MOEENUL ISLAM

21MCA0269

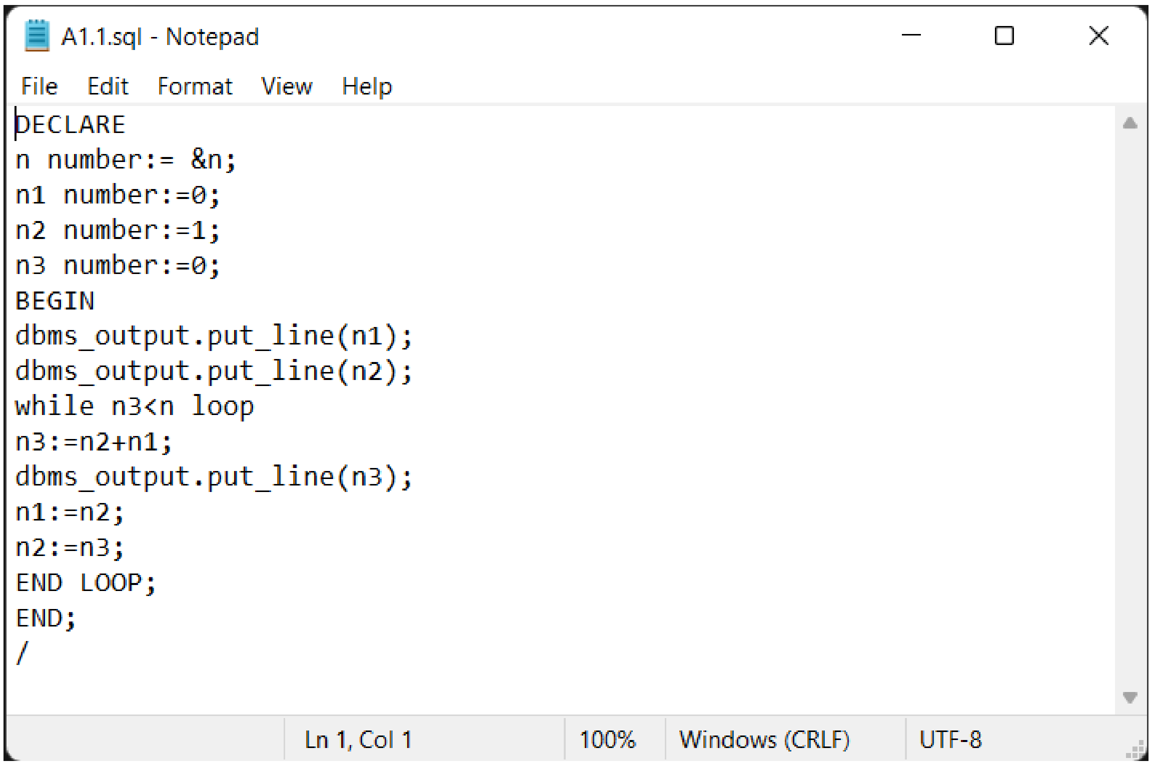
Slot: L5 + L6

DATABASE TECHNOLOGIES LAB

Exercise 4 – PL/SQL

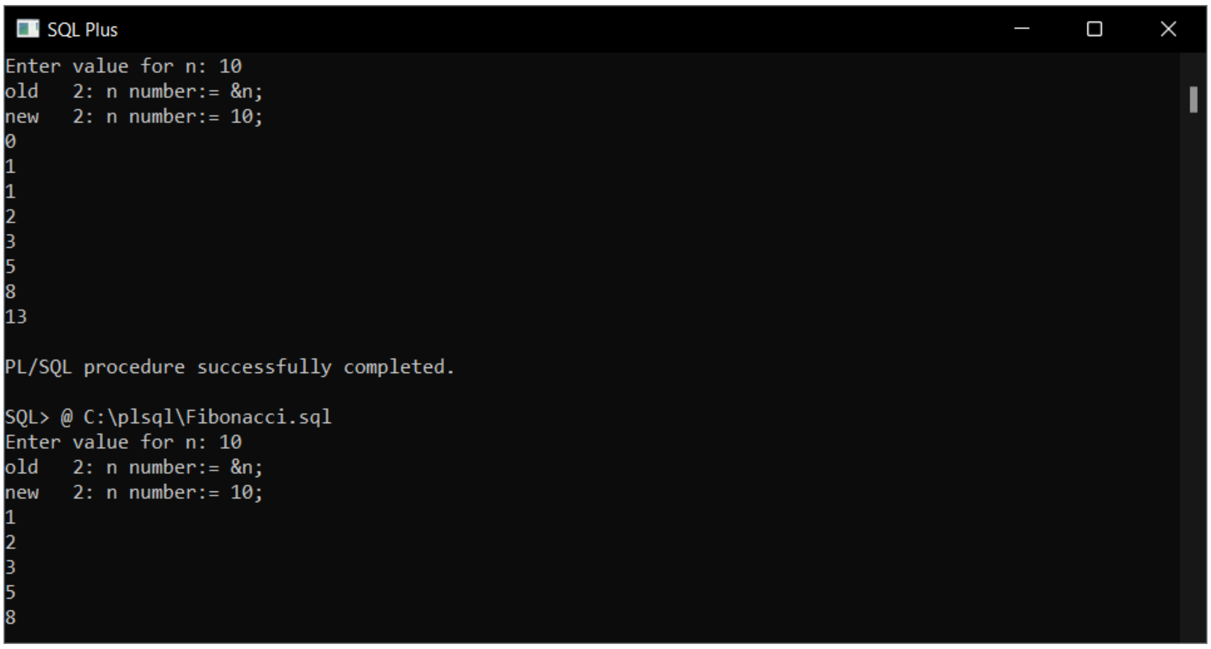
PART A

1.1 – Fibonacci Series



A1.1.sql - Notepad

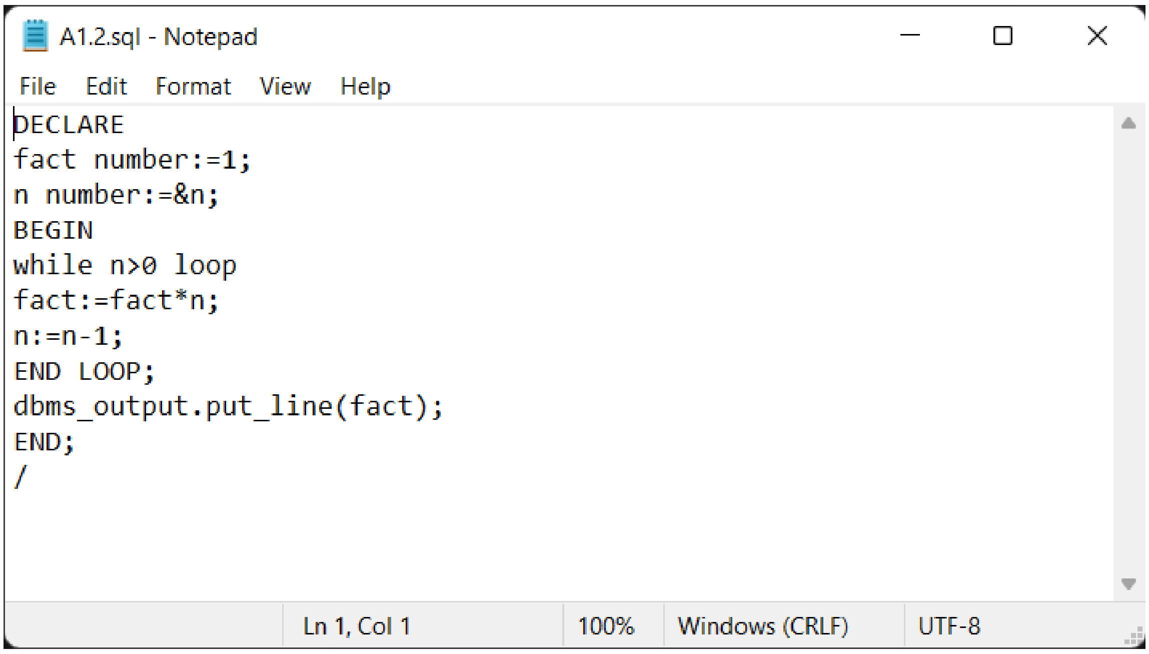
```
DECLARE
n number:= &n;
n1 number:=0;
n2 number:=1;
n3 number:=0;
BEGIN
dbms_output.put_line(n1);
dbms_output.put_line(n2);
while n3<n loop
n3:=n2+n1;
dbms_output.put_line(n3);
n1:=n2;
n2:=n3;
END LOOP;
END;
/
```



