



APEX 입문 워크샵(Beginner Workshop) - 실습가이드: Part 2

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Low-code Dev

Oracle APEX - Beginner Workshop

M03. 영수증 관리:
1. 법인카드 영수증 등록 -
Form

Oracle

APEX

OCI

Marco Polo
1254 - 1324

Low-Code

Karl Marx
1818 - 1883

Science and Technology

Italy (230)

Politics

Nero
37 - 68

United Kingdom

France (395)

Germany (300)

Politics - 37% (1,549)

1.5K

1.2K

0.9K

0.6K

0.3K

0.0K

877

475

205

100

87

77

55

42

30

12

8

7

5

3

2

1,356

United States

United Kingdom

Turkey

Poland

China

Germany

France

Japan

Canada

Australia

South Korea

Spain

Italy

Portugal

[참고] Expenses 테이블 설명

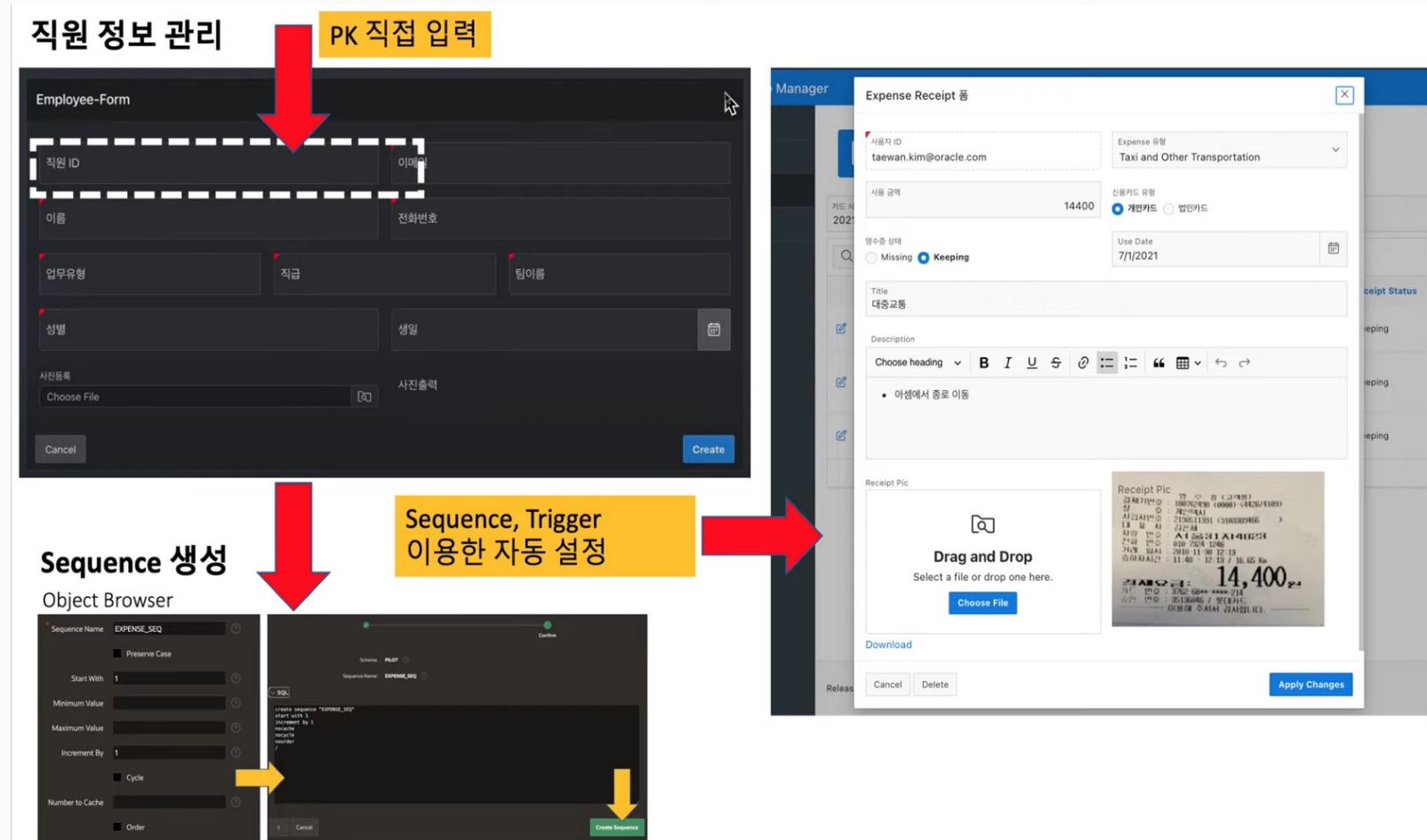
| APEXWS.EXPENSES | |
|--|-----------------|
| P * EXPENSE_ID | NUMBER (9) |
| * EMPLOYEE_ID | VARCHAR2 (50) |
| TYPE_ID | NUMBER (3) |
| PAYMENT_AMOUNT | NUMBER (8) |
| TITLE | VARCHAR2 (200) |
| DESCRIPTION | VARCHAR2 (1024) |
| RECEIPT_STATUS | VARCHAR2 (2) |
| CARD_TYPE | VARCHAR2 (2) |
| RECEIPT_PIC | BLOB |
| USE_DATE | DATE |
| CRE_DATE | DATE |
| | |
| PK EXPENSES_PK (EXPENSE_ID) | |
| FK EXPENSES_EMPLOYEE_ID_FK (EMPLOYEE_ID) | |
| FK EXPENSES_TYPE_ID_FK (TYPE_ID) | |
| | |
| U EXPENSES_PK (EXPENSE_ID) | |

```
CREATE TABLE EXPENSES
(
    expense_id      number(9) not null,
    employee_id     VARCHAR2(50) not null,
    type_id         number(3),
    payment_amount  number(8),
    title           VARCHAR2(200),
    description     VARCHAR2(1024),
    receipt_status  VARCHAR2(2), --missing/keeping
    card_type       VARCHAR2(2), --개인카드/법인카드
    receipt_pic     BLOB,
    use_date        DATE,
    cre_date        DATE,
    CONSTRAINT expenses_pk PRIMARY KEY (expense_id),
    CONSTRAINT expenses_employee_id_fk FOREIGN KEY
        (employee_id) references EMPLOYEES,
    CONSTRAINT expenses_type_id_fk FOREIGN KEY
        (type_id) references EXPENSE_TYPES
);
```

