

CS:532 Database Systems
Project 2
Report

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Objective

Our objective for this project is to create a Retail Management System which will allow us to search, update, display the various details of various entities involved in the Management Systems. We will be able to do the following operations in our project:

- Display the data of each table in our Database.
- Find the Monthly sale of a particular product.
- Insert the data into Purchase and Products Table.
- Search data of Employees, Customers and the details of a Purchases.

Procedures, Triggers, Sequences

In our Project we have used the following procedures, Triggers, Sequences:

1.)Insert into Purchase table:

Objective: Objective of this Procedure is to properly insert the data into the purchase table after validating all the field which are required.

In the below procedure we are first validating whether the given cid,pid,eid are valid or not if they are valid and the purchase quantity is less than the quantity on hand(qoh) then only we are proceeding to insert the purchase. After the insertion is done we are checking if the updated qoh is less than the threshold, if it is less then we are automatically printing the message and ordering from supply, and displaying the new quantity in hand.

- procedure insert_in_purchase(p_id in products.pid%type,e_id in employees.eid%type,c_id in customers.cid%type,qty_no in purchases.qty%type, message out varchar2,message1 out varchar2,message2 out varchar2) is
price products.original_price%type;
quantity products.qoh%type;
quant_threshold products.qoh_threshold%type;
quantity1 products.qoh%type;
quant_threshold1 products.qoh_threshold%type;
new_sid suppliers.sid%type default 's1';
M number default 10;
new_supply supply.quantity%type;
n_pid products.pid%type;
n_cid customers.cid%type;
n_eid employees.eid%type;
new_supply1 supply.quantity%type;
sup_pid number;
begin
select count(employees.eid) into n_eid from employees where employees.eid=e_id;
select count(customers.cid) into n_cid from customers where customers.cid=c_id;

```

select count(products.pid) into n_pid from products where products.pid=p_id;
select original_price, qoh,qoh_threshold into price, quantity, quant_threshold
from products where pid=p_id;
if(qty_no > quantity) then
message:='invalid size of quantity';
else
if(n_pid<1) then
message:='Invalid Pid';
else
if(n_eid<1) then
message:='Invalid Eid';
else
if(n_cid<1) then
message:='Invalid Cid';
else

insert into purchases values (pur.nextval, e_id, p_id, c_id, qty_no,
sysdate,(qty_no * price));
update products set products.qoh=products.qoh-qty_no where
products.pid=p_id;
select qoh,qoh_threshold into quantity1, quant_threshold1 from products
where products.pid=p_id;
if(quantity1<quant_threshold1) then
new_supply := (M+quantity1+5);
message2:= 'quantity is less than the threshold';
select supply.sid into new_sid from supply where supply.pid=p_id order by
supply.sid asc fetch first 1 rows only;
insert into supply values (sup.nextval,p_id,new_sid,sysdate,new_supply);
select products.qoh into new_supply1 from products where products.pid=p_id;
message1:= 'The new quantity ordered is:' ||new_supply1;

end if;
end if;
end if;
end if;
end if;
end insert_in_purchase;

```

2.)Inserting into the product table.

Objective: Objective of this query is to insert the product details into the product table.

In the procedure bellow we are validating that the new product to be added dose not have the same pid as of the products already in the table. If the pid is unique then and only then we are inserting into the table.

- procedure insert_in_products(p_id in products.pid%type,p_name in products.pname%type,qoh_no in products.qoh%type,qoh_thre in products.qoh_threshold%type, original_p in products.original_price%type,discount in products.discnt_rate%type,message out varchar2) is
cnt_pid number;
begin
select count(products.pid) into cnt_pid from products where products.pid=p_id;
if(cnt_pid>0)then
message:= 'Product Id already Exists';
else
insert into products values (p_id, p_name, qoh_no, qoh_thre, original_p, discount);
end if;
end insert_in_products;

3.)Displaying all the tables.

