

DATABASE TECHNOLOGIES

Section - I

Create a table Stock with stockid number, stockdet xmltype. Insert values into the stock table as shown below.

The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL script with the following content:

```
create table stock(stockid number, stockdet xmltype);

insert into stock values(1, xmltype('<?xml version="1.0"?>
<?xml:stylesheet type="text/xsl" href="stock.xsl"?>
<portfolio xmlns:dt="urn:schemas-microsoft-com:datatypes">
<stock exchange="nasdaq">
<name>new</name>
<symbol>zzzz</symbol>
<price dt:dt="number">20.313</price>
</stock>
<stock exchange="nyse">
<name>zacx corp</name>
<symbol>ZCXM</symbol>
<price dt:dt="number">28.875</price>
</stock>
<stock exchange="nasdaq">
<name>zaffymat inc</name>
<symbol>ZFFX</symbol>
<price dt:dt="number">92.250</price>
</stock>
<stock exchange="nasdaq">
<name>zysmergy inc</name>
```

Below the script, the 'Query Result' tab shows the execution output:

```
Table STOCK created.

1 row inserted.
```

The status bar at the bottom indicates 'Task completed in 1.504 seconds' and 'Line 30 Column 26 | Insert | Modified | Windows: CF'.

KISHAN KUMAR THAKUR (21MCA0105)

1. Display stock price whose value is greater than 50.50 using xpath.

Oracle SQL Developer : C:\Users\Chandan Kumar\Desktop\OracleAssignment.sql

File Edit View Navigate Run Source Team Tools Window Help

OracleAssignment.sql Welcome Page OracleDB

SQL Worksheet History

Worksheet Query Builder

```
WITH
stock_data AS
(select xt.* from stock x, xmltable('portfolio/stock'
passing x.stockdet columns
stock_exchange varchar2(10) path '@exchange',
name varchar2(10) path 'name',
symbol varchar2(12) path 'symbol',
price number(10, 4) path 'price')
xt)
select * from stock_data where price>50.50;
```

Script Output x Query Result x

SQL All Rows Fetched: 1 in 0.108 seconds

	STOCK_EXCHANGE	NAME	SYMBOL	PRICE
1	nasdaq	zaffymat	ZFFX	92.25

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration"

Line 57 Column 1 Insert Modified Windows: CF

07:35 31-12-2021

KISHAN KUMAR THAKUR (21MCA0105)

2. Display only the attribute values of the Stock exchange.

The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL script in the 'Worksheet' tab. The script uses a CTE named 'stock_data' to extract stock exchange information from an XML table. The query is as follows:

```
WITH
stock_data AS
(select xt.* from stock x, xmltable('portfolio/stock'
passing x.stockdet columns
stock_exchange varchar2(10) path '@exchange',
name varchar2(10) path 'name',
symbol varchar2(12) path 'symbol',
price number(10, 4) path 'price')
xt)
select stock_exchange from stock_data;
```

The 'Query Result' tab at the bottom shows the output of the query, which is a list of stock exchange names. The results are displayed in a table with one column, 'STOCK_EXCHANGE', and four rows of data.

STOCK_EXCHANGE
1 nasdaq
2 nyse
3 nasdaq
4 nasdaq

The status bar at the bottom indicates that 4 rows were fetched in 0.023 seconds. The system tray shows the date and time as 31-12-2021, 07:38.

KISHAN KUMAR THAKUR (21MCA0105)

3. Display the name of the stock whose name starts with “z...”.

Oracle SQL Developer: C:\Users\Chandan Kumar\Desktop\OracleAssignment.sql

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OracleAssignment.sql Welcome Page OracleDB

SQL Worksheet History

Worksheet Query Builder

```
WITH
stock_data AS
(select xt.* from stock x, xmltable('portfolio/stock'
passing x.stockdet columns
stock_exchange varchar2(10) path '@exchange',
name varchar2(10) path 'name',
symbol varchar2(12) path 'symbol',
price number(10, 4) path 'price')
xt)
select name from stock_data where name like 'z%';
```

Script Output x Query Result x

SQL | All Rows Fetched: 3 in 0.018 seconds

	NAME
1	zacx corp
2	zaffymat i
3	zysmerqy i

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration"

Line 93 Column 1 Insert Modified Windows: CR

07:39 31-12-2021

KISHAN KUMAR THAKUR (21MCA0105)

