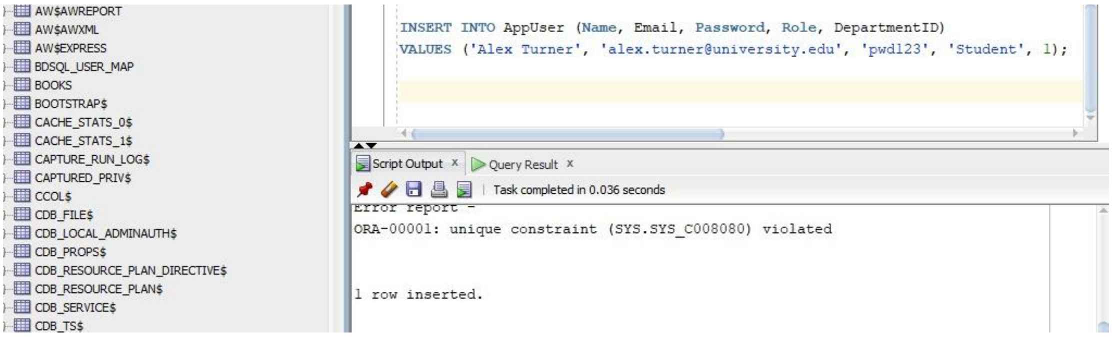
Phase VI – : Database Interaction and Transactions

DML

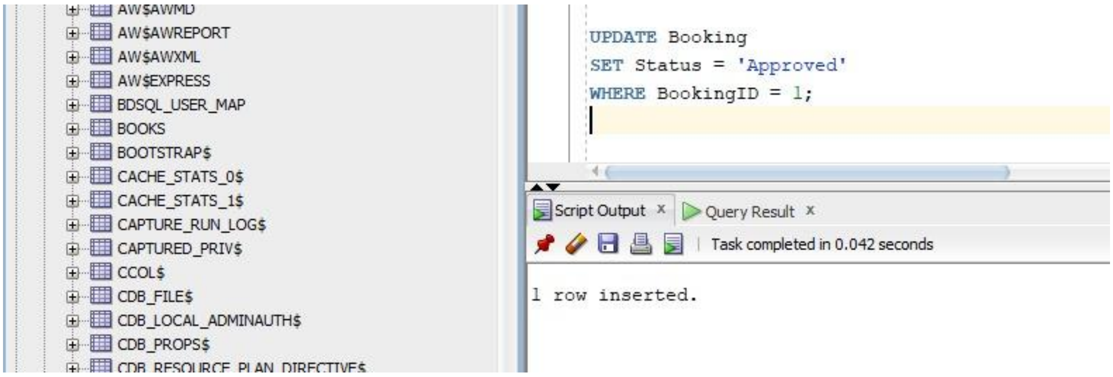
INSERT



```
INSERT INTO AppUser (Name, Email, Password, Role, DepartmentID)
VALUES ('Alex Turner', 'alex.turner@university.edu', 'pwd123', 'Student', 1);
```

```
Error report -
ORA-00001: unique constraint (SYS.SYS_C008080) violated


1 row inserted.
```

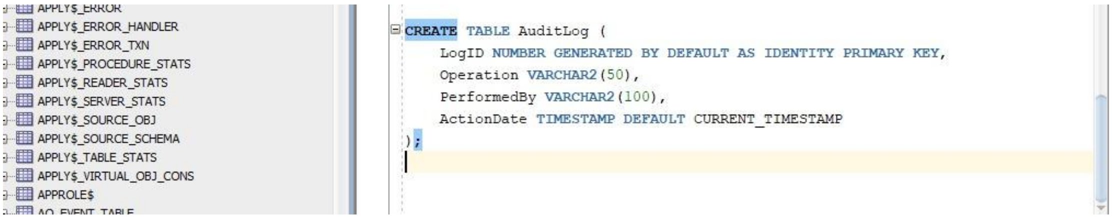
UPDATE



```
UPDATE Booking
SET Status = 'Approved'
WHERE BookingID = 1;
```

```
1 row inserted.
```