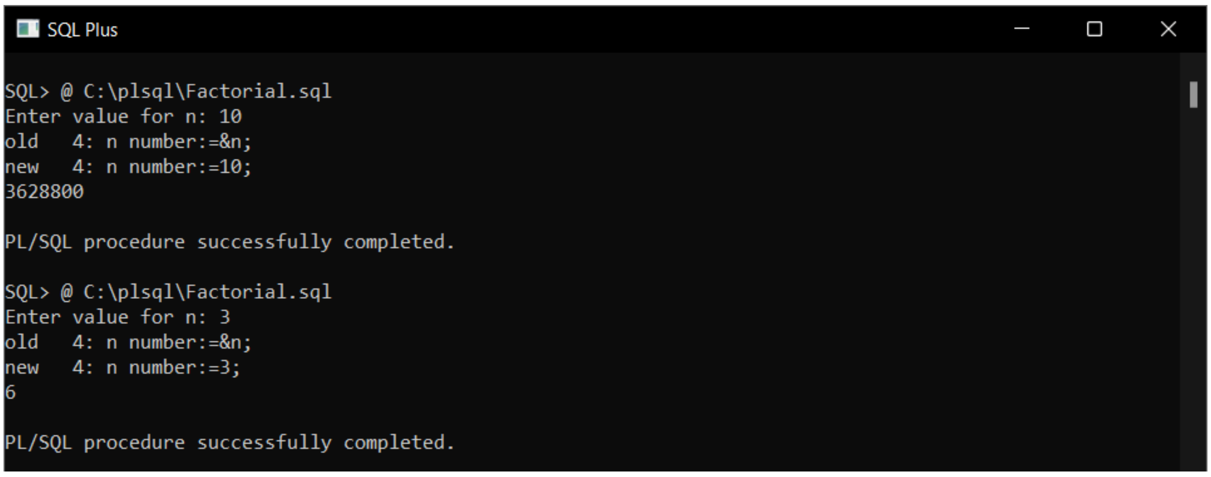
SQL Plus

```
Enter value for n: 10
old   2: n number:= &n;
new   2: n number:= 10;
0
1
1
2
3
5
8
13

PL/SQL procedure successfully completed.

SQL> @ C:\plsql\Fibonacci.sql
Enter value for n: 10
old   2: n number:= &n;
new   2: n number:= 10;
1
2
3
5
8
```

1.2 – Factorial of a number

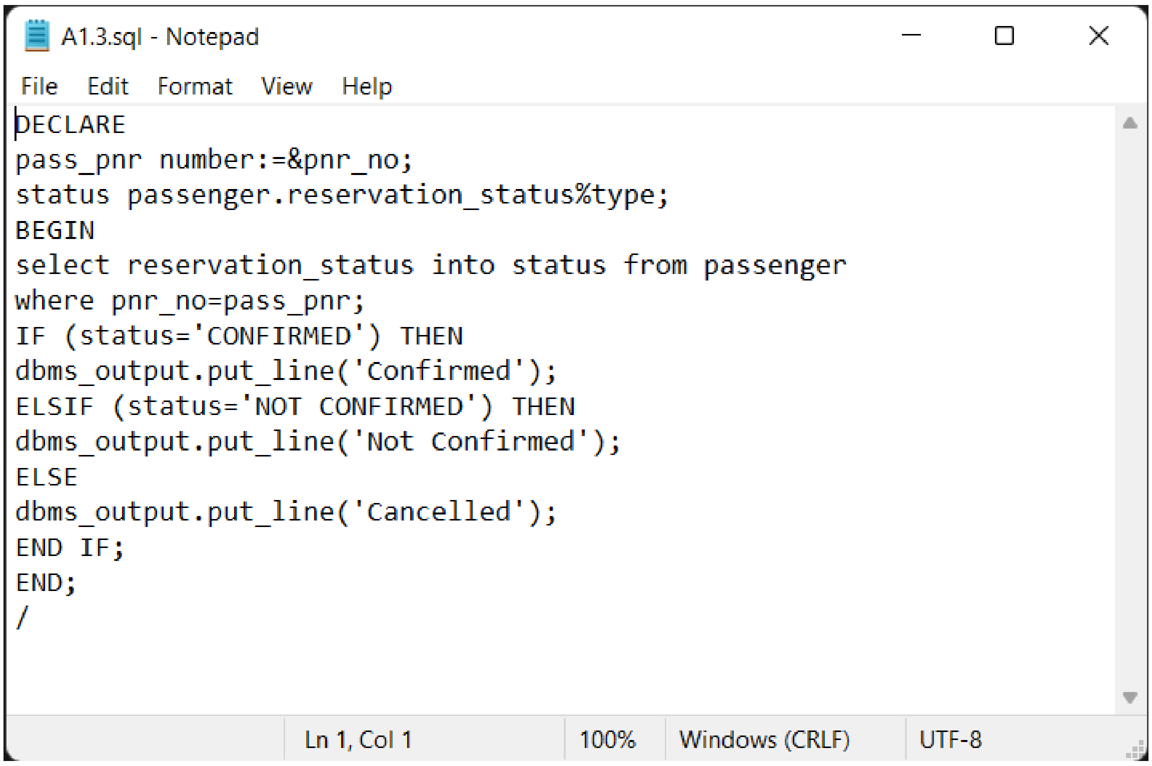


```
DECLARE
fact number:=1;
n number:=&n;
BEGIN
while n>0 loop
fact:=fact*n;
n:=n-1;
END LOOP;
dbms_output.put_line(fact);
END;
/
```

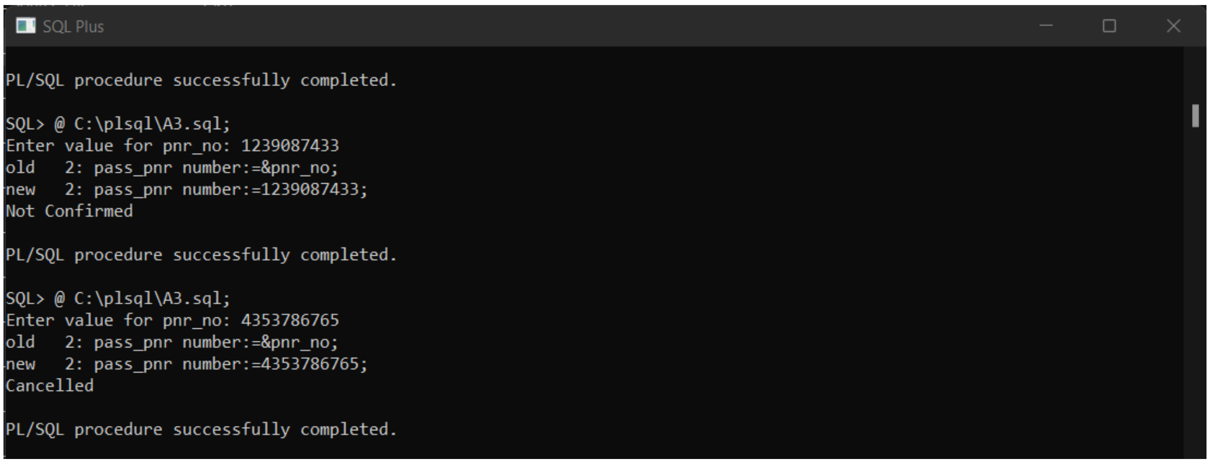


```
SQL> @ C:\plsql\Factorial.sql
Enter value for n: 10
old   4: n number:=&n;
new   4: n number:=10;
3628800

PL/SQL procedure successfully completed.

SQL> @ C:\plsql\Factorial.sql
Enter value for n: 3
old   4: n number:=&n;
new   4: n number:=3;
6

PL/SQL procedure successfully completed.
```

1.3) Print ‘Not Confirmed’ based on the reservation status, of a particular passenger.

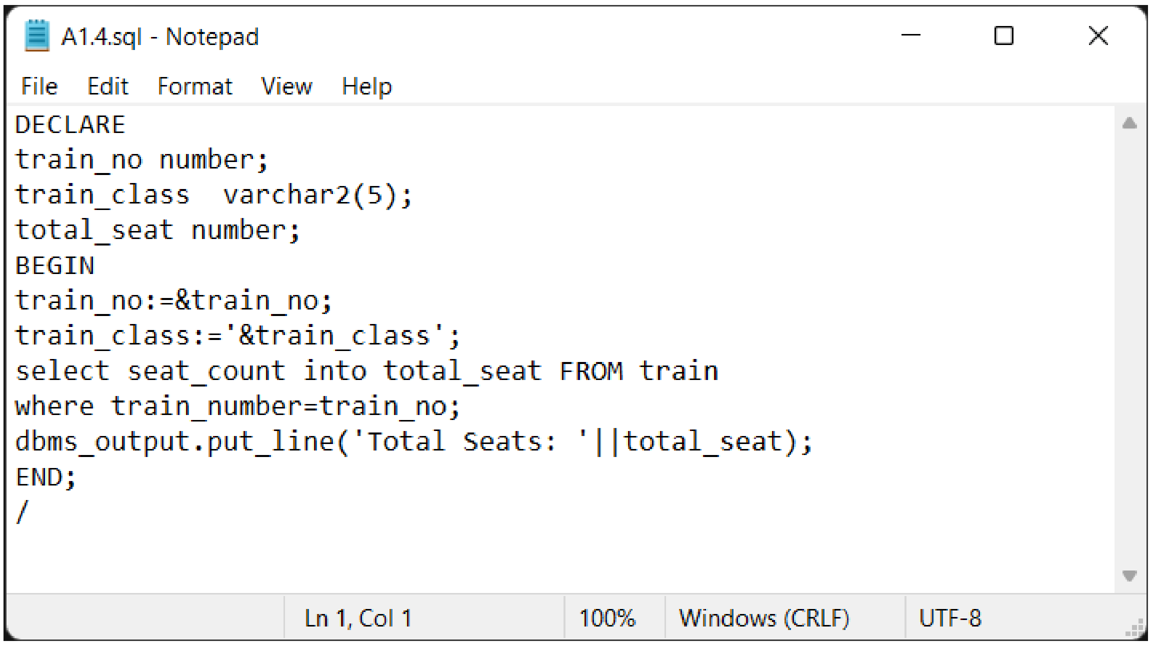

A1.3.sql - Notepad
File Edit Format View Help
Ln 1, Col 1 100% Windows (CRLF) UTF-8

```sql
DECLARE
pass_pnr number:=&pnr_no;
status passenger.reservation_status%type;
BEGIN
select reservation_status into status from passenger
where pnr_no=pass_pnr;
IF (status='CONFIRMED') THEN
dbms_output.put_line('Confirmed');
ELSIF (status='NOT CONFIRMED') THEN
dbms_output.put_line('Not Confirmed');
ELSE
dbms_output.put_line('Cancelled');
END IF;
END;
/
```

