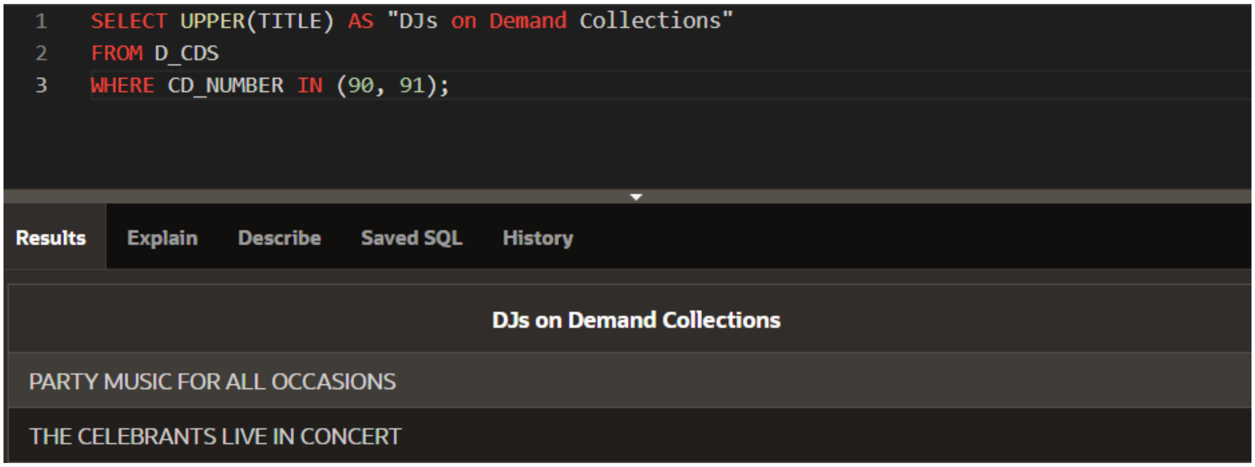
1. For DJs on Demand, display the number of months between the event_date of the Vigil wedding and today's date. Round to the nearest month.



```sql
SELECT ROUND(MONTHS_BETWEEN(SYSDATE, EVENT_DATE)) AS Months_Difference
FROM D_EVENTS
WHERE NAME = 'Vigil wedding';
```

```
MONTHS_DIFFERENCE
245
```

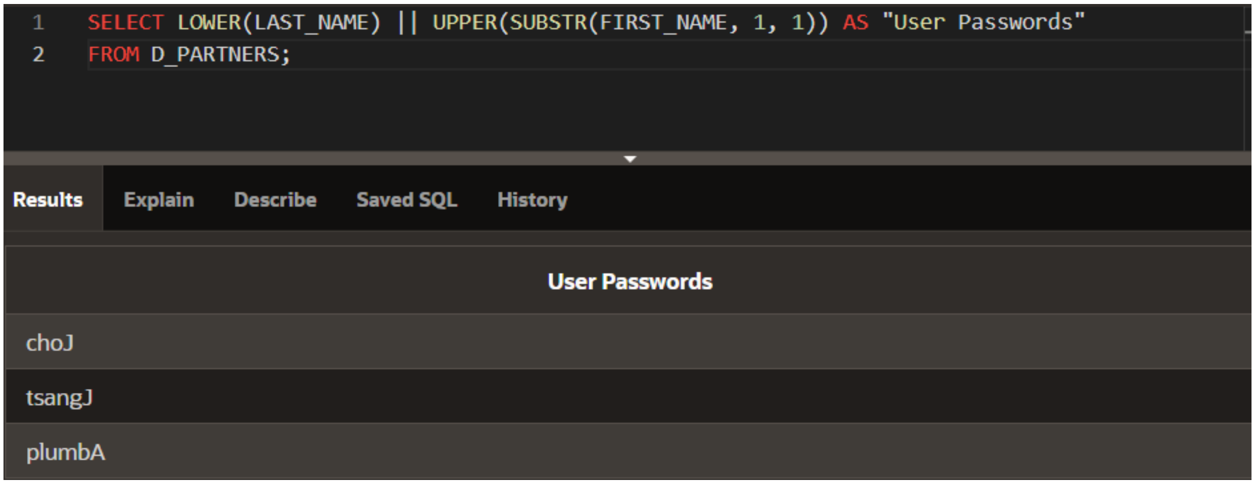
2. Write a statement that will display the DJs on Demand CD titles for cd_numbers 90 and 91 in uppercase in a column headed “DJs on Demand Collections.”



```
SELECT UPPER(TITLE) AS "DJs on Demand Collections"
FROM D_CDS
WHERE CD_NUMBER IN (90, 91);
```