[참고] 법인카드 영수증 등록 Form – PK 자동 설정

PK 설정 방법

1. PK 직접 입력 : 직원정보 관리 Form
 2. PK 자동 설정 : 법인카드 영수증 등록 Form
 - (1) 법인카드 영수증 등록 Form에서 Insert문 수행 전에 Trigger 작동
 - (2) Trigger는 Sequence 객체를 시작시켜 일련 번호를 생성하는 프로세스 수행
 - (3) 생성된 일련번호가 PK로 자동 입력
- ** Sequence, Trigger 생성 필요 **



M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(1/11)

The screenshot shows the Oracle APEX dashboard. At the top, there is a navigation bar with links to APEX, App Builder, SQL Workshop, Team Development, App Gallery, a search icon, and a user profile for DE dev01. On the right side, there is an 'About' section with a brief description of Oracle APEX and a 'Learn More ...' link. Below that is a 'Dashboard' section with various metrics: 1 Application (highlighted with a red box), 8 Tables, 0 Productivity Apps, 0 Issues, and 0 Resources. There is also a 'Community Site' link. At the bottom left, a URL is displayed: <https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:1500:104959710011012::RP,1500,RIR::>.

M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(2/11)

The screenshot shows the Oracle APEX App Builder interface. At the top, there are navigation links: APEX, App Builder (with a dropdown), SQL Workshop, Team Development, and App Gallery. On the far right, there is a user icon and the text "DE dev01". Below the navigation, there are four main icons: Create (a grid with a plus sign), Import (a grid with an upward arrow), Dashboard (a grid with a clock), and Workspace Utilities (a grid with a wrench). To the right of these icons is a sidebar with sections for About, Recent, Tasks, and Migrations. The "Recent" section lists an application titled "100 슬기로운 익스펜스 생활". In the center, there is a search bar with a magnifying glass icon, a "Go" button, and a "Create >" button. Below the search bar, there is a list of recent items, with the first item, "100 슬기로운 익스펜스 생활", highlighted with a red box. A large blue box with the number "2" is overlaid on the left side of the screen, covering the search bar area.

https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:1:104959710011012::NO:RP:FB_FLOW_ID,F4000_P1_FLOW,P0_FLOWPAGE,RECENT_PAGES:100,100,100

Application Express 20.2.0.0.20

M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(3/11)