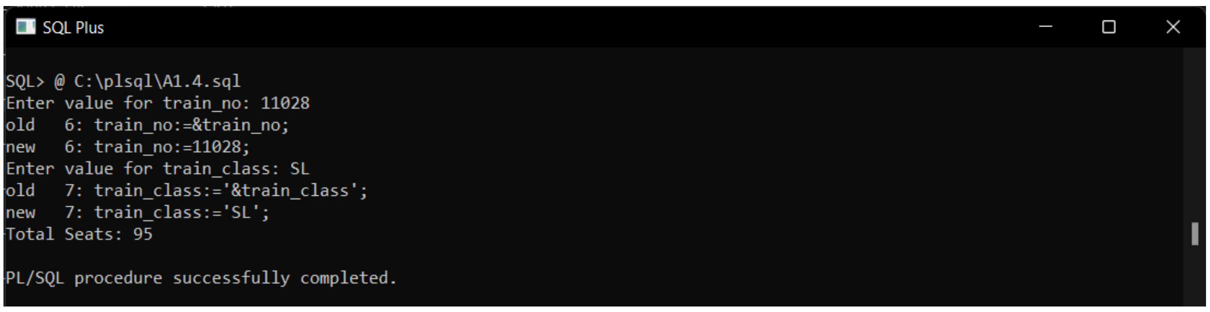


```
PL/SQL procedure successfully completed.

SQL> @ C:\plsql\A3.sql;
Enter value for pnr_no: 1239087433
old   2: pass_pnr number:=&pnr_no;
new   2: pass_pnr number:=1239087433;
Not Confirmed

PL/SQL procedure successfully completed.

SQL> @ C:\plsql\A3.sql;
Enter value for pnr_no: 4353786765
old   2: pass_pnr number:=&pnr_no;
new   2: pass_pnr number:=4353786765;
Cancelled

PL/SQL procedure successfully completed.
```

1.4) Print the total no of available seats for a particular train and for a particular class.



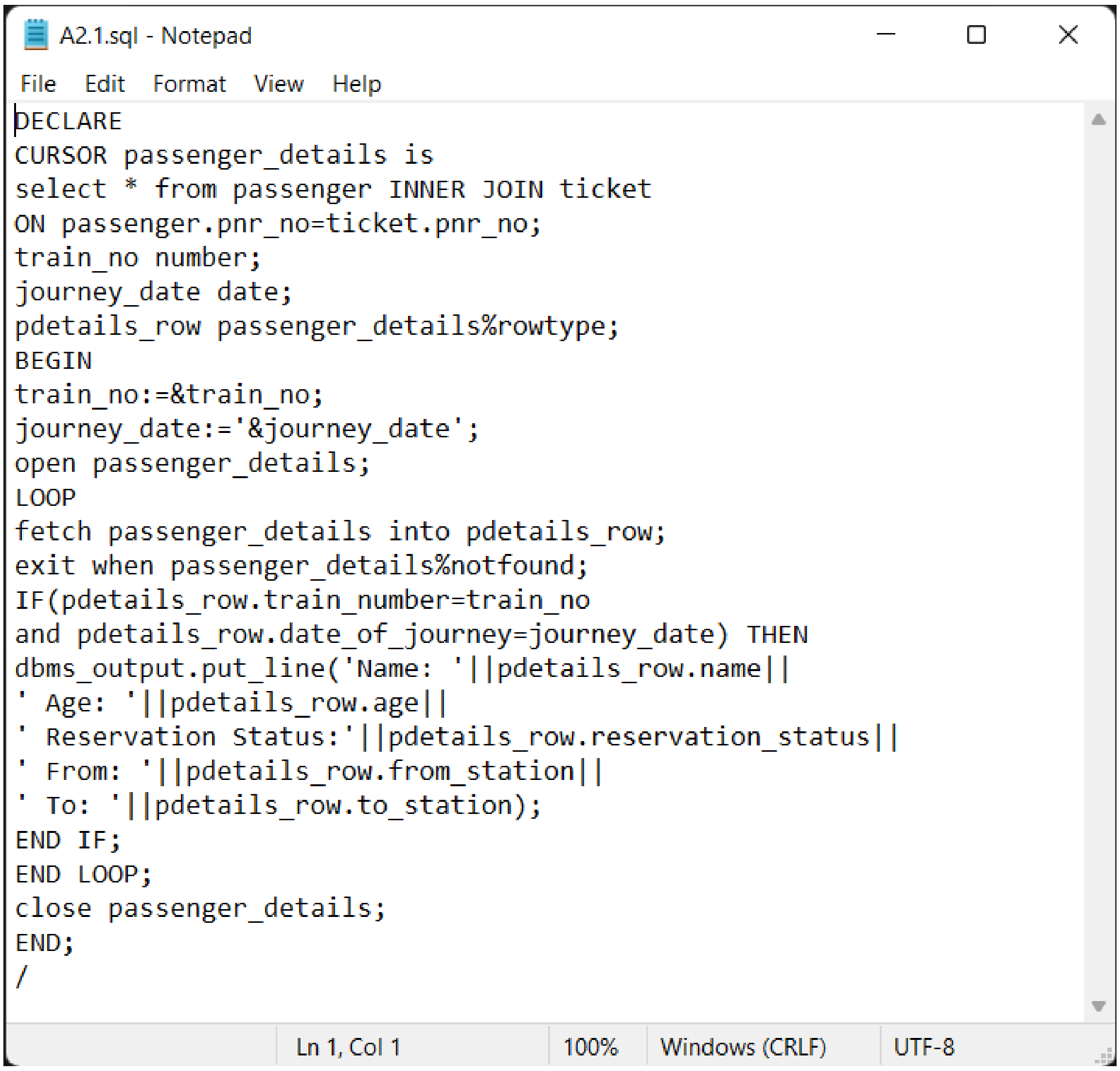
```
DECLARE
train_no number;
train_class  varchar2(5);
total_seat number;
BEGIN
train_no:=&train_no;
train_class:='&train_class';
select seat_count into total_seat FROM train
where train_number=train_no;
dbms_output.put_line('Total Seats: '||total_seat);
END;
/
```



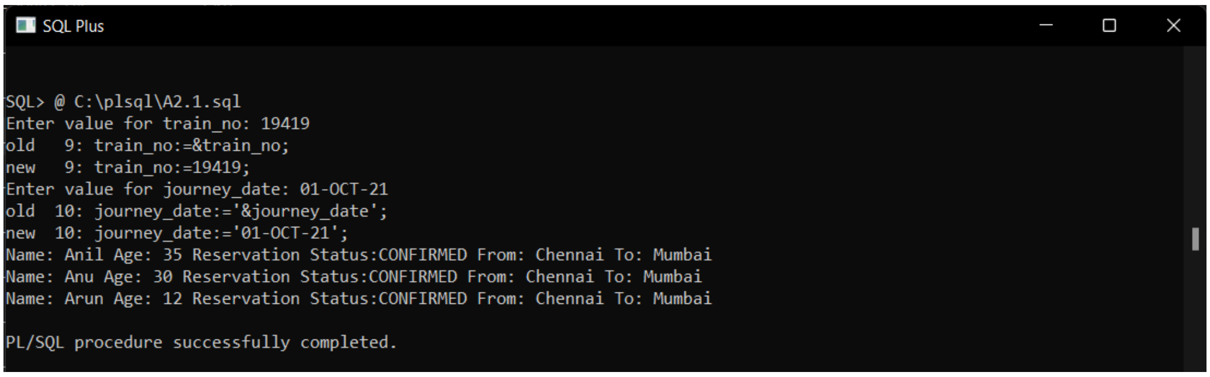
```
SQL> @ C:\plsql\A1.4.sql
Enter value for train_no: 11028
old   6: train_no:=&train_no;
new   6: train_no:=11028;
Enter value for train_class: SL
old   7: train_class:='&train_class';
new   7: train_class:='SL';
Total Seats: 95

PL/SQL procedure successfully completed.
```

Cursors

2.1) Retrieve the passenger details for ‘X’ train no and given journey date.