DDL

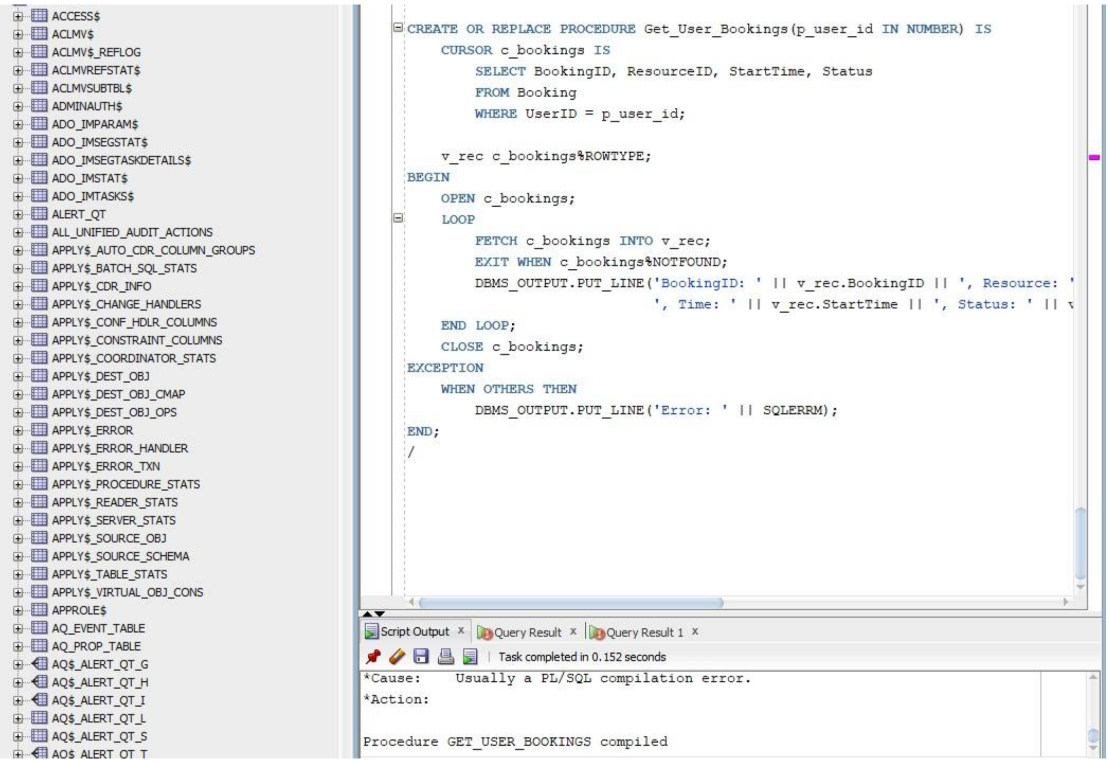


```
CREATE TABLE AuditLog (
    LogID NUMBER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,
    Operation VARCHAR2(50),
    PerformedBy VARCHAR2(100),
    ActionDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

PROCEDURE

```
CREATE OR REPLACE PROCEDURE Get_User_Bookings(p_user_id IN NUMBER) IS
   CURSOR c_bookings IS
      SELECT BookingID, ResourceID, StartTime, Status
      FROM Booking
      WHERE UserID = p_user_id;

   v_rec c_bookings%ROWTYPE;
BEGIN
   OPEN c_bookings;
   LOOP
      FETCH c_bookings INTO v_rec;
      EXIT WHEN c_bookings%NOTFOUND;
```

```
        DBMS_OUTPUT.PUT_LINE('BookingID: ' || v_rec.BookingID || ', Resource: ' ||
v_rec.ResourceID ||
                             ', Time: ' || v_rec.StartTime || ', Status: ' || v_rec.Status);
    END LOOP;
    CLOSE c_bookings;
EXCEPTION
    WHEN OTHERS THEN
        DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);
END;

CREATE OR REPLACE FUNCTION Get_Resource_Bookings_Count(p_resource_id IN
NUMBER)
RETURN NUMBER IS
    v_count NUMBER;
BEGIN
    SELECT COUNT(*) INTO v_count FROM Booking WHERE ResourceID = p_resource_id;
    RETURN v_count;
EXCEPTION
    WHEN OTHERS THEN
        RETURN -1;
END;
```



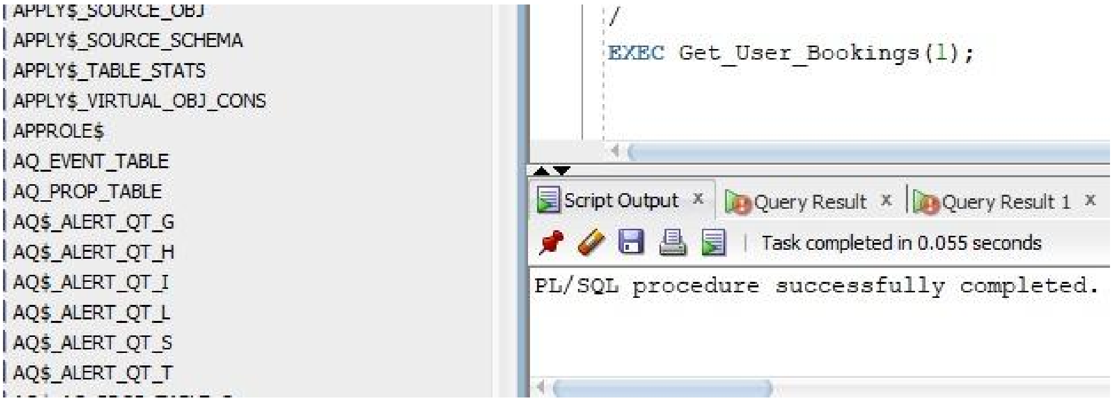
```
CREATE OR REPLACE PROCEDURE Get_User_Bookings(p_user_id IN NUMBER) IS
    CURSOR c_bookings IS
        SELECT BookingID, ResourceID, StartTime, Status
        FROM Booking
        WHERE UserID = p_user_id;