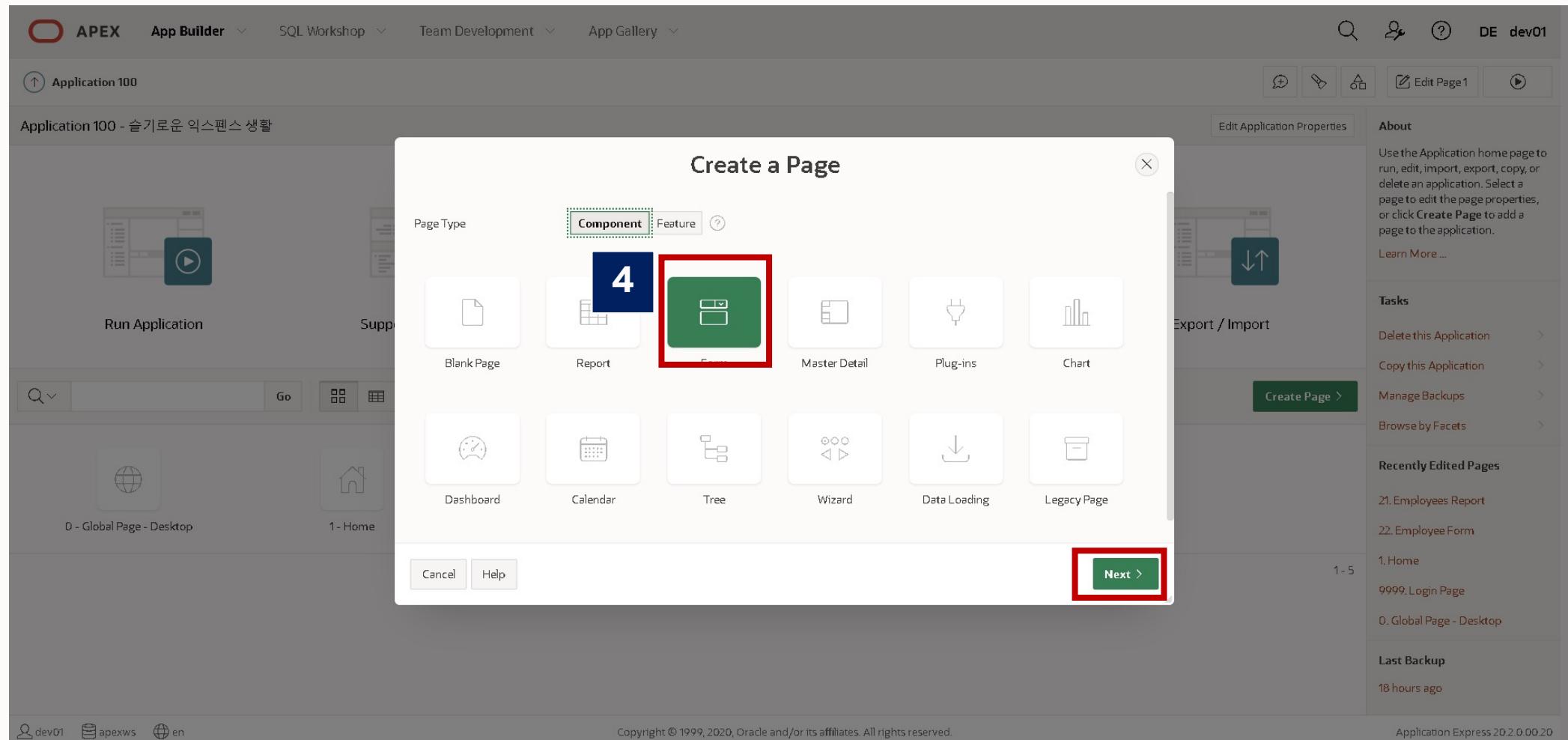
The screenshot shows the Oracle APEX App Builder interface. At the top, there are navigation links: APEX, App Builder (selected), SQL Workshop, Team Development, and App Gallery. On the right, there are user icons and the session identifier DE dev01.

The main area displays the application "Application 100 - 슬기로운 익스펜스 생활". Below the title, there are five main categories with icons: Run Application, Supporting Objects, Shared Components, Utilities, and Export / Import. In the Utilities section, there is a "Create Page" button, which is highlighted with a red box and the number 3 above it.