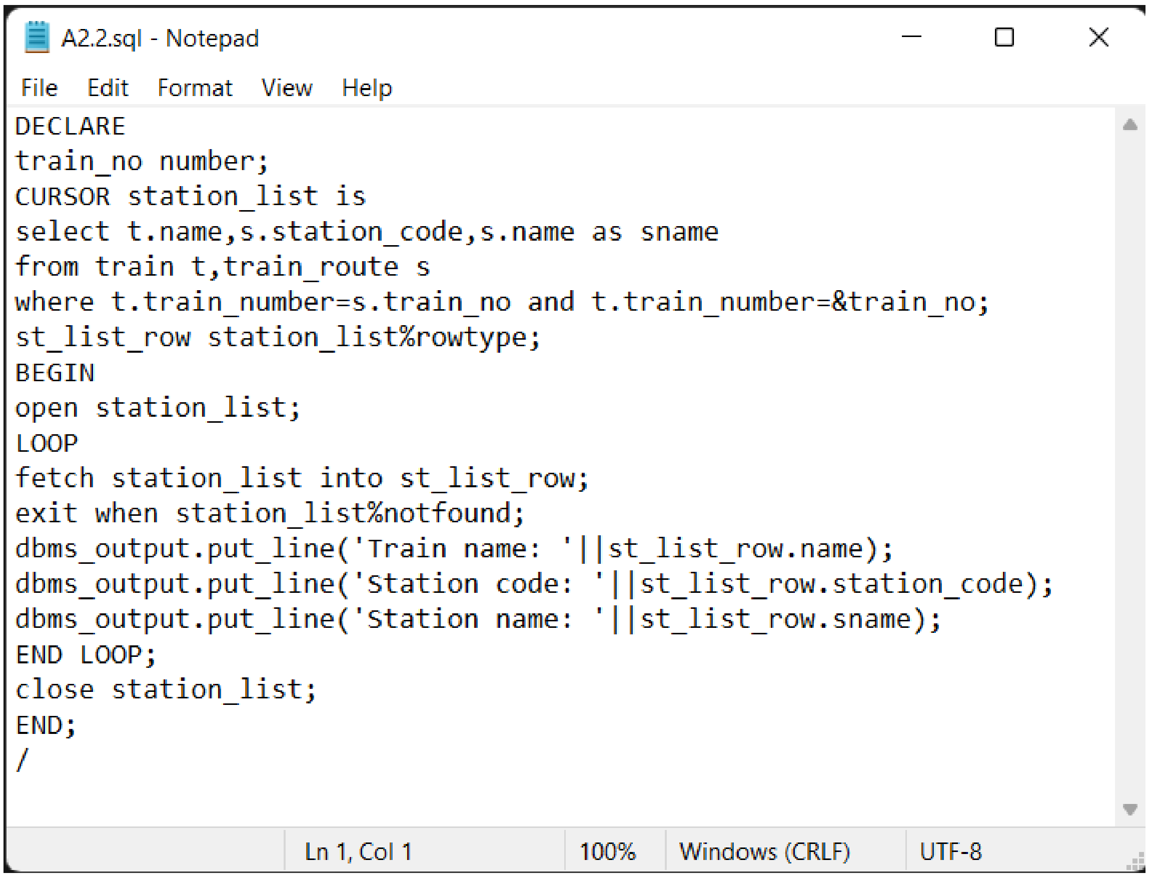


```
DECLARE
CURSOR passenger_details is
select * from passenger INNER JOIN ticket
ON passenger.pnr_no=ticket.pnr_no;
train_no number;
journey_date date;
pdetails_row passenger_details%rowtype;
BEGIN
train_no:=&train_no;
journey_date:='&journey_date';
open passenger_details;
LOOP
fetch passenger_details into pdetails_row;
exit when passenger_details%notfound;
IF(pdetails_row.train_number=train_no
and pdetails_row.date_of_journey=journey_date) THEN
dbms_output.put_line('Name: '||pdetails_row.name||
' Age: '||pdetails_row.age||
' Reservation Status:'||pdetails_row.reservation_status||
' From: '||pdetails_row.from_station||
' To: '||pdetails_row.to_station);
END IF;
END LOOP;
close passenger_details;
END;
/
```

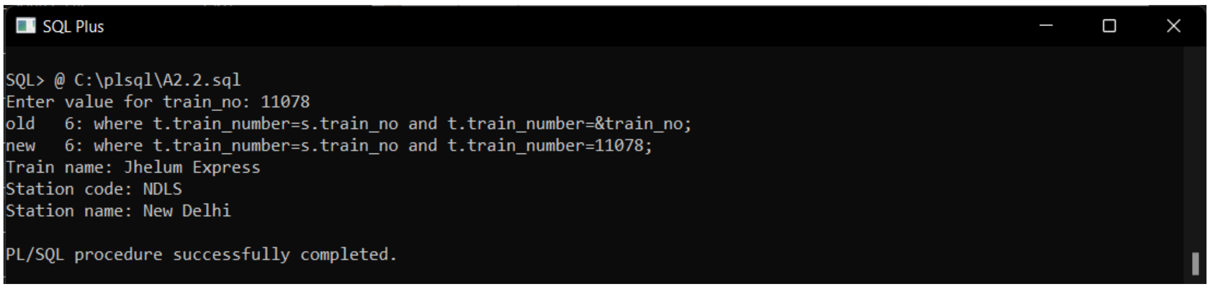


```
SQL> @ C:\plsql\A2.1.sql
Enter value for train_no: 19419
old   9: train_no:=&train_no;
new   9: train_no:=19419;
Enter value for journey_date: 01-OCT-21
old  10: journey_date:='&journey_date';
new  10: journey_date:='01-OCT-21';
Name: Anil Age: 35 Reservation Status:CONFIRMED From: Chennai To: Mumbai
Name: Anu Age: 30 Reservation Status:CONFIRMED From: Chennai To: Mumbai
Name: Arun Age: 12 Reservation Status:CONFIRMED From: Chennai To: Mumbai

PL/SQL procedure successfully completed.
```

2.2) Display the train name (once) and the substation names.

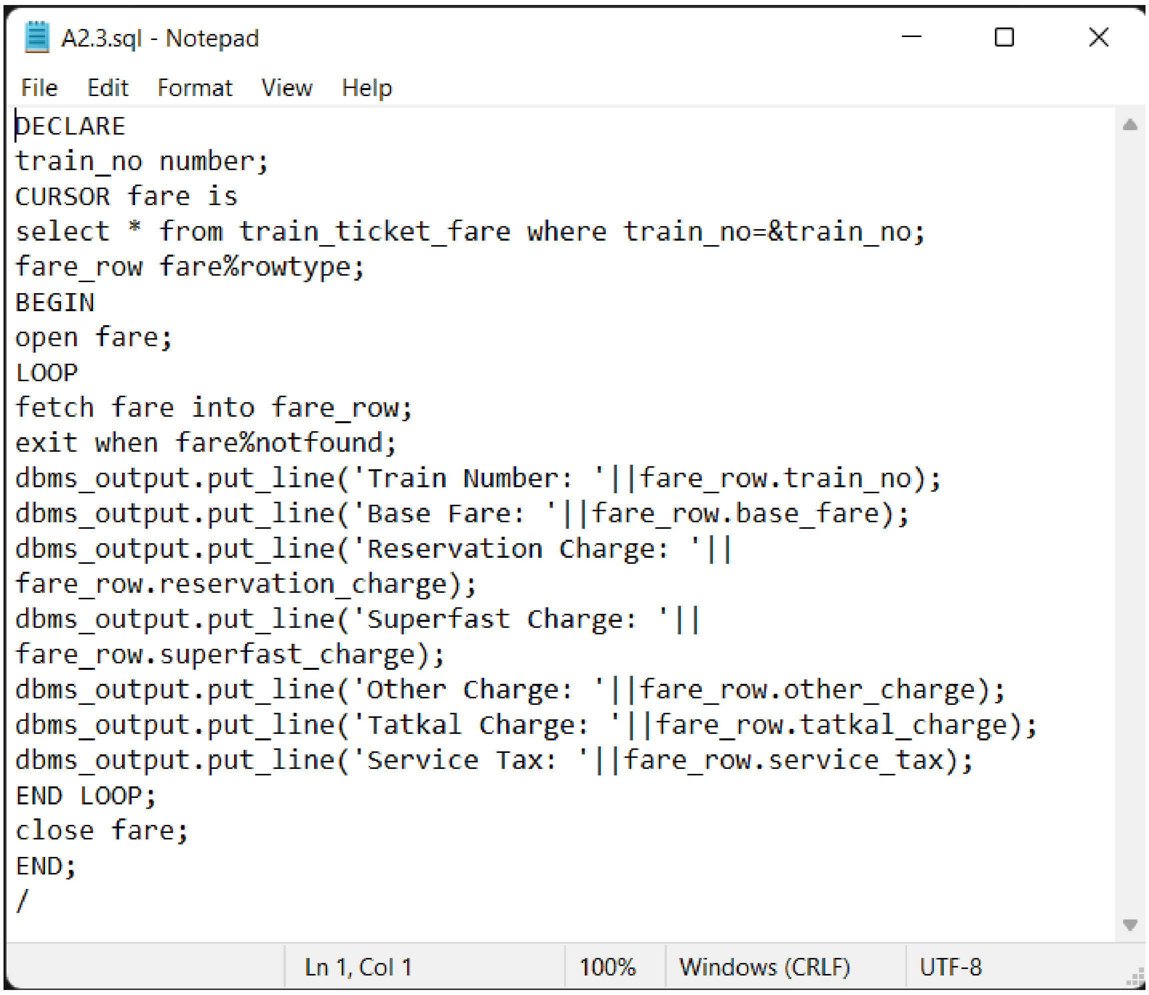


```
DECLARE
train_no number;
CURSOR station_list is
select t.name,s.station_code,s.name as sname
from train t,train_route s
where t.train_number=s.train_no and t.train_number=&train_no;
st_list_row station_list%rowtype;
BEGIN
open station_list;
LOOP
fetch station_list into st_list_row;
exit when station_list%notfound;
dbms_output.put_line('Train name: '||st_list_row.name);
dbms_output.put_line('Station code: '||st_list_row.station_code);
dbms_output.put_line('Station name: '||st_list_row.sname);
END LOOP;
close station_list;
END;
/
```

