Name: Saravanakumar K Department: Impact Training
Date: 18.11.2024 Task: PL/SQL

PL/SQL:

- Procedural Language extensions to the Structured Query Language (PL/SQL).
- SQL is a popular language for both querying and updating data in relational database management systems (RDBMS).
- PL/SQL adds many procedural constructs to SQL language to overcome some limitations of SQL.
- The PL/SQL language enables efficient data manipulation and control-flow logic, all within the Oracle Database.
- It includes procedural language elements like conditions and loops.
- PL/SQL allows declaration of constants and variables, procedures and functions, types and variables of those types and triggers.
- Application written in PL/SQL are portable to the computer hardware or operating system where Oracle is operational.
- Pl/SQL Offers extensive error checking.

DML Statements:

- DML (Data Manipulation Language) statements add, change, and delete Oracle Database table data.
- DML statements access and manipulate data in existing tables.
- Data manipulation language is a component of the SQL statement that controls access to the data and to the database.
- Basically, DCL (Data Control Language) statements are grouped with DML statements.
- List of DML commands:
  1. **INSERT** - insert data into a table.
  2. **UPDATE** - update existing data within the table.
  3. **DELETE** - delete records from the database table.
  4. **LOCK** - table control concurrency.
  5. **CALL** – call a PL/SQL or java subprogram.
  6. **EXPLAIN PLAN** - describes the access path to data.

DDL Statements:

- Data Definition Language actually consists of the SQL commands that can be used to define databases.
- DDL is a set of commands used to create, modify, and delete database structures but not data.

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- It simply deals with the descriptions of the database.
- These commands are used to create and modify the structure of the database objects in the database.
- And these commands are normally not used by a general user, who is accessing the database through an application.
- List of DDL commands:
  1. **CREATE** – creates databases or its objects such as tables, inserts, functions, views, store procedures, and triggers.
  2. **DROP** – it deletes objects from the database
     Syntax: DROP TABLE table_names;
  3. **ALTER** – alter the structure of the database
  4. **TRUNCATE** – remove all records from the table, includes all spaces allocated for the records are removed.
     Syntax: TRUNCATE TABLE table_names;

  5. **COMMENT** – add comments to the data dictionary
  6. **RENAME** – rename an object existing in the database

Anonymous Block:

- A block without a name is an anonymous block.
- Anonymous block is not saved in the oracle database saver, so it is just for one-time use. However, PL/SQL anonymous blocks can be useful for testing purposes.
- This block does not form the body of a function or triggers or procedure.
- A block consists of three sections:
  1. Declaration section
  2. Execution section
  3. Exception-handling section
- In this block, the executable section is mandatory while the declaration and exception-handling are optional.

Declaration section:

- Code block starts with a declaration section, in which memory variables, constants, cursors, and other oracle objects can be declared and if required initialized.

Execution section:

- It consists of a set of SQL and PL/SQL statements, which describe processes that have to be applied to table data.

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Task: PL/SQL

- Actual data manipulation, retrieval, looping and branching constructs are specified in this section.
- The executable section must have at least one executable statement, even if it is a NULL Statement that does nothing.

Exceptional-handling section:

- A PL/SQL block has an exception-handling section that starts with the keyword EXCEPTION.
- The exception-handling section is where you catch, and handle exceptions raised by the code in the execution section.

Primary key:

- A Primary key uniquely identifies each record in a table.
- It must contain unique values, and it cannot contain NULL values.
- A table can have only one primary key, but it can consist of one or more columns (i.e. composite primary key).
- It also has an added feature of creating an index on the column used in defining the primary key constraint to improve efficiency.
- Properties of primary key:
  1. Uniqueness
  2. Non-nullable
  3. indexing

Foreign Key:

- A foreign key is a referential constraint that defines a table column or column relating to the column of another table's primary key.
- The main use of foreign key is to change the second table to match that of the first table.
- Foreign keys ensure that values in at least one of the columns of a given table mirrors the values in at least one of the primary key fields of another table.
- Properties of Foreign key:
  1. Referential integrity
  2. Cascading actions
  3. Preventing invalid data

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Create a table and insert data:

```
create database product_detail;
use product;
create table product_detail(
product_id int,
product_name varchar(50),
Qty int not null,
price int not null
);
insert into product_detail (product_id, product_name, Qty, price)
values (1, 'laptop', 45, 45000),
(2, 'charger', 40, 1500),
(3, 'keyboard', 30, 500);
select * from product_detail;
```

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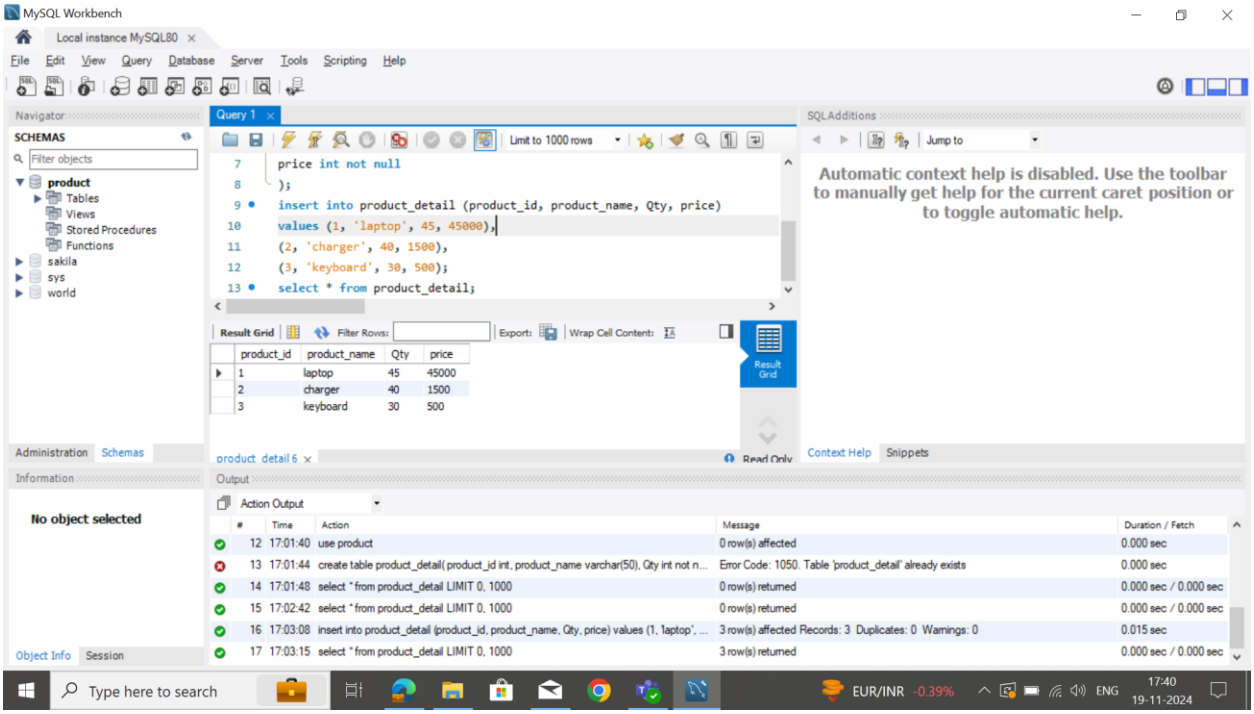
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