DJs on Demand Collections
PARTY MUSIC FOR ALL OCCASIONS
THE CELEBRANTS LIVE IN CONCERT

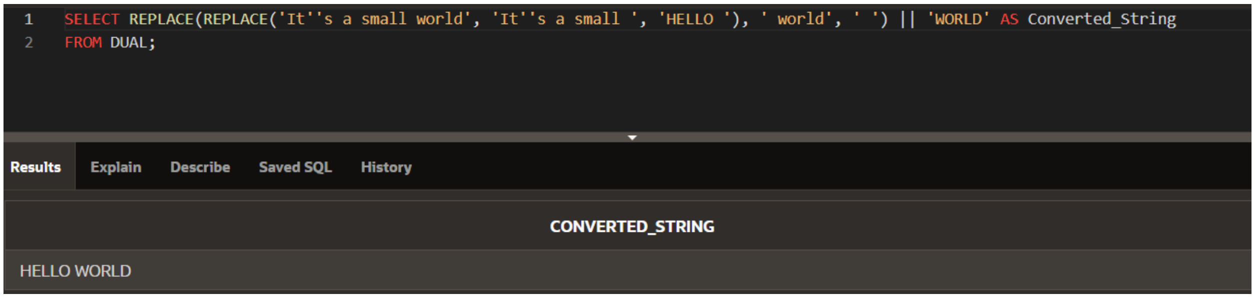
3. Write a statement that will create computer usernames for the DJs on Demand partners. The usernames will be the lowercase letters of the last name + the uppercase first letter in the first name. Title the column “User Passwords.” For example, Mary Smythers would be smythersM.



```
SELECT LOWER(LAST_NAME) || UPPER(SUBSTR(FIRST_NAME, 1, 1)) AS "User Passwords"
FROM D_PARTNERS;
```

User Passwords
choJ
tsangJ
plumbA

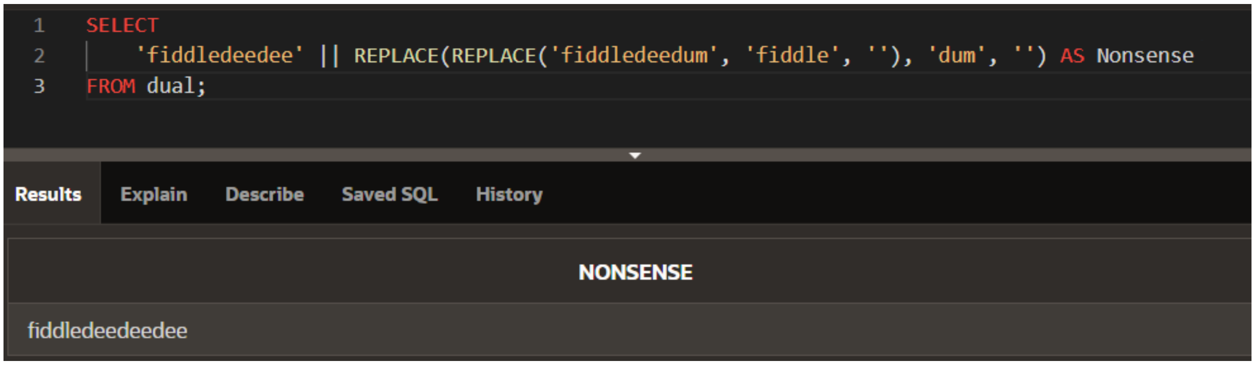
4. Write a statement that will convert “It’s a small world” to “HELLO WORLD.”



```
SELECT REPLACE(REPLACE('It''s a small world', 'It''s a small ', 'HELLO '), ' world', ' ') || 'WORLD' AS Converted_String
FROM DUAL;
```