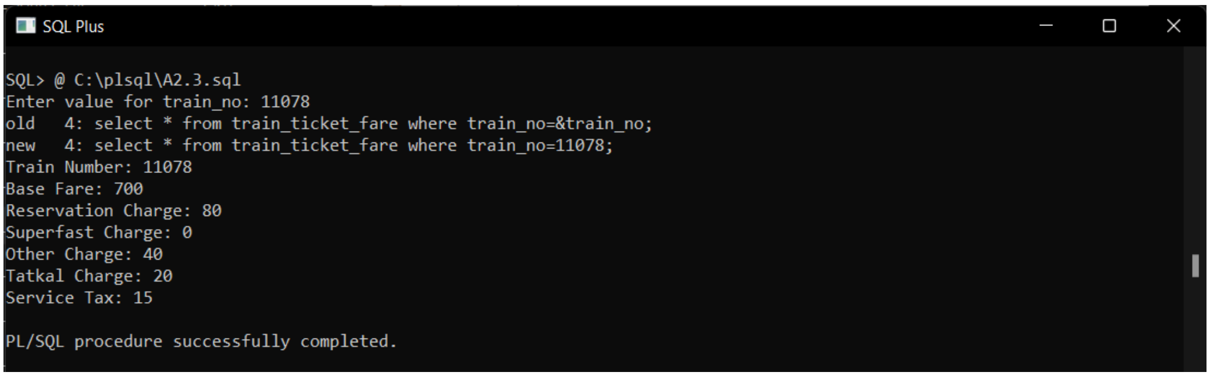


```
SQL> @ C:\plsql\A2.2.sql
Enter value for train_no: 11078
old   6: where t.train_number=s.train_no and t.train_number=&train_no;
new   6: where t.train_number=s.train_no and t.train_number=11078;
Train name: Jhelum Express
Station code: NDLS
Station name: New Delhi

PL/SQL procedure successfully completed.
```

2.3) Display the fare details of a particular train (use basic exception).



```
DECLARE
train_no number;
CURSOR fare is
select * from train_ticket_fare where train_no=&train_no;
fare_row fare%rowtype;
BEGIN
open fare;
LOOP
fetch fare into fare_row;
exit when fare%notfound;
dbms_output.put_line('Train Number: '||fare_row.train_no);
dbms_output.put_line('Base Fare: '||fare_row.base_fare);
dbms_output.put_line('Reservation Charge: '||
fare_row.reservation_charge);
dbms_output.put_line('Superfast Charge: '||
fare_row.superfast_charge);
dbms_output.put_line('Other Charge: '||fare_row.other_charge);
dbms_output.put_line('Tatkal Charge: '||fare_row.tatkal_charge);
dbms_output.put_line('Service Tax: '||fare_row.service_tax);
END LOOP;
close fare;
END;
/
```

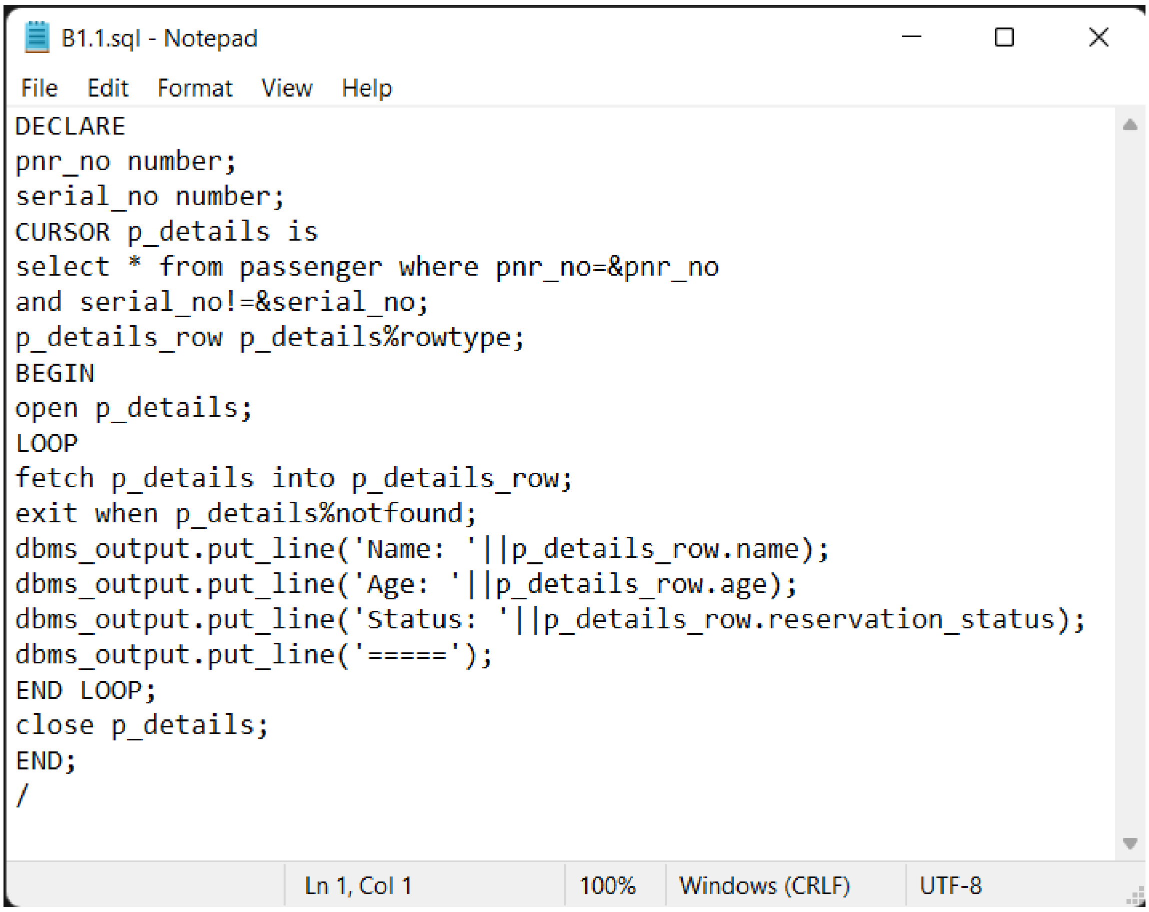


```
SQL> @ C:\plsql\A2.3.sql
Enter value for train_no: 11078
old   4: select * from train_ticket_fare where train_no=&train_no;
new   4: select * from train_ticket_fare where train_no=11078;
Train Number: 11078
Base Fare: 700
Reservation Charge: 80
Superfast Charge: 0
Other Charge: 40
Tatkal Charge: 20
Service Tax: 15

PL/SQL procedure successfully completed.
```

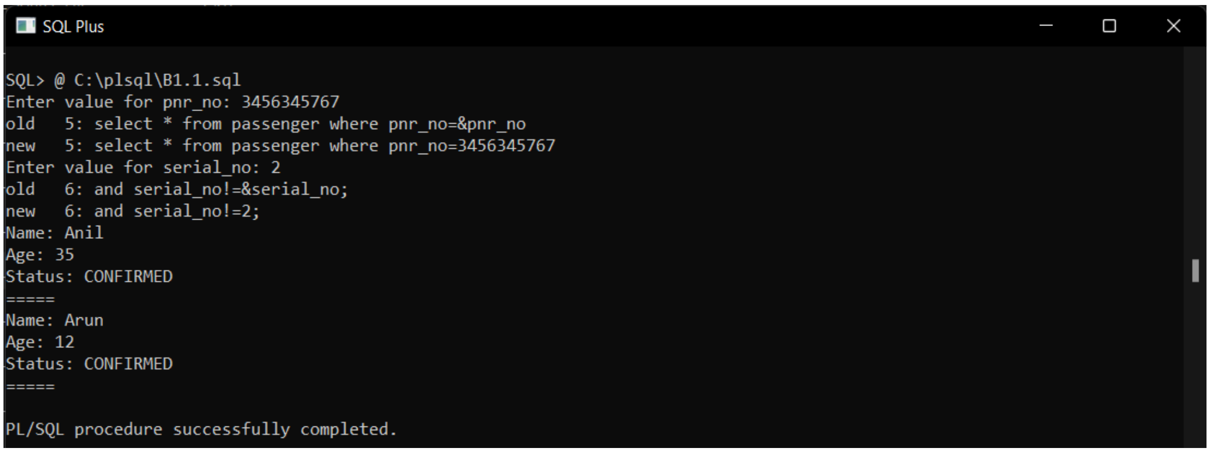
End of PART A

PART B

1.1) List the details of the passengers who has reserved next to “Mr. X”.