Objective: Objective of these procedures are to display the table data using a sys_refcursor.

We are simply fetching the data and sending it to the java code using the sys_refcursor.

- procedure show_products(rc out sys_refcursor);
begin
open rc for
select * from products;
end show_products;

- procedure show_purchases(rc out sys_refcursor);
begin
open rc for
select * from purchases;
end show_purchases;
- procedure show_customers(rc out sys_refcursor);
begin
open rc for
select * from customers;
end show_customers;
- procedure show_employees(rc out sys_refcursor);
begin
open rc for
select * from employees;
end show_employees;
- procedure show_supply(rc out sys_refcursor);
begin
open rc for
select * from supply;
end show_supply;
- procedure show_suppliers(rc out sys_refcursor);
begin
open rc for
select * from suppliers;
end show_suppliers;
- procedure show_logs(rc out sys_refcursor);
begin
open rc for
select * from logs;
end show_logs;

4.) Displaying the Average Monthly Sale of a product.

Objective: the objective of this procedure is to report the average monthly sale.

In this procedure we are firstly checking if the pid entered is valid or not. If it is valid then we are finding the monthly sale of that product by grouping the date ,pid,pname.

- ```
procedure show_monthly_sale(rc out sys_refcursor, id in
products.pid%type,message out varchar2);
valid_pid products.pid%type;
begin
select count(products.pid) into valid_pid from products where products.pid =
id;
if(valid_pid<1)then
message:='Invalid Pid';
else
open rc for
select products.pid, products.pname, to_char(purchases.ptime, 'Mon-YYYY')
as time, sum(purchases.qty) as qty, sum(purchases.total_price) as
total_price,(sum(purchases.total_price)/sum(purchases.qty)) as avg from
products, purchases where products.pid=purchases.pid AND products.pid=id
group by to_char(purchases.ptime,'Mon-YYYY'),products.pid,
products.pname;
end if;
end show_monthly_sale;
```

5.) For displaying the data requested to be searched.

Objective: The objective of this procedure is to display the data which is requested to be searched.

In all of the procedures we are first checking whether the data is valid or not i.e. we are validating the pid, cid, in the following procedure.

- procedure show\_EmployeeInfo(rc out sys\_refcursor, id in employees.eid%type,message out varchar2);  
cnt\_emp number;  
begin  
select count(employees.eid) into cnt\_emp from employees where employees.eid=id;  
if(cnt\_emp<1) then  
message:= 'Invalid Eid';  
else  
open rc for  
select \* from employees where employees.eid=id;  
end if;  
end show\_EmployeeInfo;
- procedure show\_CustomerInfo(rc out sys\_refcursor, id in customers.cid%type,message out varchar2);  
cnt\_cus number;  
begin  
select count(customers.cid) into cnt\_cus from customers where customers.cid=id;  
if(cnt\_cus<1) then  
message:= 'Invalid Cid';  
else  
open rc for  
select \* from customers where customers.cid=id;  
  
end if;  
end show\_CustomerInfo;
- procedure show\_PurchaseInfo(rc out sys\_refcursor, id in purchases.cid%type,message out varchar2);  
cnt\_pur number;  
begin  
select count(purchases.cid) into cnt\_pur from purchases where purchases.cid=id;



```

if(cnt_pur<1) then
message:= 'Invalid Purchase Info';
 else
 open rc for
 select * from purchases where purchases.cid=id;

end if;
end show_PurchaseInfo;

```

## 6.) Triggers:

**Objective:** The objective of these triggers are to insert into the log table and make changes to other table when some value is changed or added in a particular table.