4. Display the all the elements of the stock.

Oracle SQL Developer : C:\Users\Chandan Kumar\Desktop\OracleAssignments.sql

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OracleAssignment.sql Welcome Page OracleDB

SQL Worksheet History

Worksheet Query Builder

```
SET LONG 5000
SELECT x.stockdet.getClobVal()
FROM stock x;
```

Script Output Query Result

SQL | All Rows Fetched: 1 in 0.053 seconds

X.STOCKDET.GETCLOBVAL()

1 </stock>

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration"

Line 46 Column 1 Insert Modified Windows: CF

View Value

Line Terminator: Platform Default

Value:

```
<?xml version="1.0"?>
<?xml:stylesheet type="text/xsl" href="stock.xsl"?>
<portfolio xmlns:dt="urn:schemas-microsoft-com:datatypes">
  <stock exchange="nasdaq">
    <name>new</name>
    <symbol>zzzz</symbol>
    <price dt:dt="number">20.313</price>
  </stock>
  <stock exchange="nyse">
    <name>zacx corp</name>
    <symbol>ZCXM</symbol>
    <price dt:dt="number">28.875</price>
  </stock>
  <stock exchange="nasdaq">
    <name>zaffymat inc</name>
    <symbol>ZFFX</symbol>
    <price dt:dt="number">92.250</price>
  </stock>
  <stock exchange="nasdaq">
    <name>zysmergy inc</name>
    <symbol>ZYSZ</symbol>
    <price dt:dt="number">20.313</price>
  </stock>
</portfolio>
```

Help

07:40 31-12-2021

5. Display only the symbol and price values.

The screenshot shows the Oracle SQL Developer interface. The main window displays a SQL script in the 'Worksheet' tab. The script is as follows:

```
WITH
stock_data AS
(select xt.* from stock x, xmltable('portfolio/stock'
passing x.stockdet columns
symbol varchar2(12) path 'symbol',
price number(10, 4) path 'price')
xt)
select symbol, price from stock_data;
```

Below the script, the 'Query Result' tab shows the output of the query. It displays a table with two columns: 'SYMBOL' and 'PRICE'. The results are as follows:

	SYMBOL	PRICE
1	ZZZZ	20.313
2	ZCXM	28.875
3	ZFFX	92.25
4	ZYSZ	20.313

The status bar at the bottom indicates 'Line 66 Column 5' and 'All Rows Fetched: 4 in 0.03 seconds'.

6. Change the price value of stock whose name is “zysmergy inc”.

The screenshot displays the Oracle SQL Developer interface. The main window shows an SQL worksheet with the following query:

```
update stock set stockdet = updatexml(stockdet,'portfolio/stock[name="zysmergy inc"]',  
xmltype('<stock exchange="nasdaq">  
<name>zysmergy inc</name>  
<symbol>ZYSZ</symbol>  
<price>100</price>  
</stock>  
</xml>'));
```

The query has been executed, and the results pane shows:

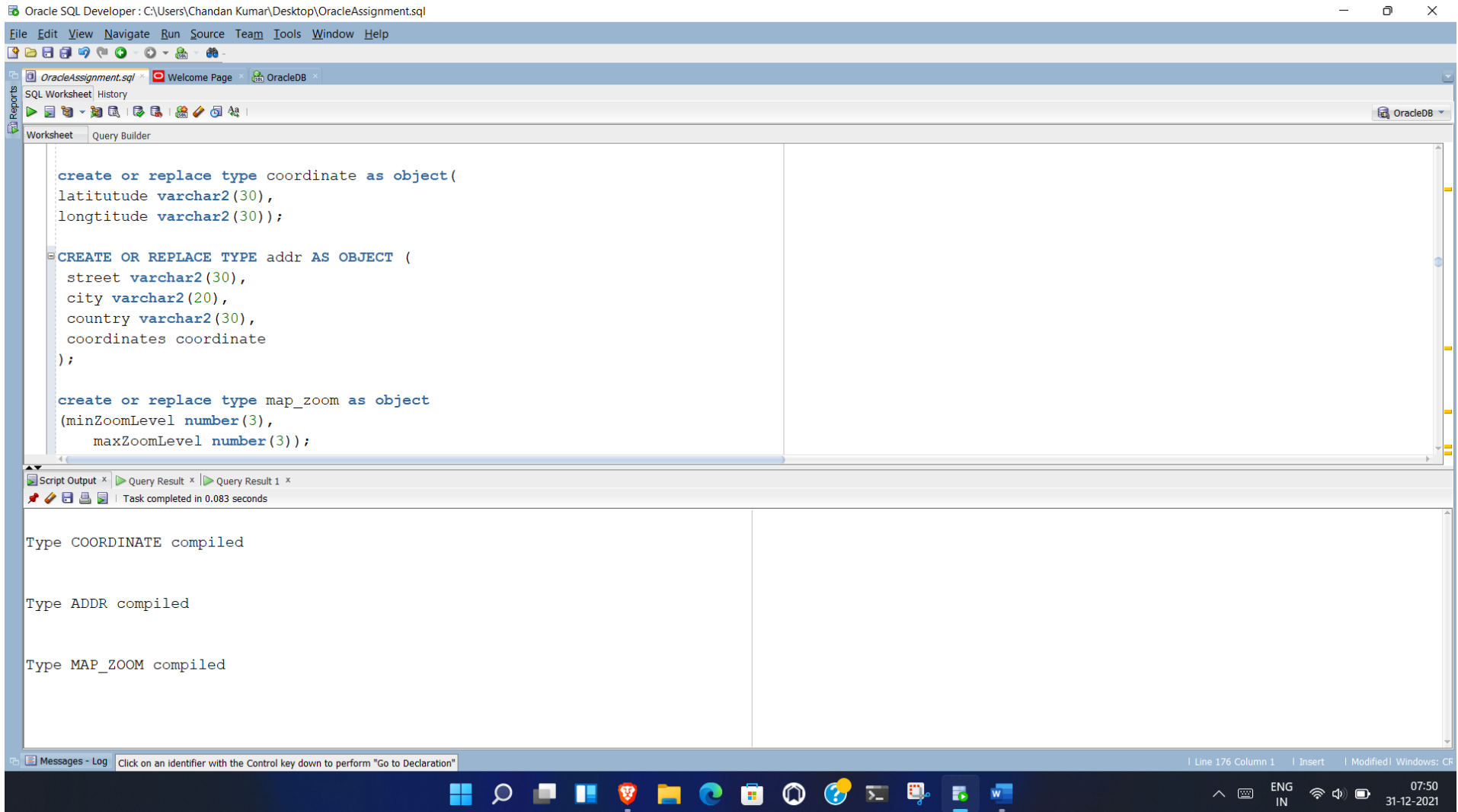
```
>>Query Run In:Query Result  
  
1 row updated.
```

The status bar at the bottom indicates the task was completed in 0.208 seconds. The Windows taskbar at the bottom shows the date and time as 07:46 on 31-12-2021.

KISHAN KUMAR THAKUR (21MCA0105)

Section - II

Convert RDBMS table into XMLtype. For the following Restaurant data. Create tables for restaurant and menu as per xml document shown below. Copy the restaurant information into the 'rest_xmltab' using PL/SQL.