CONVERTED_STRING
HELLO WORLD

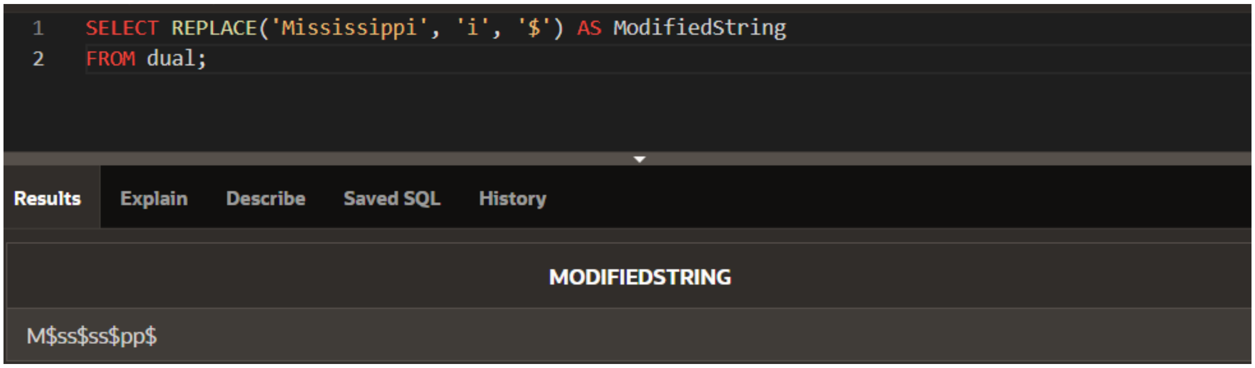
5. Write a statement that will remove the "fiddle" from "fiddledeedee" and the "dum" from "fiddledeedum." Display the result "fiddledeedeedee" in a column with the heading "Nonsense."



```
SELECT
    'fiddledeedee' || REPLACE(REPLACE('fiddledeedum', 'fiddle', ''), 'dum', '') AS Nonsense
FROM dual;
```

NONSENSE
fiddledeedeedee

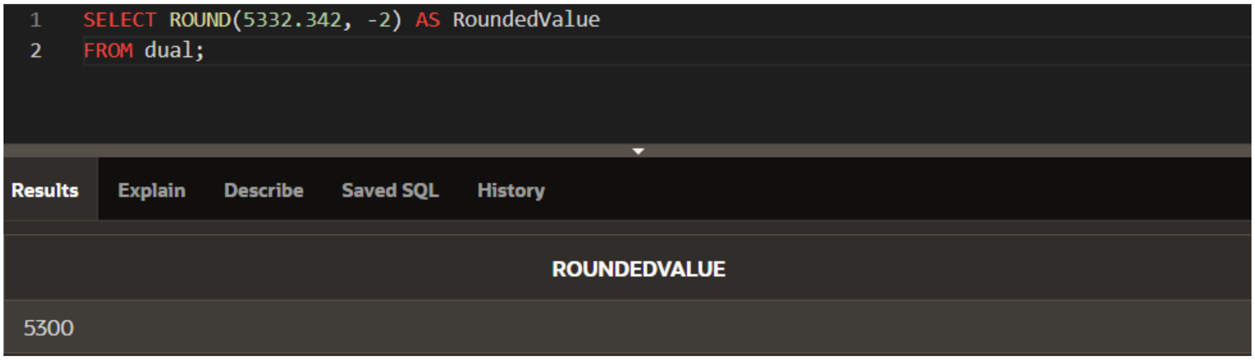
6. Replace every "i" in Mississippi with "$."



```
SELECT REPLACE('Mississippi', 'i', '$') AS ModifiedString
FROM dual;
```