- create or replace trigger trigger1  
after  
insert  
on purchases  
for each row  
declare  
n\_cid char(4);  
begin  
n\_cid := :new.cid;  
insert into logs values (logf.nextval,user, sysdate, 'purchases','insert',  
:NEW.pur#);  
update customers set customers.visits\_made=customers.visits\_made+1 ,  
customers.last\_visit\_date=sysdate where customers.cid=n\_cid;  
end trigger1;  
/  
show errors  
/
- create or replace trigger trigger4  
after  
insert  
on supply  
for each row  
declare  
n\_pid char(4);  
n\_qty number(5);  
begin  
n\_pid := :new.pid;  
n\_qty := :new.quantity;  
insert into logs values (logf.nextval,user, sysdate, 'supply','insert', :NEW.sup#);

```
update products set products.qoh=products.qoh+n_qty where
products.pid=n_pid;
```

```
end trigger4;
```

```
/
```

```
show errors
```

```
create or replace trigger trigger2
```

```
after
```

```
update
```

```
of qoh on products
```

```
for each row
```

```
begin
```

```
insert into logs values (logf.nextval,user, sysdate, 'products','update',
:NEW.pid);
```

```
end trigger2;
```

```
/
```

```
show errors
```

```
/
```

```
create or replace trigger trigger3
```

```
after
```

```
update
```

```
of visits_made on customers
```

```
for each row
```

```
begin
```

```
insert into logs values (logf.nextval,user, sysdate, 'customers','update',
:NEW.cid);
```

```
end trigger3;
```

## 7.) Sequences

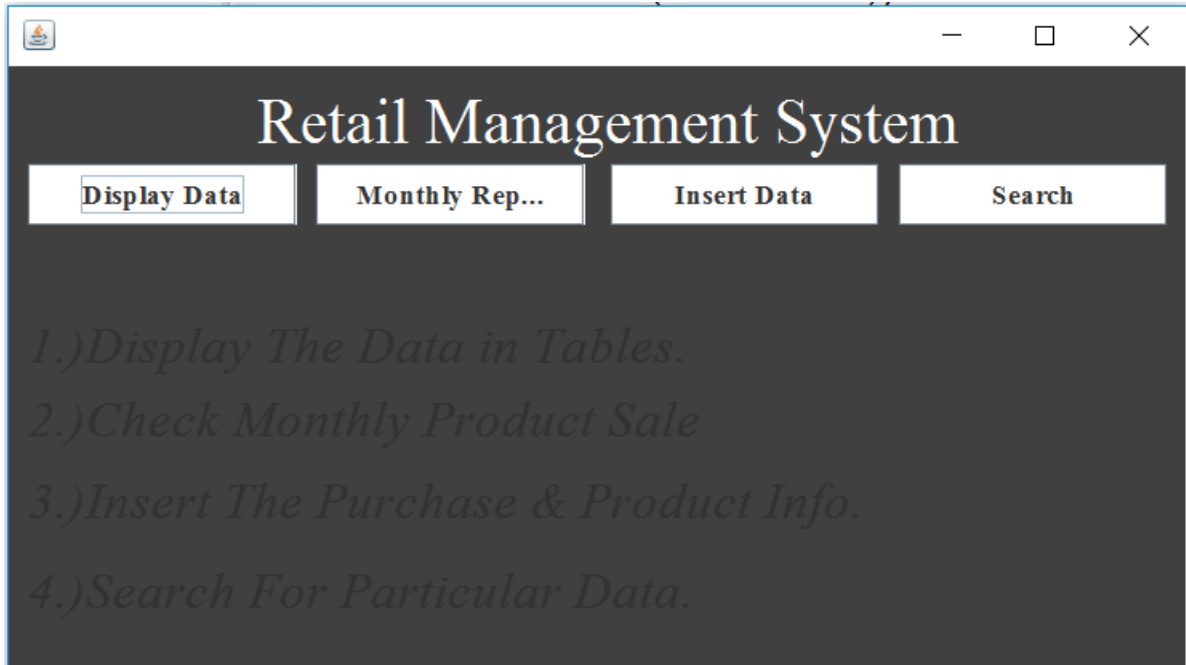
Objective: The objective of the sequences is to insert a value dynamically every time a data is been inserted into the tables.