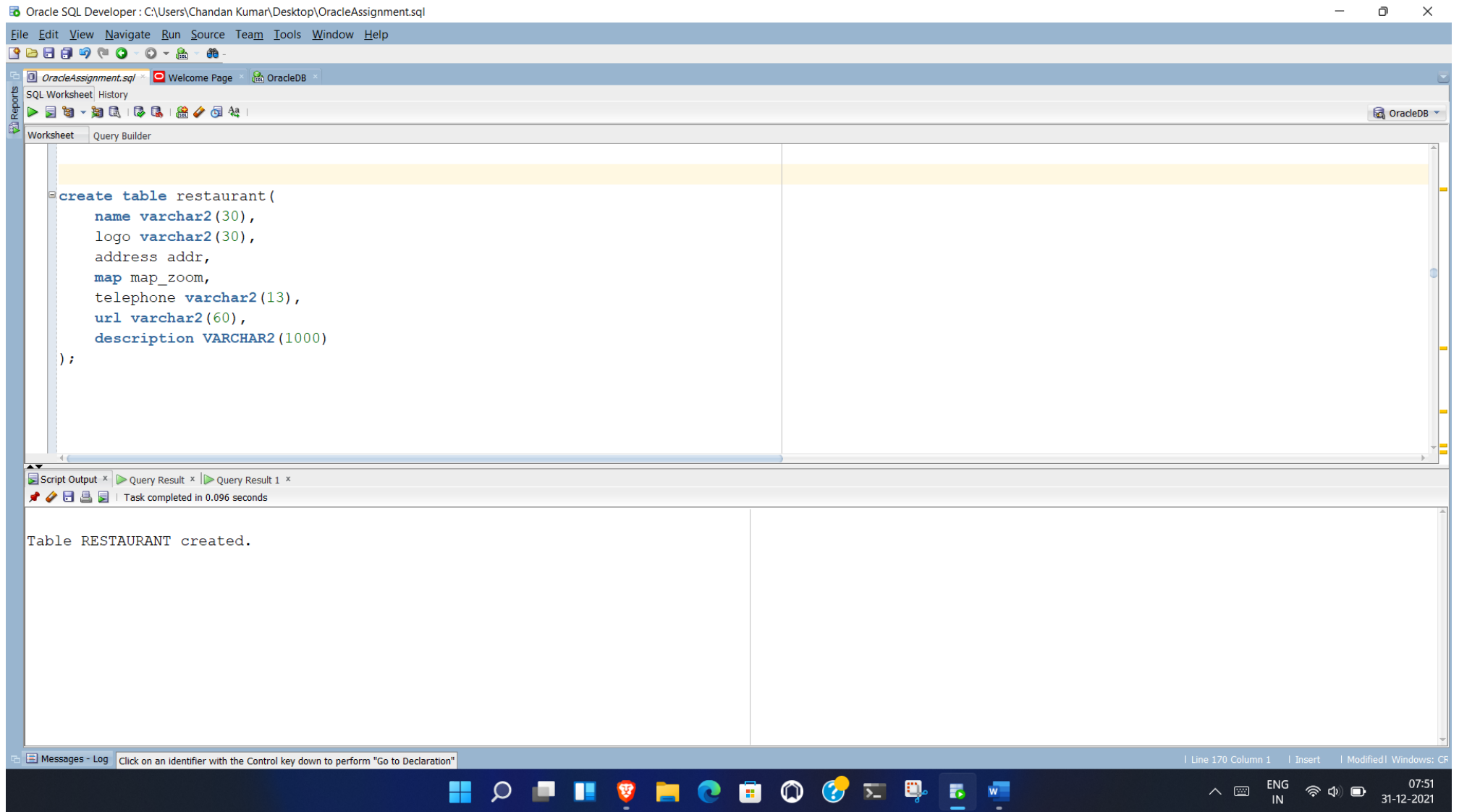
The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL Worksheet with the following PL/SQL code:

```
create or replace type coordinate as object(  
  latitude varchar2(30),  
  longitude varchar2(30));  
  
CREATE OR REPLACE TYPE addr AS OBJECT (  
  street varchar2(30),  
  city varchar2(20),  
  country varchar2(30),  
  coordinates coordinate  
);  
  
create or replace type map_zoom as object  
(minZoomLevel number(3),  
  maxZoomLevel number(3));
```