MODIFIEDSTRING
M$ss$ss$pp$

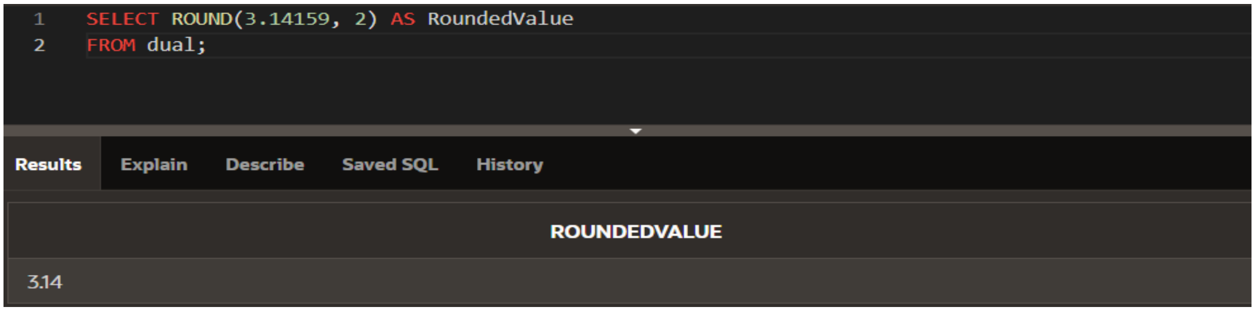
7. Using DUAL, convert 5332.342 to 5300.



```
SELECT ROUND(5332.342, -2) AS RoundedValue
FROM dual;
```

ROUNDEDVALUE
5300

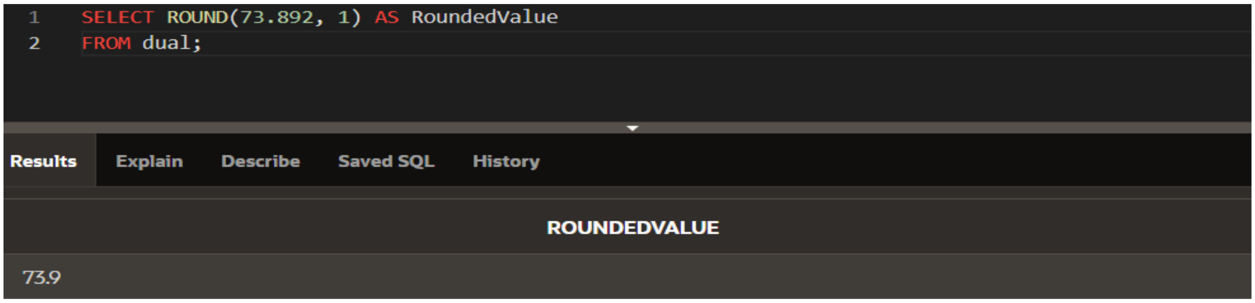
8. Using DUAL, convert 3.14159 to 3.14.



```
SELECT ROUND(3.14159, 2) AS RoundedValue
FROM dual;
```

```
ROUNDEDVALUE
3.14
```