    v_rec c_bookings%ROWTYPE;
BEGIN
    OPEN c_bookings;
    LOOP
        FETCH c_bookings INTO v_rec;
        EXIT WHEN c_bookings%NOTFOUND;
        DBMS_OUTPUT.PUT_LINE('BookingID: ' || v_rec.BookingID || ', Resource: '
                             ', Time: ' || v_rec.StartTime || ', Status: ' || v
    END LOOP;
    CLOSE c_bookings;
EXCEPTION
    WHEN OTHERS THEN
        DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);
END;
/
```

Task completed in 0.152 seconds

```
*Cause:    Usually a PL/SQL compilation error.
*Action:

Procedure GET_USER_BOOKINGS compiled
```

TESTING

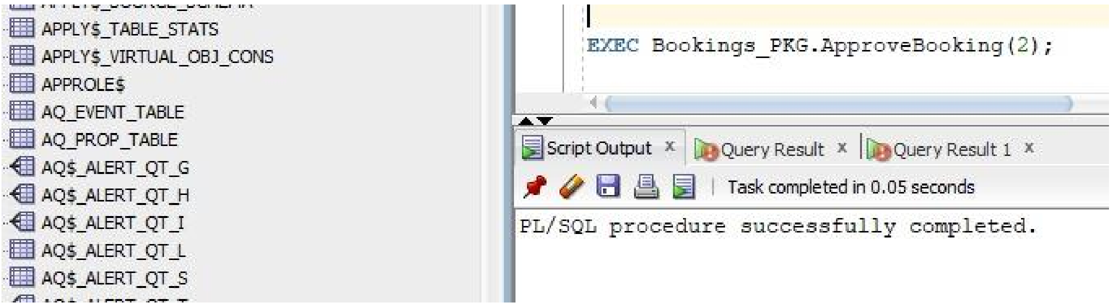
```
EXEC Get_User_Bookings(1);

-- Function test
SELECT Get_Resource_Bookings_Count(1) FROM dual;

-- Package test
EXEC Bookings_PKG.ApproveBooking(2);
SELECT Bookings_PKG.GetTotalBookings(1) FROM dual;
```



```
/
EXEC Get_User_Bookings(1);
```

Task completed in 0.055 seconds

```
PL/SQL procedure successfully completed.
```

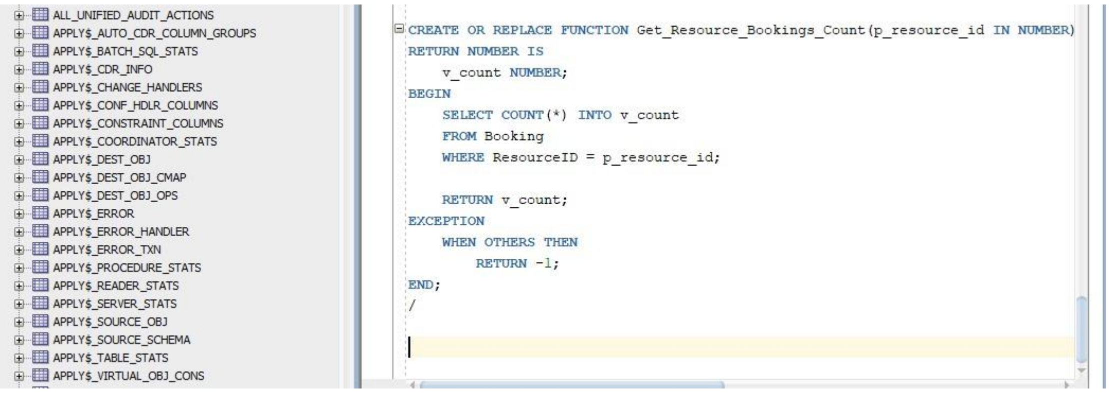


```
EXEC Bookings_PKG.ApproveBooking(2);
```

Task completed in 0.05 seconds

```
PL/SQL procedure successfully completed.
```

FUNCTION EXAMPLE



```
CREATE OR REPLACE FUNCTION Get_Resource_Bookings_Count(p_resource_id IN NUMBER)
RETURN NUMBER IS
    v_count NUMBER;
BEGIN
    SELECT COUNT(*) INTO v_count
    FROM Booking
    WHERE ResourceID = p_resource_id;

    RETURN v_count;
EXCEPTION
    WHEN OTHERS THEN
        RETURN -1;
END;
/
```