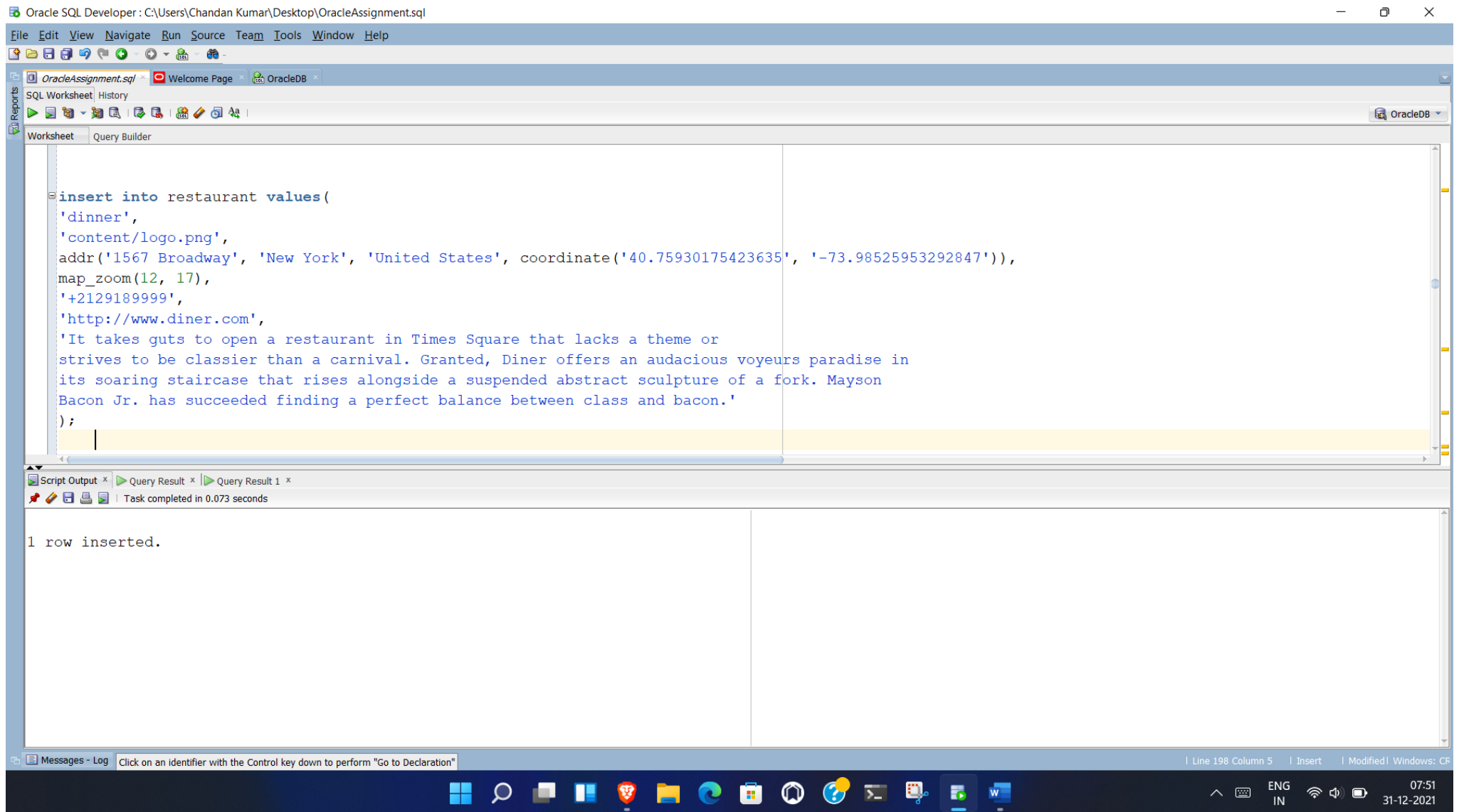
Below the code editor, the 'Script Output' pane shows the execution results:

```
Type COORDINATE compiled  
  
Type ADDR compiled  
  
Type MAP_ZOOM compiled
```