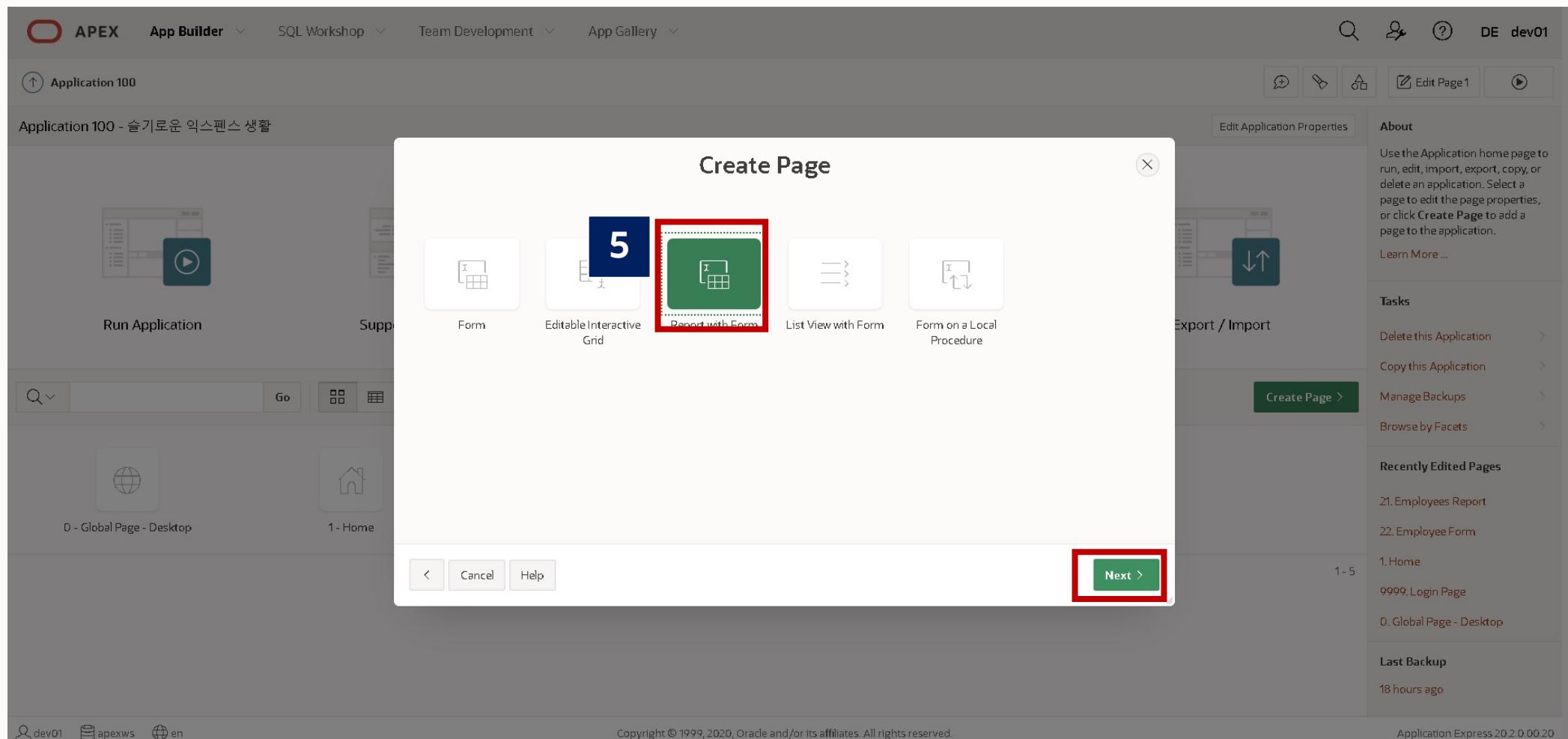
Below these categories, there is a search bar and a toolbar with icons for grid view, list view, and actions. Underneath the toolbar, there is a row of five small cards representing pages: 0 - Global Page - Desktop, 1 - Home, 21 - Employees Report, 22 - Employee Form, and 9999 - Login Page. To the right of these cards, there is a page navigation bar showing "1 - 5".

On the right side of the screen, there is a sidebar with sections for "About", "Tasks", "Recently Edited Pages", and "Last Backup". The "About" section contains instructions for running, editing, importing, exporting, copying, or deleting an application. The "Tasks" section lists options like Delete this Application, Copy this Application, Manage Backups, and Browse by Facets. The "Recently Edited Pages" section lists pages such as 21. Employees Report, 22. Employee Form, 1. Home, 9999. Login Page, and 0. Global Page - Desktop. The "Last Backup" section shows a backup from 18 hours ago.

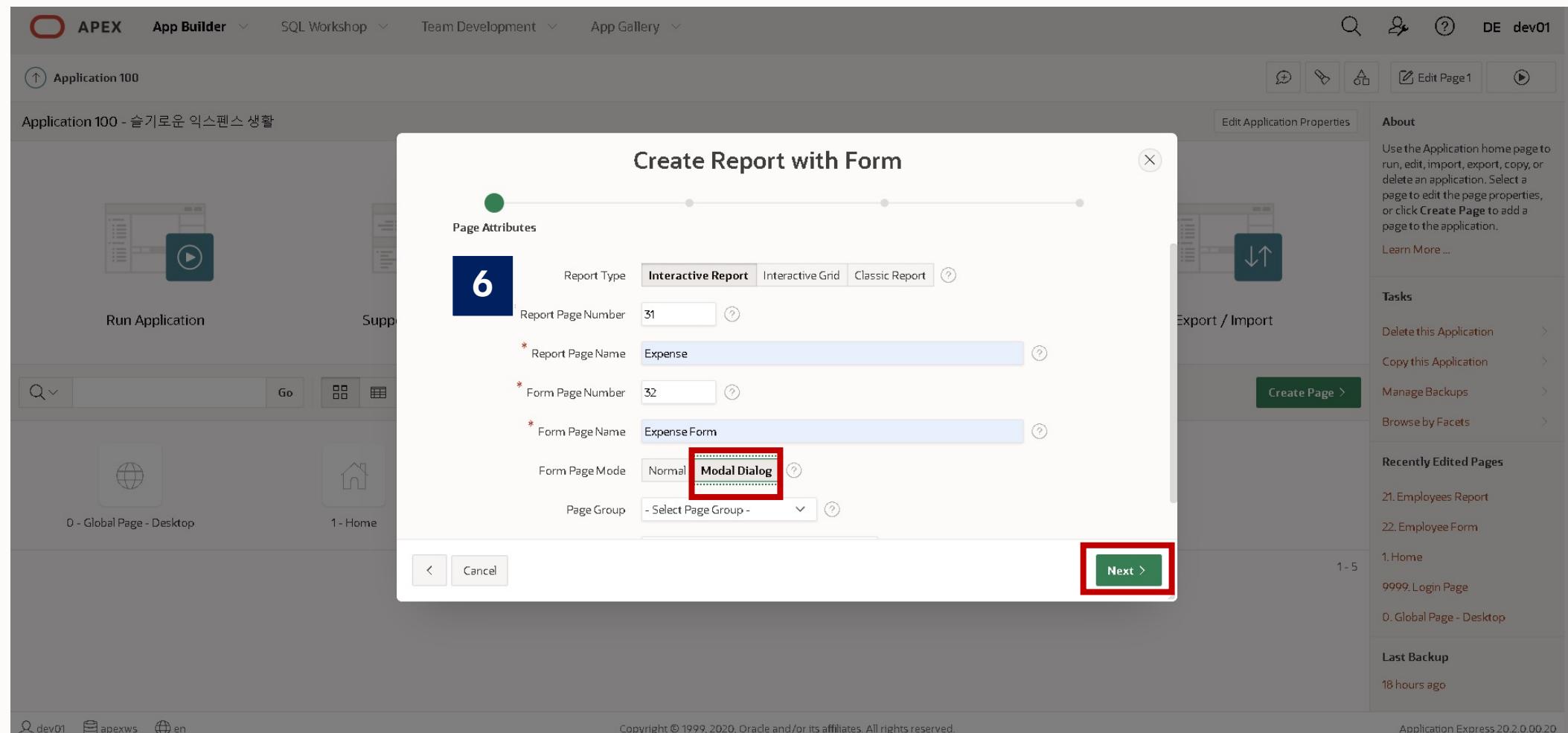
M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(4/11)



