**Psycopg2**

* Create a connection with PostgreSQL database from Python.
* Create a cursor from the connection.
* Create a table product wiht fields as id(primary key) automatically fetching value from sequence, name, cost price, sale price. Here name must be null and sale price must be greater than cost price.
* Create a table category with id(primary key), code and name where code must be unique and name must not be null.
* Add a foreign key for category in product table.
* Insert 20 different realistic products.
* Fetch all the products.
* Fetch first product in the list.
* Fetch all the products and order by cost price.
* Fetch the product with the highest sale price.
* Update cost price of atleast 3 products.
* Update cost price of atleast 2 products.
* Fetch all the records with updated values.
* Fetch id, name, cost price, sale price, category code, category name for all the products.
* Close a cursor
* Close a connection

**Code:**

import psycopg2

#1

try:

conn = psycopg2.connect(dbname="exercise3",user="postgres",password="123",host="localhost",port="5432")

print("Connection with database established successfully.")

except:

print("Connection with database has not been established")

#2

try:

cur = conn.cursor()

print("\nCursor created successfully")

except:

print("\nCursor has not been created")

#3

try:

cur.execute("create table if not exists product(id serial primary key,name varchar,cost\_price numeric,sale\_price numeric)")

conn.commit()

print("\nProduct table created successfully")

except:

print("\nProduct table has not been created")

#4

try:

cur.execute("create table if not exists category(id serial primary key,code varchar unique,name varchar not null)")

conn.commit()

print("\nCategory table created successfully")

except:

print("\nCategory table has not been created")

#5

try:

cur.execute("alter table product add column category\_id integer references category(id)")

conn.commit()

print("\nCategory ID column added to Product table successfully with foreign key constraint")

except:

print("\nError occurred while adding Category ID column to Product table")

#6

try:

categories = [

("C001", "Electronics"),

("C002", "Clothing"),

("C003", "Home Appliances"),

("C004", "Books"),

("C005", "Toys")

]

cur.executemany("insert into category (code,name) values(%s,%s)",categories)

conn.commit()

print("\nData inserted to category table")

products = [

("Smartphone", 399.99, 499.99, 1),

("Laptop", 799.99, 999.99, 2),

("Headphones", 49.99, 69.99, 3),

("Bluetooth Speaker", 29.99, 39.99, 4),

("Tablet", 299.99, 399.99, 5),

("Smartwatch", 199.99, 249.99, 1),

("Gaming Console", 299.99, 399.99, 2),

("Digital Camera", 249.99, 349.99, 3),

("Fitness Tracker", 79.99, 99.99, 4),

("Wireless Earbuds", 69.99, 89.99, 5),

("External Hard Drive", 79.99, 119.99, 1),

("Monitor", 149.99, 199.99, 2),

("Printer", 99.99, 149.99, 3),

("Keyboard", 29.99, 49.99, 4),

("Mouse", 19.99, 29.99, 5),

("Router", 59.99, 79.99, 1),

("Webcam", 39.99, 59.99, 2),

("Graphics Tablet", 149.99, 199.99, 3),

("Microphone", 49.99, 69.99, 4),

("Portable Charger", 19.99, 29.99, 5)

]

cur.executemany("Insert into product(name,cost\_price,sale\_price,category\_id) values(%s,%s,%s,%s)",products)

conn.commit()

print("\nData inserted to Product table")

except:

print("\nRecords failed to be inserted")

#7

cur.execute("select \* from product")

print("\n",cur.fetchall())

#8

cur.execute("select \* from product limit 1")

print("\n",cur.fetchone())

#9

cur.execute("select \* from product order by cost\_price")

print("\n",cur.fetchall())

#10

cur.execute("select \* from product order by sale\_price desc limit 1")

print("\n",cur.fetchone())

#11

cur.execute("SELECT id FROM product LIMIT 3")

product\_ids\_to\_update = cur.fetchall()

for product\_id in product\_ids\_to\_update:

cur.execute("UPDATE product SET cost\_price = cost\_price + 5 WHERE id = %s", (product\_id,))

print("\nRecord updted successfully")

#12

cur.execute("SELECT id FROM product LIMIT 2")

product\_ids\_to\_update = cur.fetchall()

for product\_id in product\_ids\_to\_update:

cur.execute("UPDATE product SET cost\_price = cost\_price + 10 WHERE id = %s", (product\_id,))

print("\nRecord updted successfully")

#13

cur.execute("select \* from product")

print("\n",cur.fetchall())

#14

cur.execute("SELECT p.id, p.name, p.cost\_price, p.sale\_price, c.code, c.name FROM product p JOIN category c ON p.category\_id = c.id")

print(cur.fetchall())

#15

cur.close()

print("\nCursor closed successfully")

conn.close()

print("\nConnection closed successfully")

**Output:**