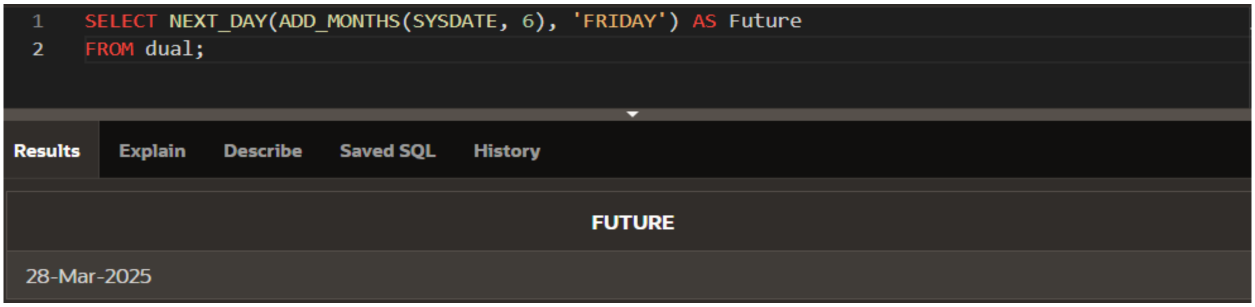
9. Using DUAL, convert 73.892 to 73.8.



```
SELECT ROUND(73.892, 1) AS RoundedValue
FROM dual;
```

```
ROUNDEDVALUE
73.9
```

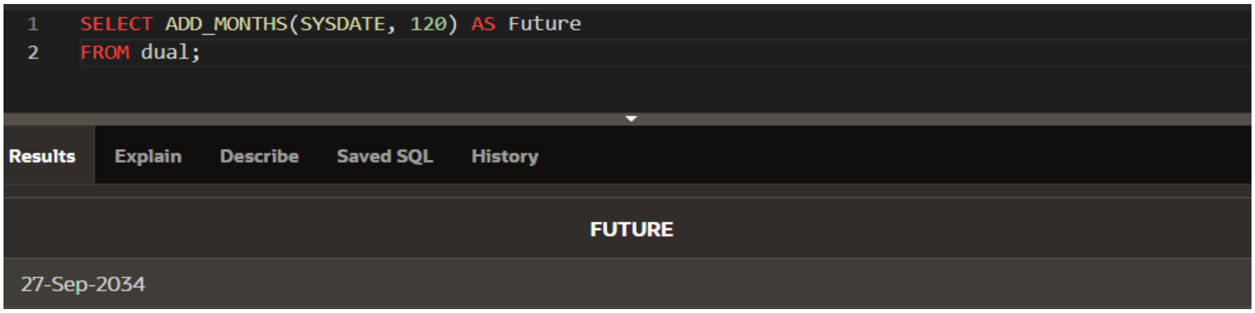
10. What is the next Friday six months from now? Label the column “Future.”



```
SELECT NEXT_DAY(ADD_MONTHS(SYSDATE, 6), 'FRIDAY') AS Future
FROM dual;
```

```
FUTURE
28-Mar-2025
```

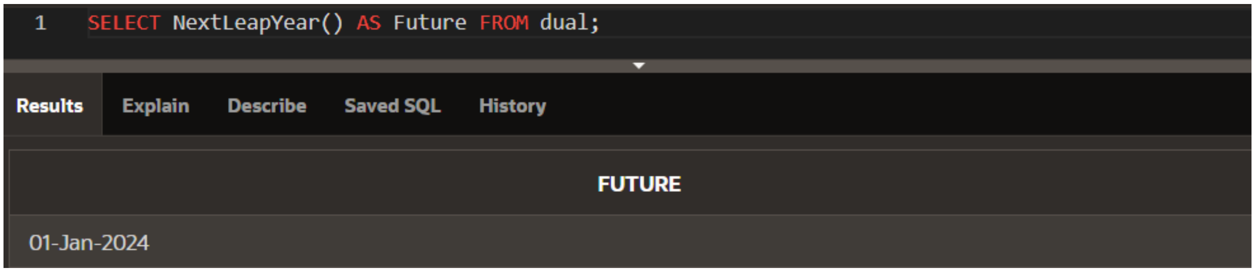
11. What is the date 10 years from now? Label the column “Future.”



```
SELECT ADD_MONTHS(SYSDATE, 120) AS Future
FROM dual;
```

```
FUTURE
27-Sep-2034
```