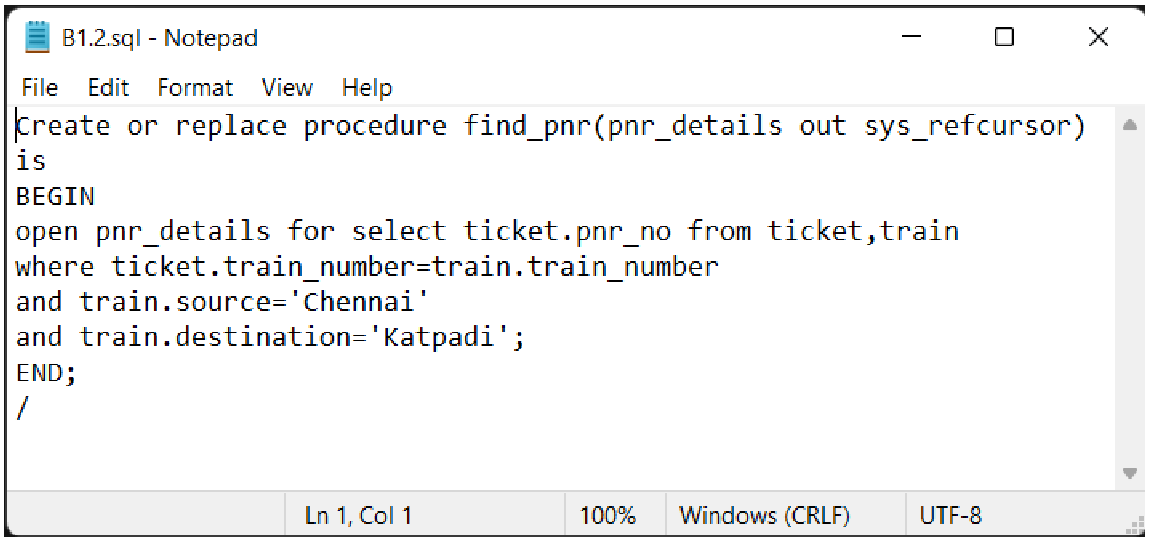


```
DECLARE
pnr_no number;
serial_no number;
CURSOR p_details is
select * from passenger where pnr_no=&pnr_no
and serial_no!=&serial_no;
p_details_row p_details%rowtype;
BEGIN
open p_details;
LOOP
fetch p_details into p_details_row;
exit when p_details%notfound;
dbms_output.put_line('Name: '||p_details_row.name);
dbms_output.put_line('Age: '||p_details_row.age);
dbms_output.put_line('Status: '||p_details_row.reservation_status);
dbms_output.put_line('=====');
END LOOP;
close p_details;
END;
/
```

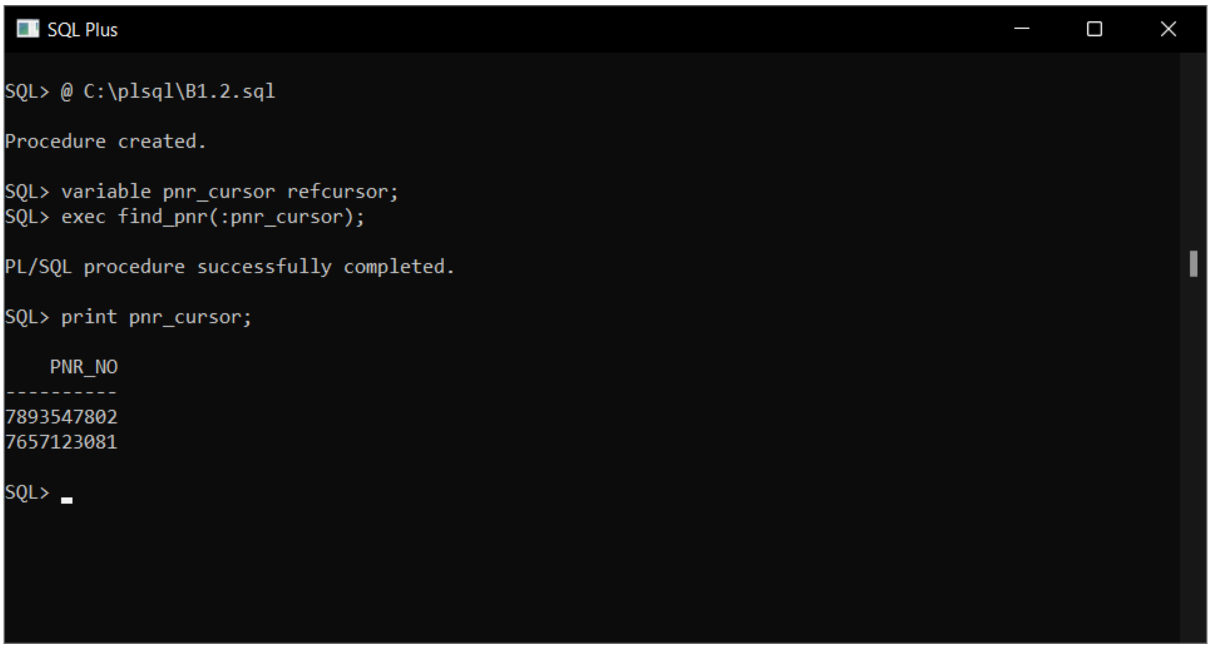


```
SQL> @ C:\plsql\B1.1.sql
Enter value for pnr_no: 3456345767
old   5: select * from passenger where pnr_no=&pnr_no
new   5: select * from passenger where pnr_no=3456345767
Enter value for serial_no: 2
old   6: and serial_no!=&serial_no;
new   6: and serial_no!=2;
Name: Anil
Age: 35
Status: CONFIRMED
=====
Name: Arun
Age: 12
Status: CONFIRMED
=====

PL/SQL procedure successfully completed.
```

1.2) PNR number of passengers for a given source and a destination.

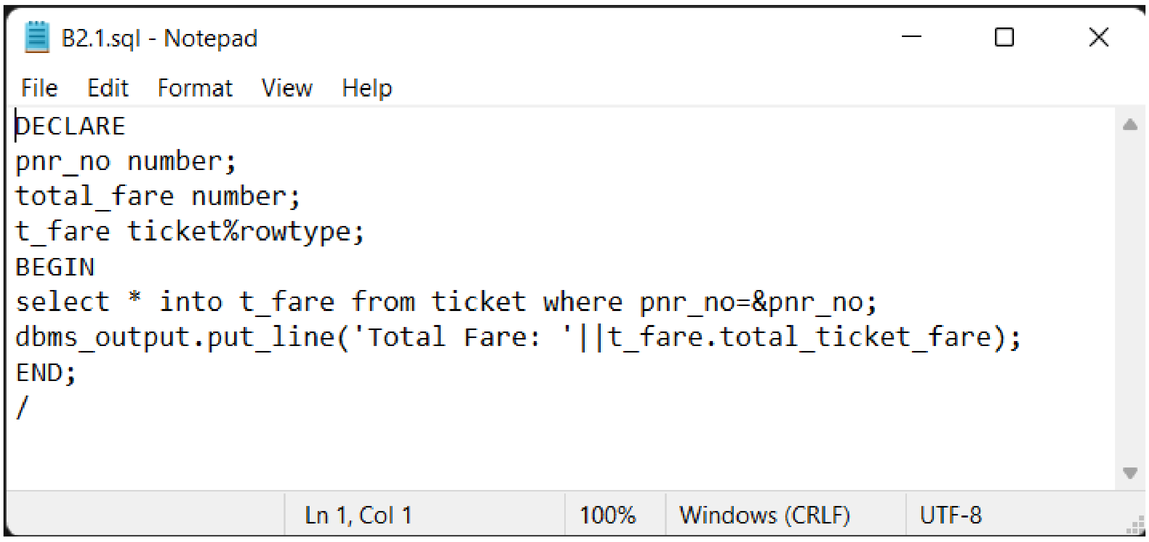


```
Create or replace procedure find_pnr(pnr_details out sys_refcursor)
is
BEGIN
open pnr_details for select ticket.pnr_no from ticket,train
where ticket.train_number=train.train_number
and train.source='Chennai'
and train.destination='Katpadi';
END;
/
```

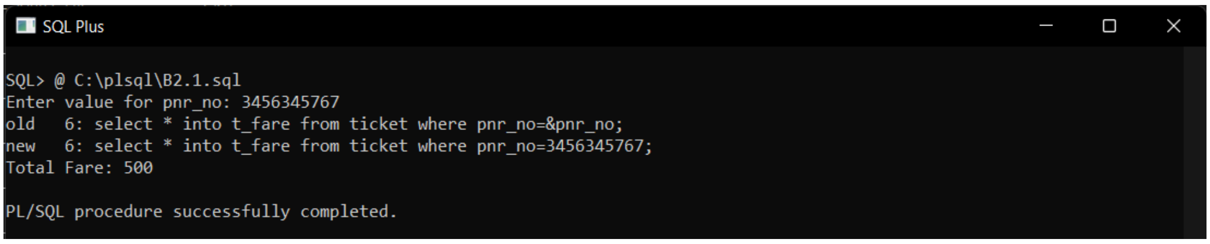


```
SQL> @ C:\plsql\B1.2.sql

Procedure created.

SQL> variable pnr_cursor refcursor;
SQL> exec find_pnr(:pnr_cursor);

PL/SQL procedure successfully completed.

SQL> print pnr_cursor;

    PNR_NO
----------
7893547802
7657123081

SQL>
```

2.1) Get the PNR number and return the total ticket fare.