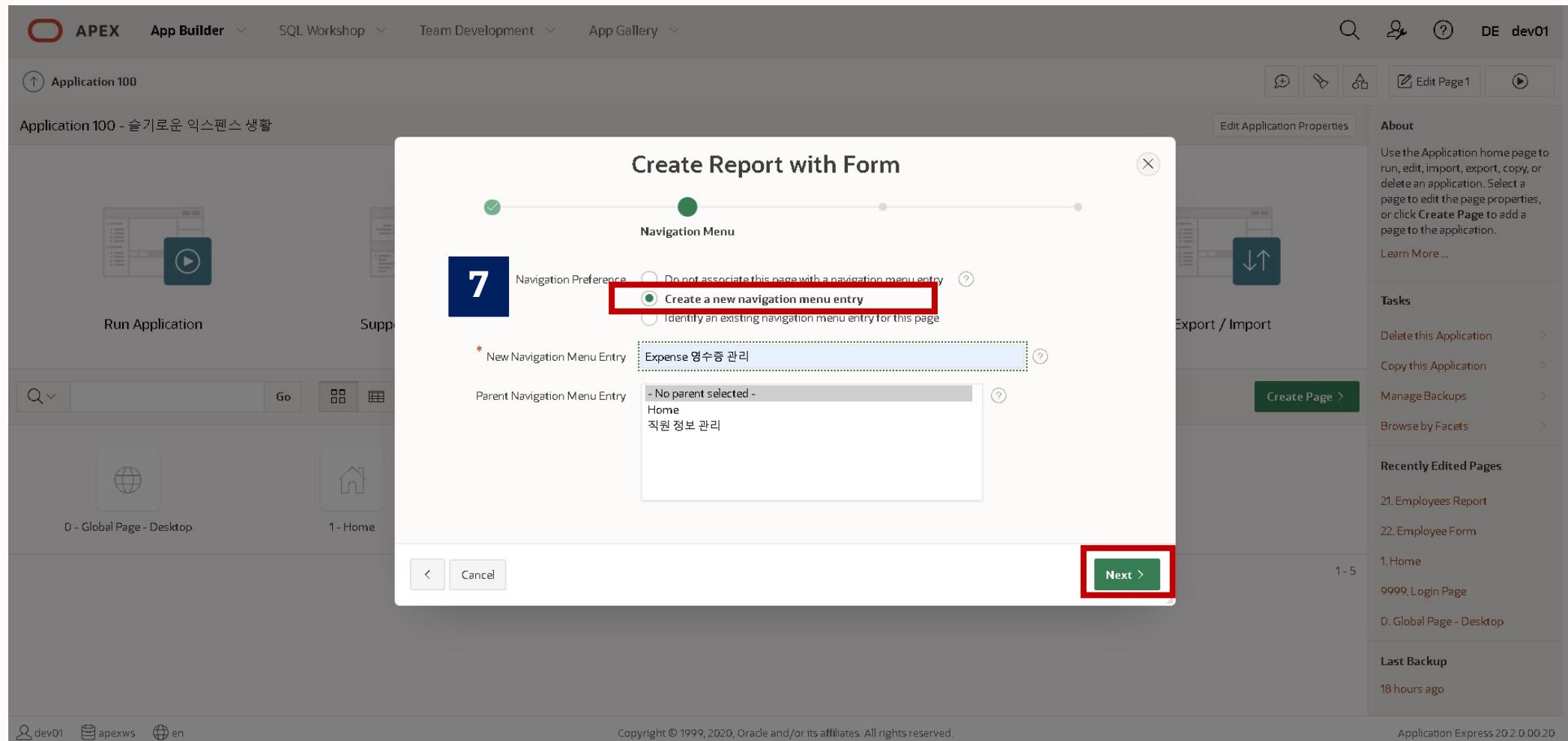
M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(5/11)