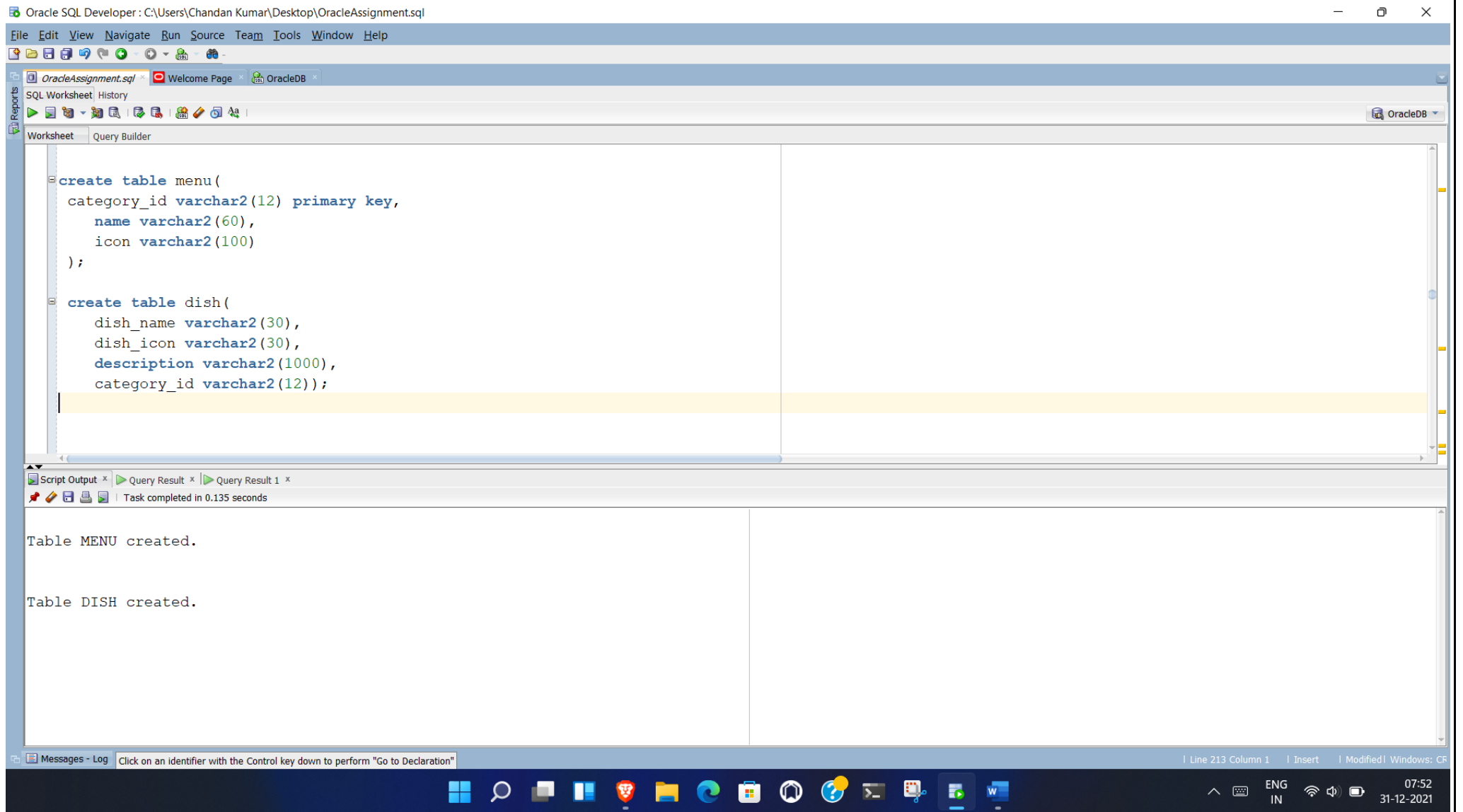
The status bar at the bottom indicates 'Task completed in 0.083 seconds' and 'Line 176 Column 1 | Insert | Modified | Windows: CF'.



KISHAN KUMAR THAKUR (21MCA0105)



KISHAN KUMAR THAKUR (21MCA0105)



KISHAN KUMAR THAKUR (21MCA0105)

Oracle SQL Developer: C:\Users\Chandan Kumar\Desktop\OracleAssignment.sql

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OracleAssignment.sql Welcome Page OracleDB

SQL Worksheet History

Worksheet Query Builder

```
insert into menu values('category1', 'Soups', 'content/soups_icon.png');
insert into menu values('category2', 'Vegetarian', 'content/vegetarian_icon.png');
insert into menu values('category3', 'Sea Food', 'content/sea_food_icon.png');
insert into menu values('category4', 'Steaks', 'content/steaks_icon.png');
insert into menu values('category5', 'Desserts', 'content/desserts_icon.png');
insert into menu values('category6', 'Drinks', 'content/drinks_icon.png');

insert into dish values('The King of Prawns', '', 'Deep-fried king prawns and Sweet Chilisauce.', 'category1');
insert into dish values('Super Hot Jalapeno Pops', '', 'Deep-fried jalapenos filled with cheese. Served with garlic mayonnaise and out SuperHot');
insert into dish values('Muchos Nachos', '', 'Tortillaa chips, melted cheddar cheese, salsa sauce, jalapeno slices, sour cream and gu');
insert into dish values('Just Fries', '', 'Salted fries with bbq sauce', 'category1');
insert into dish values('Blue Cheese and Fries', '', 'Seasoned Criss Cuts with blue cheesesauce.', 'category1');
insert into dish values('Sweet Fries', '', 'Sweet potato fries with our special mustardsauce.', 'category1');
insert into dish values('THE Ceasar Salad', '', 'A mixed green salad with Caesar dressing, Parmesan cheese, croutons and arugula with a choi');
insert into dish values('All Veggies', '', 'A mixed green salad with cherry tomato, cucumber, fresh pineapple, orange, marinated red or');
insert into dish values('Fruity Fish Salad', '', 'A mixed green salad with salmon fillet, cherry tomato, cucumber, fresh pineapple, orange, n');
insert into dish values('Master Muffin', '', 'Chocolate muffin with white-chock chips, served with vanilla whipped cream.', 'category5');
insert into dish values('The Big Apple', '', 'Apple pie with pecan nuts and raisins, served with vanilla ice cream and chocolate sauce. ');
insert into dish values('Shake it, shake it', '', 'A giant milk shake with a choice of bananachocolate, chocolate, strawberry-vanilla or mint-');
insert into dish values('Super Cheesecake', '', 'A home made cheesecake served with heaps of whipped cream and Goli berry and strawberry sa
```

Script Output Query Result Query Result 1

Task completed in 0.261 seconds

1 row inserted.