The following sequences are been used to generate a particular pattern of data to be inserted. We are using sequence to insert pur#, sup# and log# values.

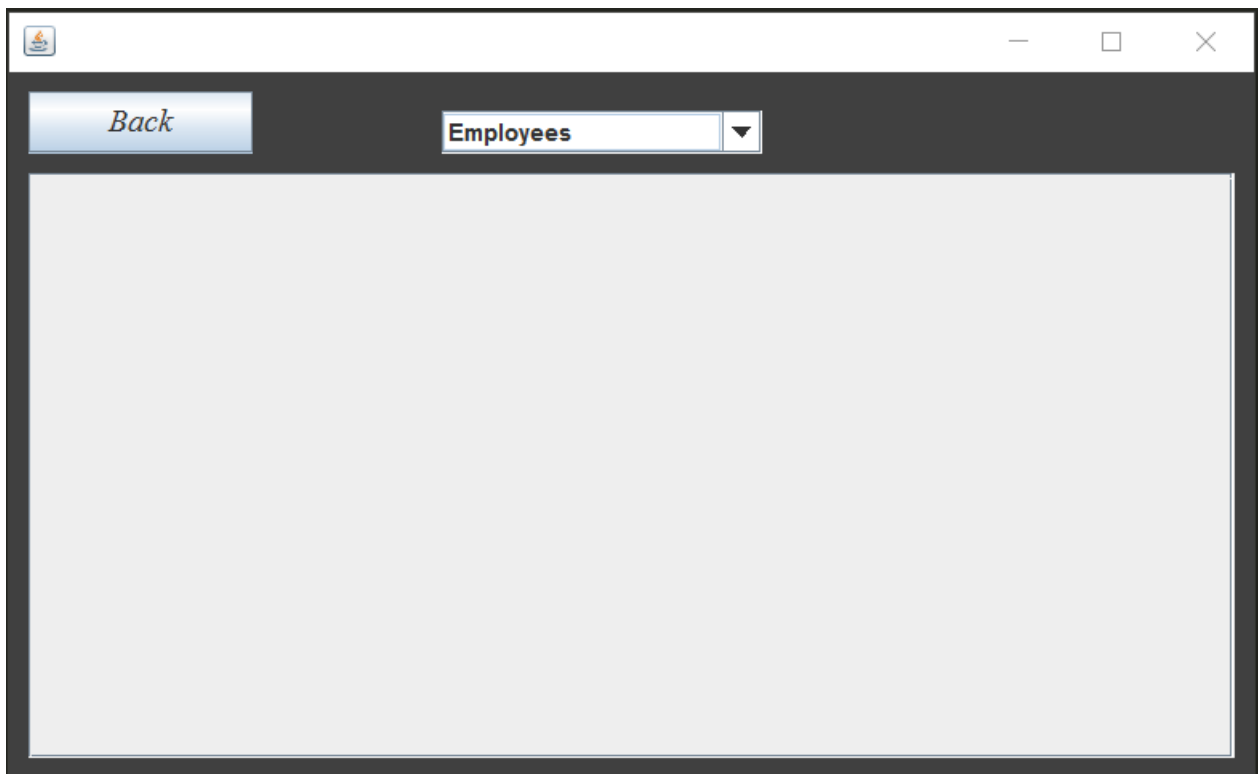
- create sequence pur  
increment by 1  
start with 100011  
minvalue 000000  
maxvalue 1000000  
nocycle  
cache 20;
- create sequence sup  
increment by 1  
start with 11  
minvalue 0000  
maxvalue 1000  
nocycle  
cache 20;
- create sequence logf  
increment by 1  
start with 0  
minvalue 00000  
maxvalue 10000  
nocycle  
cache 20;