M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(6/11)



M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(7/11)



M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(8/11)

The screenshot shows the Oracle APEX application builder interface. A modal dialog titled "Data Source" is open, overlaid on the main application page. The main application page displays a navigation bar with "APEX", "App Builder", "SQL Workshop", "Team Development", "App Gallery", and user information "DE dev01". Below the bar, the application name "Application 100 - 슬기로운 익스펜스 생활" is visible, along with a "Run Application" button and a search bar.

The "Data Source" dialog contains the following fields:

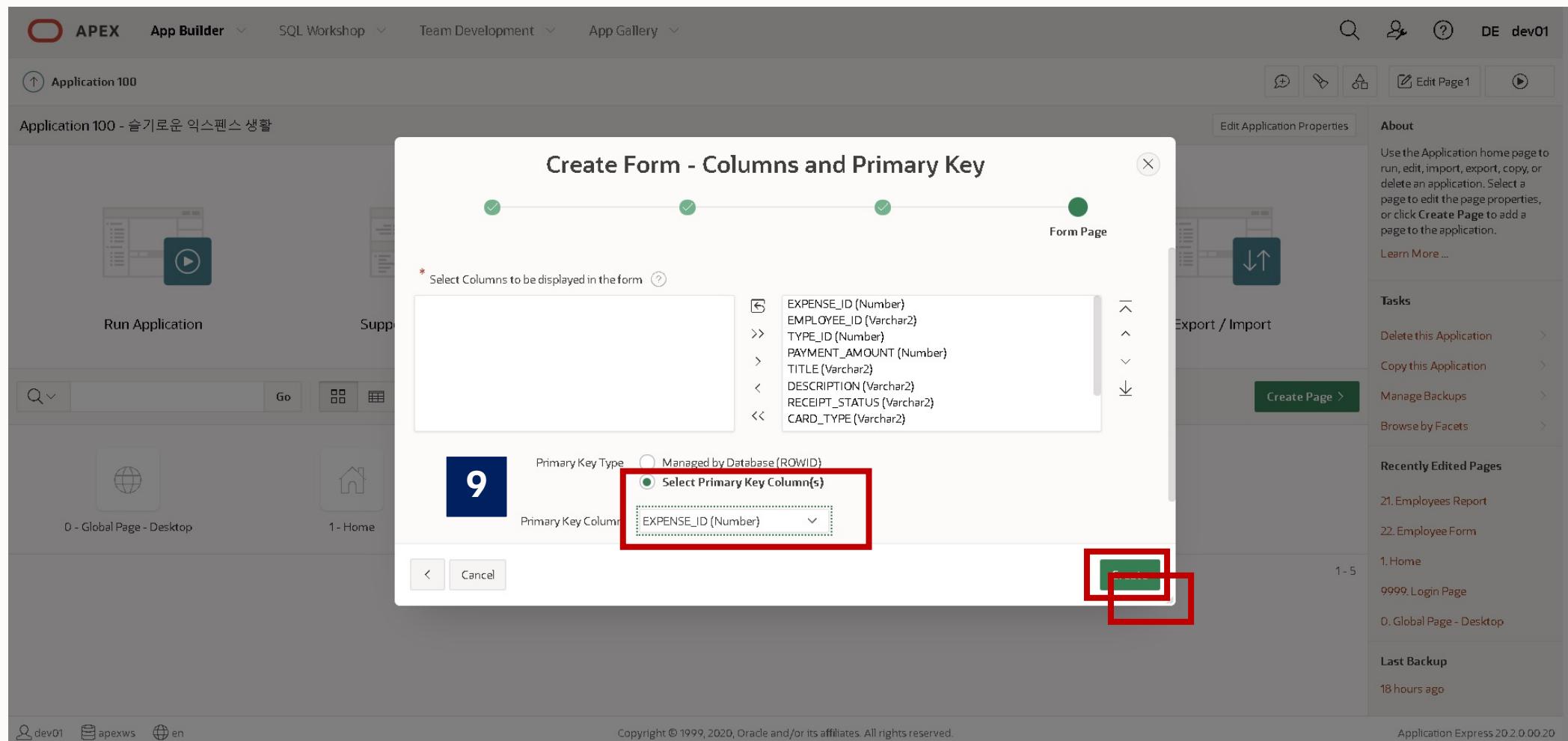
- Search input field (empty)
- Source Type dropdown: "Select Value" (highlighted with a red box)
- Table / View Owner dropdown: "EMPLOYEES (table)" (highlighted with a red box)
- Table / View Name dropdown: "EXPENSES (table)" (highlighted with a red box)
- Select Columns to be shown in the report (empty)

A large blue number "8" is overlaid on the left side of the dialog. At the bottom right of the dialog are "Next >" and "Cancel" buttons. The background of the application page shows various facets and a sidebar with tasks like "Delete this Application", "Copy this Application", and "Recently Edited Pages".