1 row inserted.

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration"

Line 224 Column 32 Insert Modified Windows: CF

07:53 31-12-2021

KISHAN KUMAR THAKUR (21MCA0105)

1. Retrieve the restaurant information into xml form using PL/SQL code

The screenshot displays the Oracle SQL Developer interface. The main window shows a PL/SQL script in the 'Worksheet' tab. The script declares an XML type, inserts data from a 'restaurant' table into an 'xml_restaurant' table, and then selects the data. A 'View Value' dialog box is open, showing the XML output of the query. The XML structure is as follows:

```
<restaurant>
  <info>
    <name>dinner</name>
    <logo>content/logo.png</logo>
    <address>
      <STREET>1567 Broadway</STREET>
      <CITY>New York</CITY>
      <COUNTRY>United States</COUNTRY>
      <COORDINATES>
        <LATITUDE>40.75930175423635</LATITUDE>
        <LONGITUDE>-73.98525953292847</LONGITUDE>
      </COORDINATES>
    </address>
    <map>
      <MINZOOMLEVEL>12</MINZOOMLEVEL>
      <MAXZOOMLEVEL>17</MAXZOOMLEVEL>
    </map>
    <telephone>+2129189999</telephone>
    <url>http://www.diner.com</url>
    <description>It takes guts to open a restaurant in Times Square that lacks a theme or strives to be classier than a carnival. Granted, Diner offers an audacious voyeurs paradise in its soaring staircase that rises alongside a suspended abstract sculpture of a fork. Mayson Bacon Jr. has succeeded finding a perfect balance between class and bacon.</description>
  </info>
</restaurant>
```

The bottom of the screen shows the 'Script Output' and 'Query Result' tabs. The 'Query Result' tab displays a single row of data with columns 'ID' and 'XML_DATA'.

ID	XML_DATA
1	

The Windows taskbar at the bottom indicates the system time is 07:56 on 31-12-2021.

2. Retrieve the menu details into xml column

Oracle SQL Developer: C:\Users\Chandan Kumar\Desktop\OracleAssignment.sql

File Edit View Navigate Run Source Team Tools Window Help

OracleAssignment.sql Welcome Page OracleDB

SQL Worksheet History

Worksheet Query Builder

```
BEGIN
SELECT XMLELEMENT("menu",
    xmlagg(
        xmlelement("category",
            xmlattributes(
                m.category_id as "id",
                m.name as "name",
                m.icon as "icon"
            ),
            xmlelement("dish",
                xmlattributes(
                    m.dish_id as "id",
                    m.dish_name as "name",
                    m.dish_icon as "icon"
                )
            )
        )
    )
)
INTO l_xmltype
FROM menu_list m;
INSERT INTO xml_menu VALUES (1, l_xmltype);
end;
select * from xml_menu;
```

Script Output x Query Result x Query Result 1 x

SQL All Rows Fetched: 1 in 0.01 seconds

ID XML_DATA

1	1
---	---

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration"