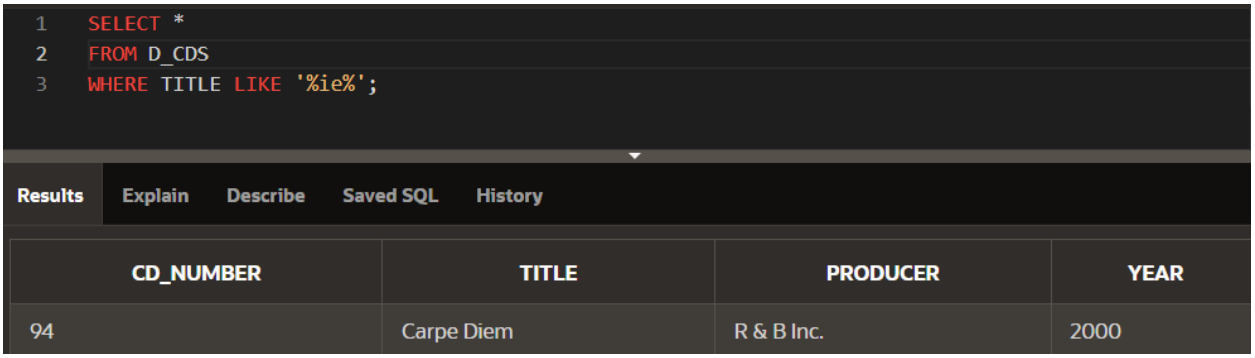
12. Leap years occur every four years. Remember, 2004 was a leap year. Now create a function that will show the date of the next leap year as 29-Feb-2008. Label the column "Future."



```sql
SELECT NextLeapYear() AS Future FROM dual;
```

FUTURE
01-Jan-2024

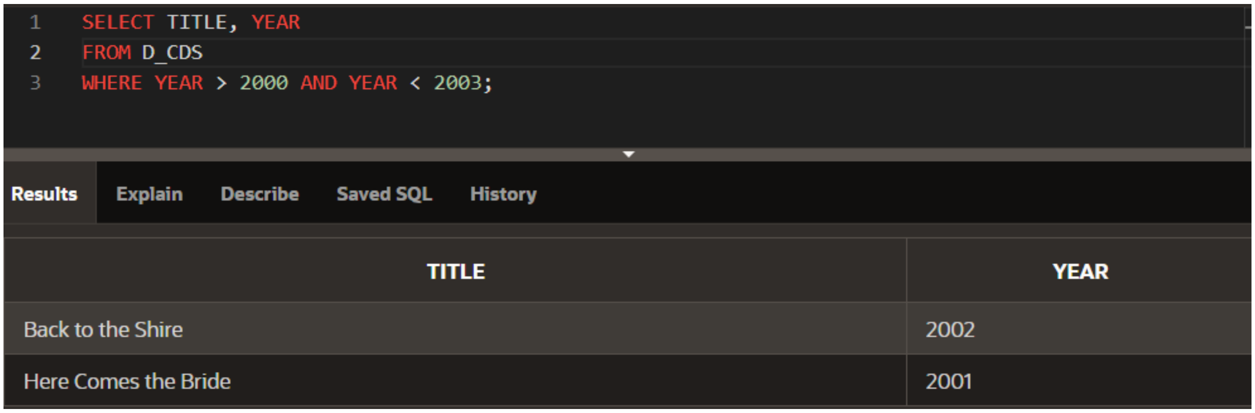
13. Write a statement that will find any of the DJs on Demand CD themes that have an "ie" in their names.



```sql
SELECT *
FROM D_CDS
WHERE TITLE LIKE '%ie%';
```