M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(9/11)

The screenshot shows the Oracle APEX application builder interface. A modal window titled "Data Source" is open, indicating the current step is "Data Source". The "Local Database" tab is selected. Under "Source Type", "Table" is chosen. The "Table / View Owner" dropdown is set to "APEXWS". The "Table / View Name" dropdown is set to "EXPENSES (table)". Below these fields, a list of columns is shown: EXPENSE_ID (Number), EMPLOYEE_ID (Varchar2), TYPE_ID (Number), PAYMENT_AMOUNT (Number), TITLE (Varchar2), and DESCRIPTION (Varchar2). A red box highlights the "Next >" button at the bottom right of the modal. The background shows the application's main menu and navigation bar.

M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(10/11)



M03.1-1. Interactive Report with Form 생성과 데이터 소스 연결(11/11)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The current application is Application 100, and the page being edited is Page Designer, specifically Page 31.

The main workspace displays a page titled "Expense". The page structure includes a PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and a CONTENT BODY section containing a "Report 1" region. This region has sections for PREVIOUS, ITEMS, REGION CONTENT, and SUB REGIONS. It also features a "CREATE" button and a "RIGHT OF INTERACTIVE REPORT SEARCH BAR" area with its own "CREATE" button.

The right side of the screen contains the "Page" settings panel, which is currently expanded to show the "Identification" section. Other collapsed sections include "Appearance", "Navigation Menu", and "Navigation". The "Identification" section contains the following fields:

- Name: Expense
- Page Alias: expense
- Title: Expense
- Page Group: - Select -

The "Appearance" section includes settings for User Interface (Desktop), Page Mode (Normal), Page Template (Theme Default), and Media Type. The "Navigation Menu" section has an "Override User Interface Level" toggle switch.

M03.1-2. PK 자동 설정 : Sequence 생성 (1/5)

The screenshot shows the Oracle APEX interface. The top navigation bar includes 'APEX' and 'App Builder' buttons, and the title 'SQL Workshop' with a dropdown menu. The dropdown menu is open, showing options: 'Object Browser', 'SQL Commands', 'SQL Scripts', 'Utilities', and 'RESTful Services'. The main workspace displays a page titled 'Page 31: Expense' in 'Page Designer' mode. The page structure is defined by regions: 'Content Body' containing 'Report 1', 'Region Buttons', and 'Post-Rendering' actions; 'Page Header'; 'Page Navigation'; 'Breadcrumb Bar'; 'Before Content Body'; 'Content Body' (containing 'Report 1'); 'Page Footer'; and 'Inline Dialogs'. On the right side, the 'Identification' section of the page properties is visible, showing fields: Name (Expense), Page Alias (expense), Title (Expense), and Page Group (- Select -). Below it, the 'Appearance' section shows User Interface (Desktop), Page Mode (Normal), Page Template (Theme Default), and other options like 'Use Template Defaults'. The bottom of the page shows the URL: <https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4500:1001:104959710011012::::>.

M03.1-2. PK 자동 설정 : Sequence 생성 (2/5)

The screenshot shows the Oracle Application Express (APEX) interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop (which is currently selected), Team Development, App Gallery, and various help icons. The Schema dropdown is set to APEXWS. On the left, the Object Browser displays a list of tables: EMPLOYEES, EXPENSES, EXPENSE_REPORTS, EXPENSE_REPORT_ITEMS, EXPENSE_TYPES, JOB_TYPES, TEAMS, and USER_TYPES. The main workspace is currently empty. On the right, a context menu is open over a blank area, listing options: Table, View, Index, Sequence (which is highlighted with a red box), Type, Package, Procedure, Function, Trigger, Materialized View, and SODA Collection. A large blue box with the number '2' is positioned to the right of the Sequence option. At the bottom of the screen, the footer displays the connection information (dev01, apexws, en), copyright notice (Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved.), the application version (Application Express 20.2.0.00.20), and the URL (https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4500:SEQUENCE_CREATE:104959710011...).