Line 321 Column 6 | Insert | Modified | Windows: CF

07:59 31-12-2021

View Value

```
<menu>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="The King of Prawns"/>
</category>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="Super Hot Jalapeno Pops"/>
</category>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="Muchos Nachos"/>
</category>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="Just Fries"/>
</category>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="Blue Cheese and Fries"/>
</category>
<category id="category1" name="Soups" icon="content/soups_icon.png">
  <dish id="category1" name="Sweet Fries"/>
</category>
<category id="category2" name="Vegetarian" icon="content/vegetarian_icon.png">
  <dish id="category2" name="THE Ceasar Salad"/>
</category>
<category id="category2" name="Vegetarian" icon="content/vegetarian_icon.png">
  <dish id="category2" name="All Veggies"/>
</category>
<category id="category2" name="Vegetarian" icon="content/vegetarian_icon.png">
  <dish id="category2" name="Fruity Fish Salad"/>
</category>
<category id="category5" name="Desserts" icon="content/desserts_icon.png">
  <dish id="category5" name="Master Muffin"/>
</category>
<category id="category5" name="Desserts" icon="content/desserts_icon.png">
  <dish id="category5" name="The Big Apple"/>
</category>
<category id="category5" name="Desserts" icon="content/desserts_icon.png">
  <dish id="category5" name="Shake it, shake it"/>
</category>
<category id="category5" name="Desserts" icon="content/desserts_icon.png">
  <dish id="category5" name="Super Cheesecake"/>
</category>
<category id="category3" name="Sea Food" icon="content/sea_food_icon.png">
  <dish id="category3" name="Fish of the day"/>
</category>
<category id="category3" name="Sea Food" icon="content/sea_food_icon.png">
  <dish id="category3" name="Tons of Tuna"/>
</category>
<category id="category4" name="Steaks" icon="content/steaks_icon.png">
  <dish id="category4" name="Giant BBQ Steak"/>
</category>
```

Load Download Set NULL Editor

Help OK Cancel

3. Retrieve the info details of sub element as an attribute of info tag.

The screenshot displays the Oracle SQL Developer interface. The main window shows a PL/SQL script in the 'Script Editor' tab. The script creates a table 'info' with columns 'id' (number) and 'info_xml' (xmltype). It then declares a variable 'l_xmltype' of type 'XMLTYPE', begins a block, and uses 'SELECT XMLAGG' to aggregate XML data from the 'restaurant' table into the 'info_xml' column. The script ends with 'end;' and 'select * from info;'. The 'Query Result' tab shows the output of the query, displaying a single row with 'ID' 1 and 'INFO_XML' containing an XML document. A 'View Value' dialog box is open, showing the XML content of the 'INFO_XML' column. The XML is a root element '<restaurant>' containing an 'info' element with attributes 'name', 'logo', 'telephone', 'url', and 'description'. The 'Messages - Log' tab at the bottom shows a message: 'Click on an identifier with the Control key down to perform "Go to Declaration"'. The system tray at the bottom right shows the date and time as 08:02 31-12-2021.

```
create table info (id number, info_xml xmltype);  
DECLARE  
  l_xmltype XMLTYPE;  
BEGIN  
  SELECT XMLAGG(  
    xmlelement("info",  
      xmlattributes(  
        e.name AS "name",  
        e.logo AS "logo",  
        e.telephone AS "telephone",  
        e.url AS "url",  
        e.description AS "description"  
      )  
    )  
  )  
  INTO l_xmltype  
  FROM restaurant e;  
INSERT INTO info VALUES (1, l_xmltype);  
end;  
select * from info;
```

XML Output:

```
<restaurant>  
<info name="dinner" logo="content/logo.png" telephone="+2129189999" url="http://www.diner.com" description="It takes guts to open a restaurant in Times Square that lacks a them">  
</info>  
</restaurant>
```

KISHAN KUMAR THAKUR (21MCA0105)

4. Insert a new category element with a set of dish names.

The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL script with three INSERT statements. The bottom pane shows the execution results, indicating that the PL/SQL procedure completed successfully and three rows were inserted.

```
insert into menu values('category7', 'Pizza', 'content/pizza_icon.png');
insert into dish values('Cheese Pizza', '', 'Deep-fried pizza', 'category7');
insert into dish values('Chilli Pizza', '', 'Deep-fried SuperHot pizza.', 'category7');
```

Script Output x Query Result x Query Result 1 x
Task completed in 0.097 seconds

PL/SQL procedure successfully completed.

1 row inserted.

1 row inserted.

1 row inserted.

Messages - Log Click on an identifier with the Control key down to perform "Go to Declaration" | Line 365 Column 1 | Insert | Modified | Windows: CR

ENG IN 08:03 31-12-2021

5. Update “category5” of dish name “Super Cheesecake” into “Super Cheese Sauce”.

The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL worksheet with the following query:

```
update dish set dish_name='Super CheeseSauce' where category_id = 'category5' and dish_name = 'Super Cheesecake';  
--select * from dish;
```

Below the worksheet, the 'Script Output' pane shows the execution result:

```
1 row updated.  
>>Query Run In:Query Result 1
```

The status bar at the bottom indicates 'Task completed in 0.686 seconds' and '1 row updated.'.