CD_NUMBER	TITLE	PRODUCER	YEAR
94	Carpe Diem	R & B Inc.	2000

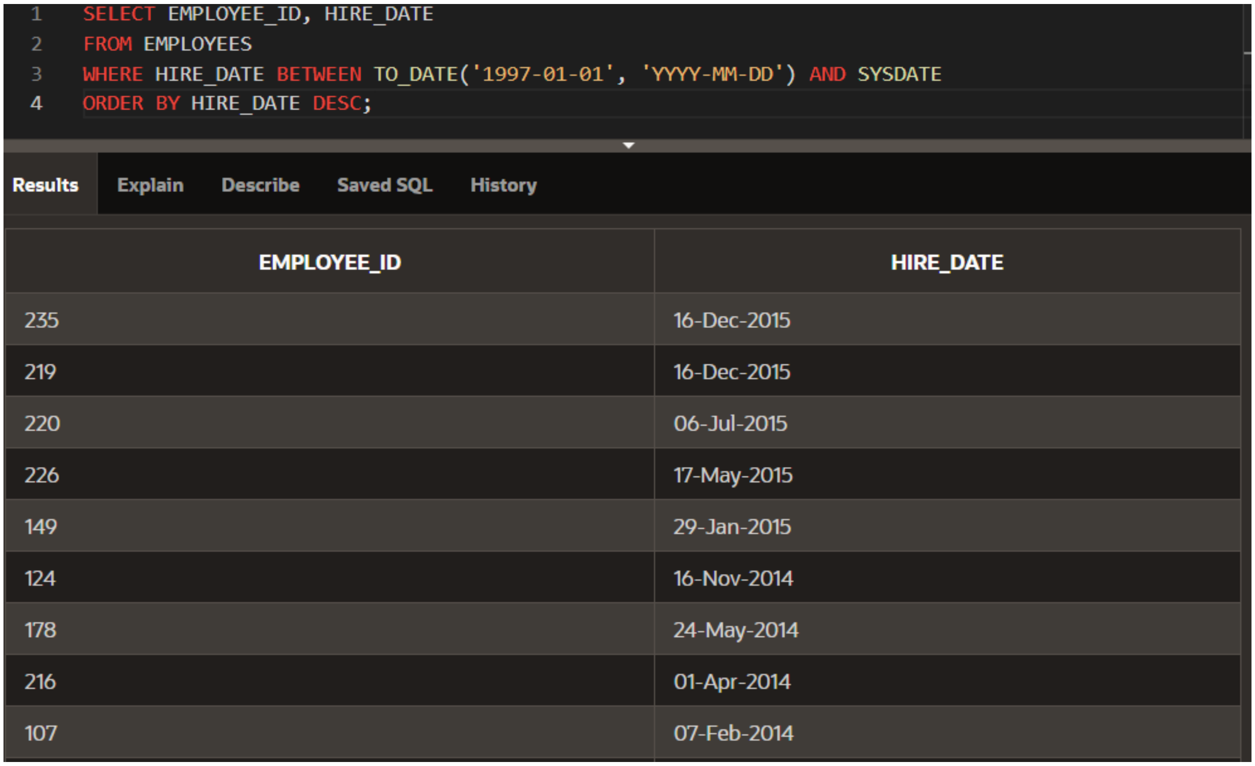
14. Write a statement that will return only the DJs on Demand CDs with years greater than 2000 but less than 2003. Display both the title and year.



```sql
SELECT TITLE, YEAR
FROM D_CDS
WHERE YEAR > 2000 AND YEAR < 2003;
```

TITLE	YEAR
Back to the Shire	2002
Here Comes the Bride	2001

15. Write a statement that will return the Oracle database employee's employee ID and his starting hire dates between January 1, 1997 and today. Display the result ordered from most recently hired to the oldest.



```sql
SELECT EMPLOYEE_ID, HIRE_DATE
FROM EMPLOYEES
WHERE HIRE_DATE BETWEEN TO_DATE('1997-01-01', 'YYYY-MM-DD') AND SYSDATE
ORDER BY HIRE_DATE DESC;
```

EMPLOYEE_ID	HIRE_DATE
235	16-Dec-2015
219	16-Dec-2015
220	06-Jul-2015
226	17-May-2015
149	29-Jan-2015
124	16-Nov-2014
178	24-May-2014
216	01-Apr-2014
107	07-Feb-2014