# Interface of the Project

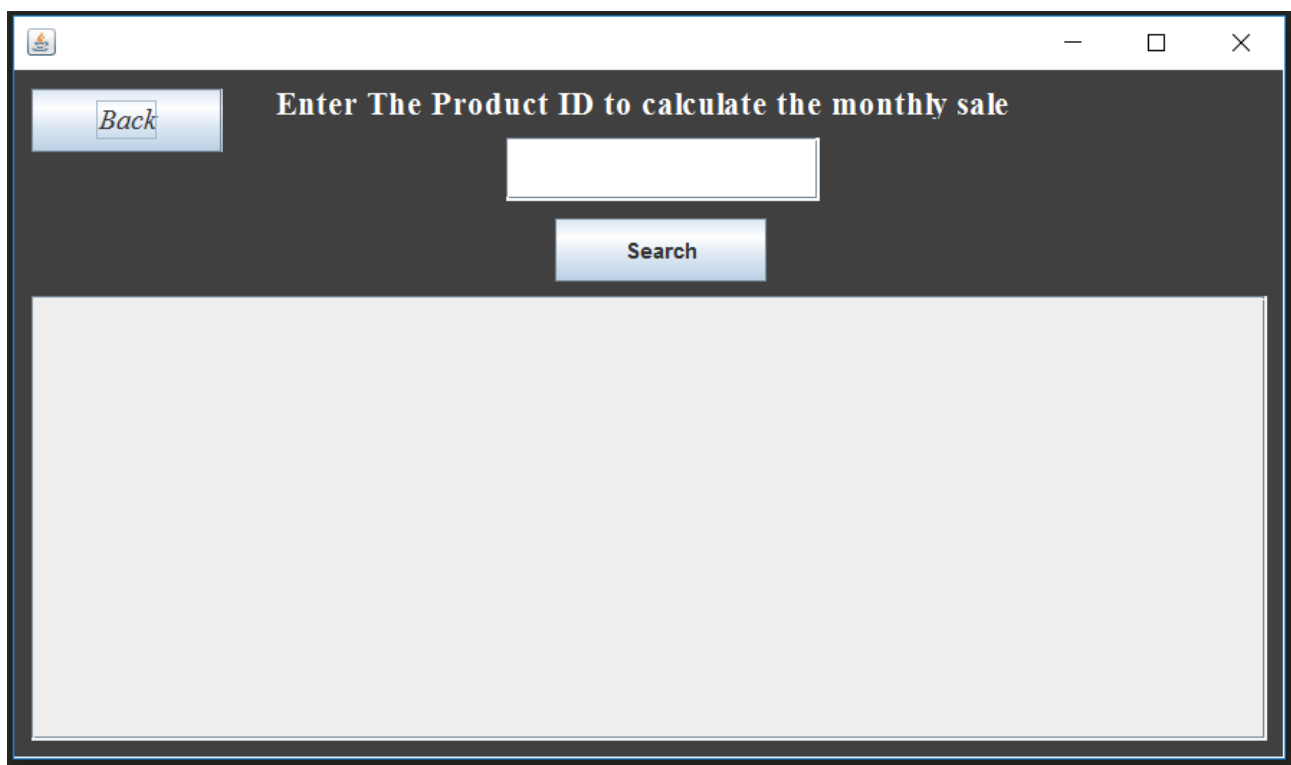
## 1.)Start Page



## 2)Display Page

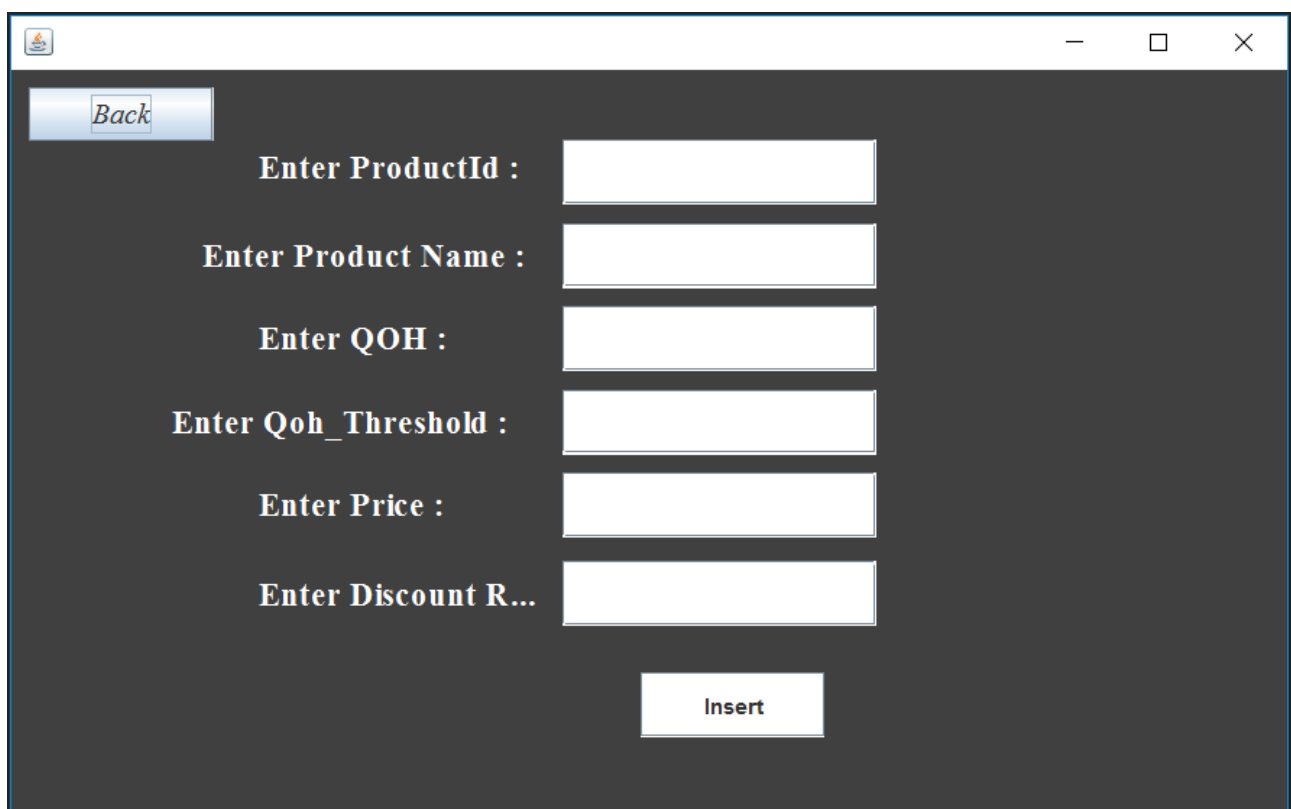


### 3.) Show Monthly Report



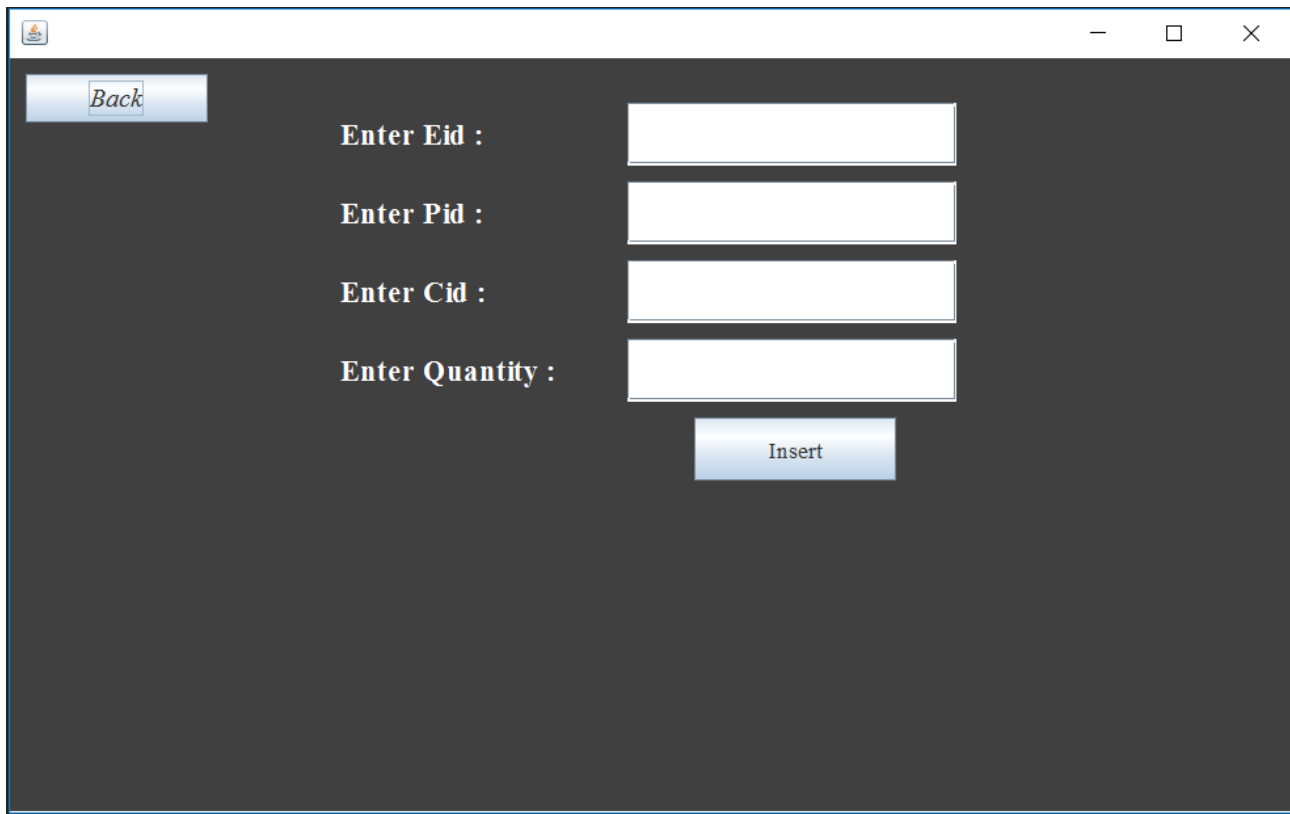
The screenshot shows a software window with a dark gray background. At the top left is a small icon. At the top right are standard window controls (minimize, maximize, close). Below the title bar, on the left, is a blue button labeled "Back". To its right, the text "Enter The Product ID to calculate the monthly sale" is displayed in a serif font. Below this text is a white rectangular input field. Underneath the input field is a blue button labeled "Search". The bottom half of the window is a large, empty white rectangular area, likely intended for displaying the monthly report results.

### 4.) Add Product



The screenshot shows a software window with a dark gray background. At the top left is a small icon. At the top right are standard window controls (minimize, maximize, close). Below the title bar, on the left, is a blue button labeled "Back". To its right, there are six input fields, each preceded by a label in a serif font: "Enter ProductId :", "Enter Product Name :", "Enter QOH :", "Enter Qoh\_Threshold :", "Enter Price :", and "Enter Discount R...". Each label is aligned to the left of its corresponding white rectangular input field. At the bottom center of the window is a white rectangular button labeled "Insert".

## 5.)Add Purchases



A screenshot of a software window titled "Add Purchases". The window has a dark gray background and a standard Windows-style title bar with a minimize, maximize, and close button. In the top-left corner, there is a "Back" button. The main area contains four labels with corresponding input fields: "Enter Eid :", "Enter Pid :", "Enter Cid :", and "Enter Quantity :". Each label is followed by a white rectangular input field. Below these fields, centered, is an "Insert" button.