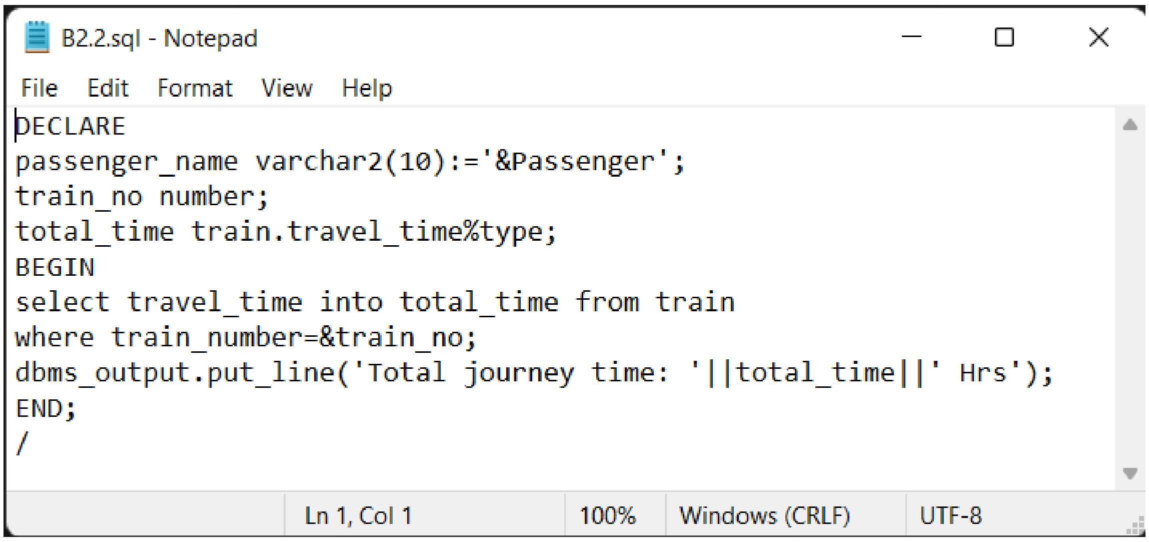


```sql
DECLARE
pnr_no number;
total_fare number;
t_fare ticket%rowtype;
BEGIN
select * into t_fare from ticket where pnr_no=&pnr_no;
dbms_output.put_line('Total Fare: '||t_fare.total_ticket_fare);
END;
/
```

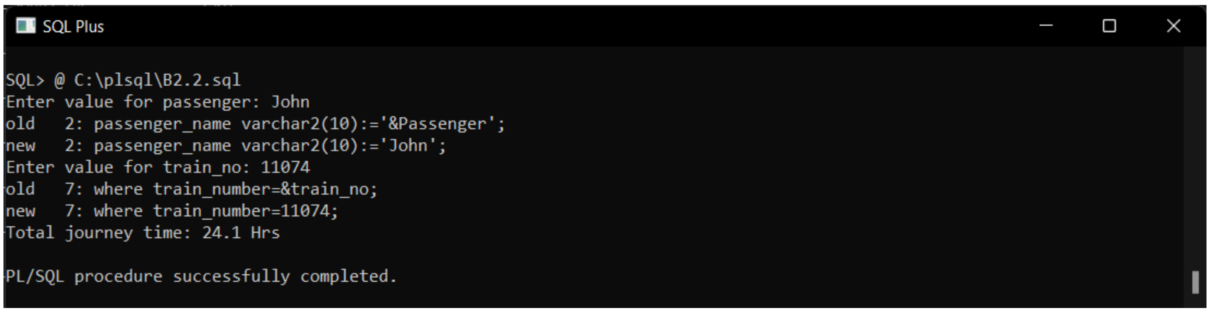


```
SQL> @ C:\plsql\B2.1.sql
Enter value for pnr_no: 3456345767
old   6: select * into t_fare from ticket where pnr_no=&pnr_no;
new   6: select * into t_fare from ticket where pnr_no=3456345767;
Total Fare: 500

PL/SQL procedure successfully completed.
```

2.2) Get the Passenger name, train no and return the total journey time in hours and minutes.



```
DECLARE
passenger_name varchar2(10):='&Passenger';
train_no number;
total_time train.travel_time%type;
BEGIN
select travel_time into total_time from train
where train_number=&train_no;
dbms_output.put_line('Total journey time: '||total_time||' Hrs');
END;
/
```

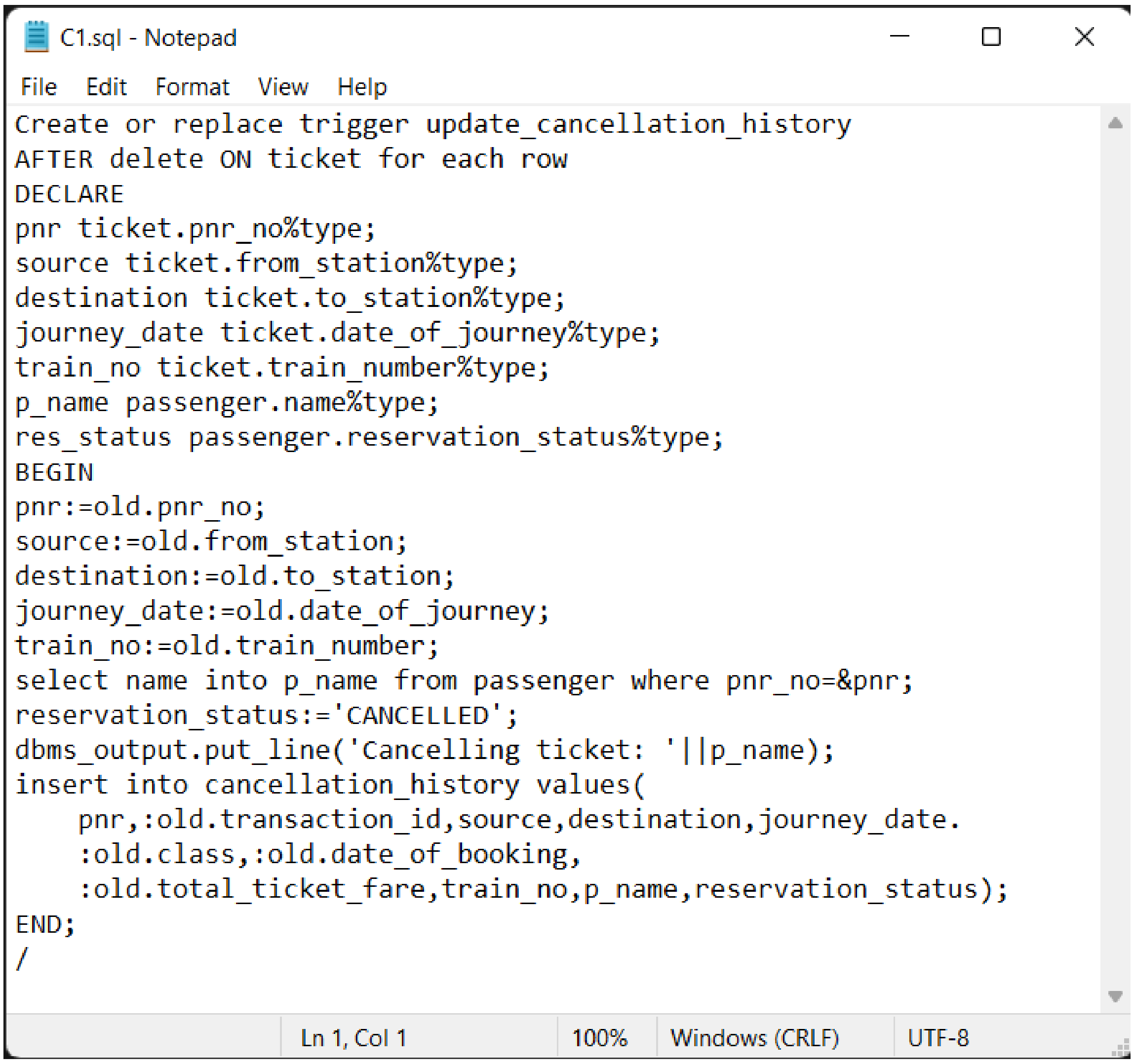


```
SQL> @ C:\plsql\B2.2.sql
Enter value for passenger: John
old   2: passenger_name varchar2(10):='&Passenger';
new   2: passenger_name varchar2(10):='John';
Enter value for train_no: 11074
old   7: where train_number=&train_no;
new   7: where train_number=11074;
Total journey time: 24.1 Hrs

PL/SQL procedure successfully completed.
```

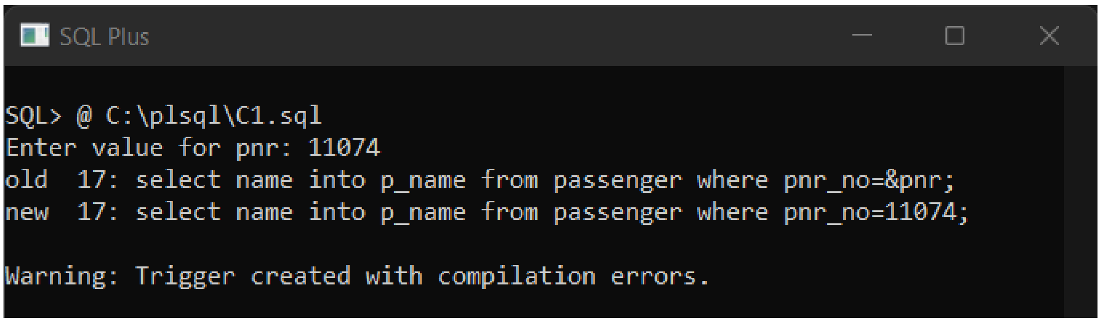
End of PART B

PART C - Triggers

1) When a passenger cancels a ticket, do the necessary process and update the cancellation history table.