Back

Enter Eid :

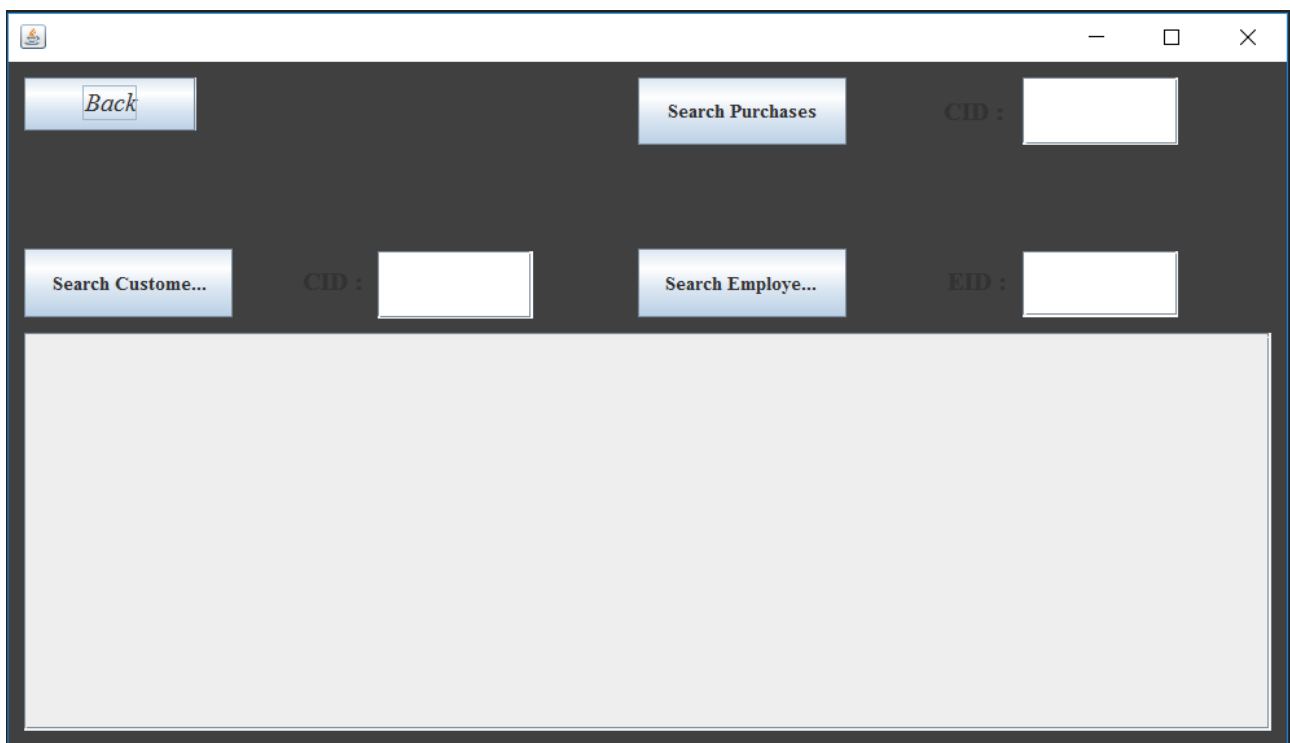
Enter Pid :

Enter Cid :

Enter Quantity :

Insert

## 6.)Search



A screenshot of a software window titled "Search". The window has a dark gray background and a standard Windows-style title bar. It features several search-related elements: a "Back" button in the top-left; a "Search Purchases" button in the top-center; a "CID :" label followed by an input field in the top-right; a "Search Custome..." button in the bottom-left; a "CID :" label followed by an input field in the bottom-center-left; a "Search Employe..." button in the bottom-center-right; and an "EID :" label followed by an input field in the bottom-right. Below these search controls is a large, empty light gray rectangular area, likely intended for displaying search results.

Back

Search Purchases

CID :

Search Custome... CID :

Search Employe... EID :

Thank You