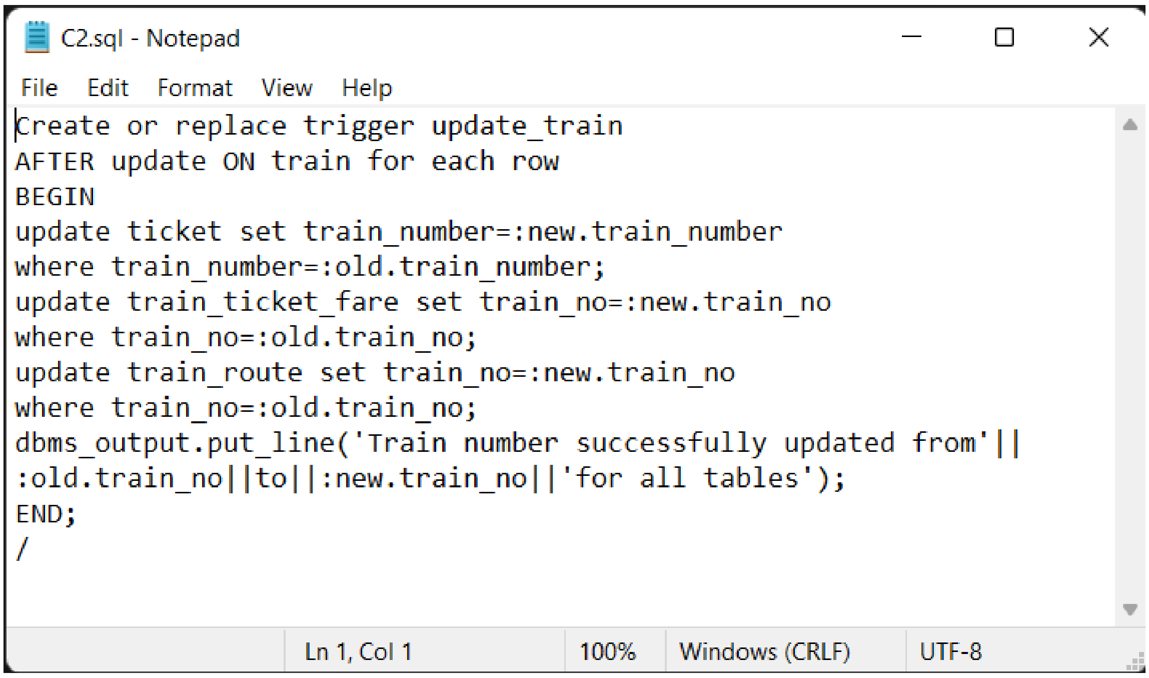


```
Create or replace trigger update_cancellation_history
AFTER delete ON ticket for each row
DECLARE
pnr ticket.pnr_no%type;
source ticket.from_station%type;
destination ticket.to_station%type;
journey_date ticket.date_of_journey%type;
train_no ticket.train_number%type;
p_name passenger.name%type;
res_status passenger.reservation_status%type;
BEGIN
pnr:=old.pnr_no;
source:=old.from_station;
destination:=old.to_station;
journey_date:=old.date_of_journey;
train_no:=old.train_number;
select name into p_name from passenger where pnr_no=&pnr;
reservation_status:='CANCELLED';
dbms_output.put_line('Cancelling ticket: '||p_name);
insert into cancellation_history values(
    pnr,:old.transaction_id,source,destination,journey_date.
    :old.class,:old.date_of_booking,
    :old.total_ticket_fare,train_no,p_name,reservation_status);
END;
/
```

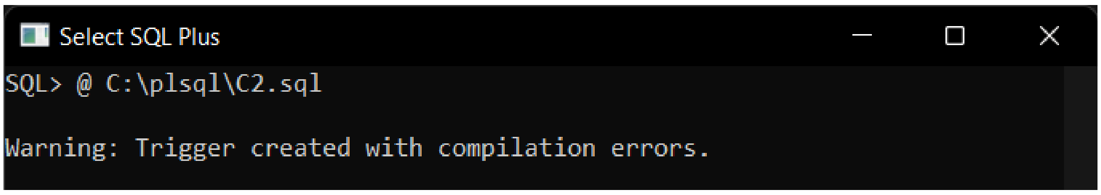


```
SQL> @ C:\plsql\C1.sql
Enter value for pnr: 11074
old  17: select name into p_name from passenger where pnr_no=&pnr;
new  17: select name into p_name from passenger where pnr_no=11074;

Warning: Trigger created with compilation errors.
```

2) When train number is changed, update it in referencing tables.

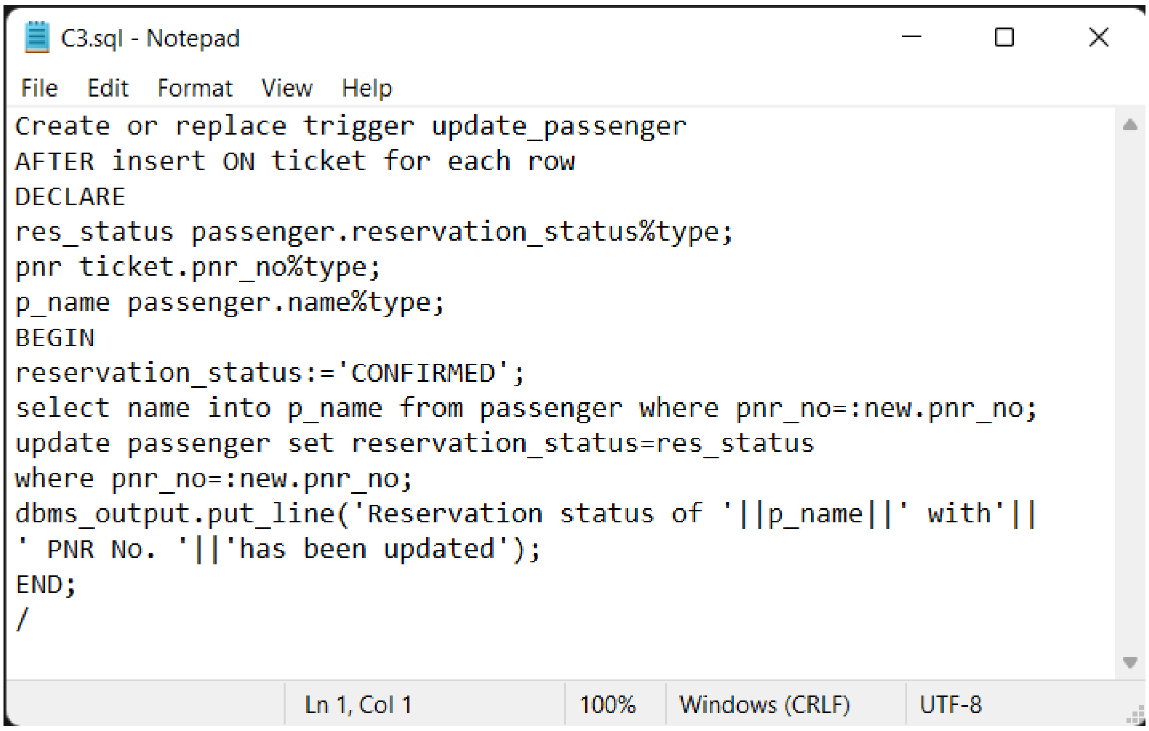


```
Create or replace trigger update_train
AFTER update ON train for each row
BEGIN
update ticket set train_number=:new.train_number
where train_number=:old.train_number;
update train_ticket_fare set train_no=:new.train_no
where train_no=:old.train_no;
update train_route set train_no=:new.train_no
where train_no=:old.train_no;
dbms_output.put_line('Train number successfully updated from'||
:old.train_no||to||:new.train_no||'for all tables');
END;
/
```

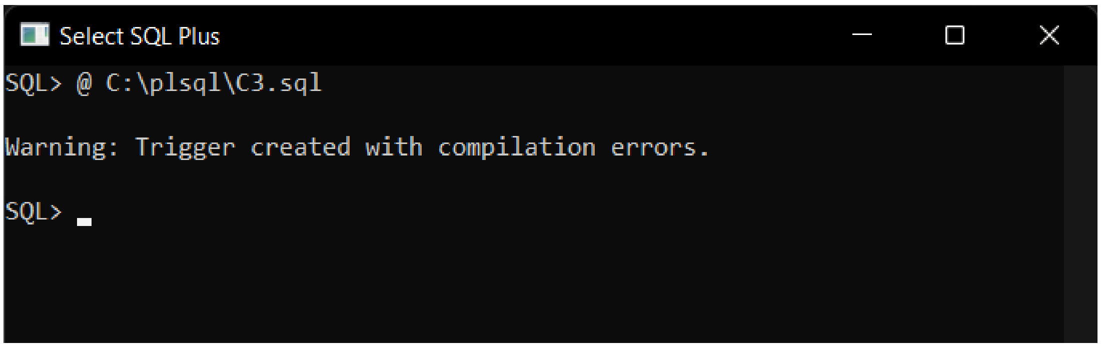


```
SQL> @ C:\plsql\C2.sql

Warning: Trigger created with compilation errors.
```

3) When a passenger record is inserted reservation status should be automatically updated.



```
Create or replace trigger update_passenger
AFTER insert ON ticket for each row
DECLARE
res_status passenger.reservation_status%type;
pnr ticket.pnr_no%type;
p_name passenger.name%type;
BEGIN
reservation_status:='CONFIRMED';
select name into p_name from passenger where pnr_no=:new.pnr_no;
update passenger set reservation_status=res_status
where pnr_no=:new.pnr_no;
dbms_output.put_line('Reservation status of '||p_name||' with'||
' PNR No. '||'has been updated');
END;
/
```



```
SQL> @ C:\plsql\C3.sql

Warning: Trigger created with compilation errors.

SQL>
```

- END OF ASSIGNMENT -