M03.1-2. PK 자동 설정 : Sequence 생성 (3/5)

3

Create Sequence

Define

Schema: APEXWS

* Sequence Name: Expense_SEQ

Preserve Case

Start With: 1

Minimum Value:

Maximum Value:

Increment By: 1

Cycle

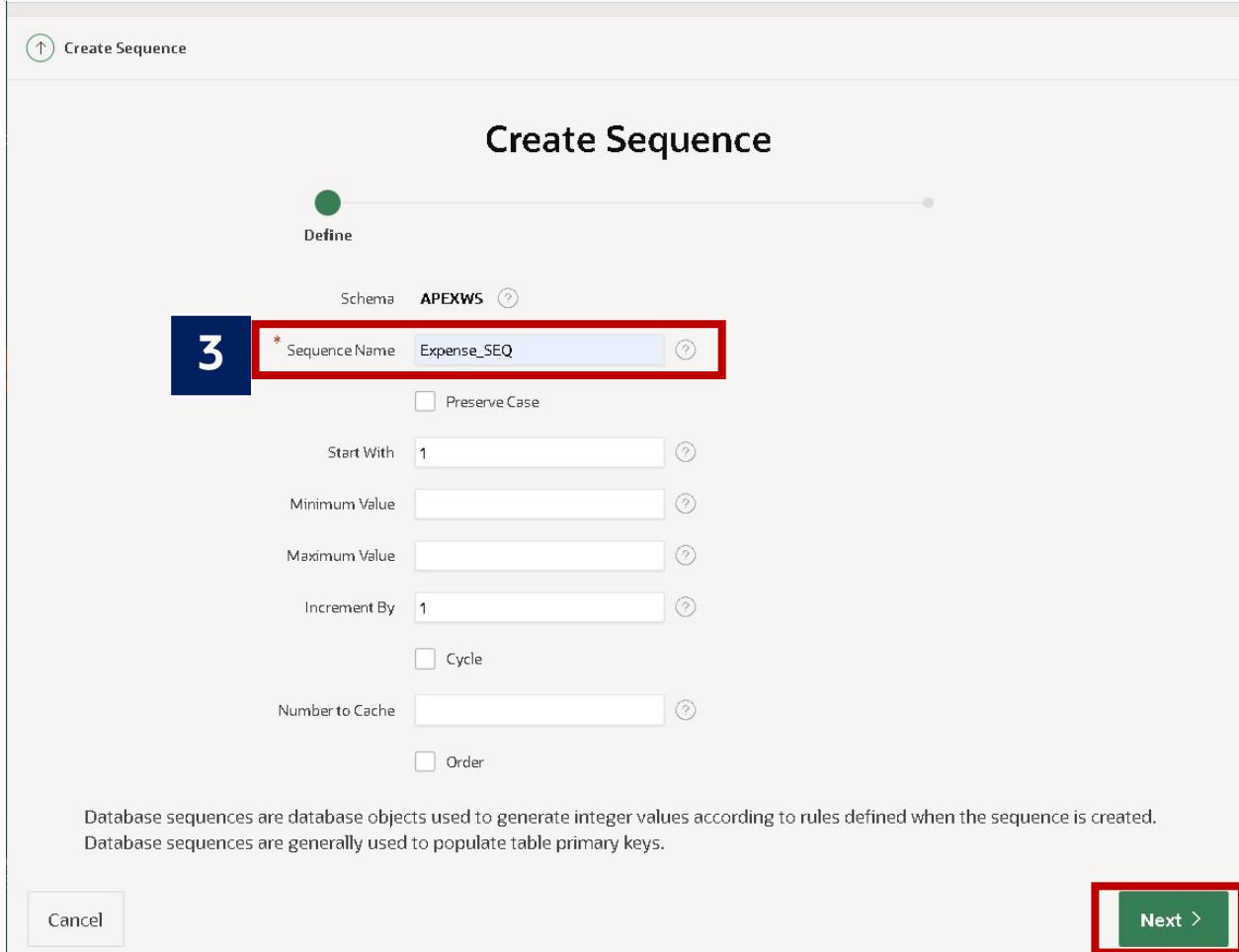
Number to Cache:

Order

Database sequences are database objects used to generate integer values according to rules defined when the sequence is created.
Database sequences are generally used to populate table primary keys.

Cancel

Next >



M03.1-2. PK 자동 설정 : Sequence 생성 (4/5)

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there are tabs for APEX, App Builder, SQL Workshop (which is selected), Team Development, and App Gallery. On the right, there are search, user, help, and connection information (DE dev01). Below the tabs, a button labeled 'Create Sequence' is visible.

The main area is titled 'Create Sequence'. It shows a progress bar with two green dots and the word 'Confirm' next to the second dot. Below the title, it says 'Schema: APEXWS' and 'Sequence Name: EXPENSE_SEQ'. A large text area contains the following SQL code:

```
create sequence "EXPENSE_SEQ"
start with 1
increment by 1
nocache
nocycle
noorder
/
```

A red box highlights the number '4' and the 'SQL' button. Another red box highlights the 'Create Sequence' button at the bottom right.

M03.1-2. PK 자동 설정 : Sequence 생성 (5/5)

The screenshot shows the Oracle Application Express (APEX) interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop (selected), Team Development, and App Gallery. On the right, there are search, user profile, help, and session information (Schema: APEXWS, DE: dev01).

The main area is the Object Browser, which displays sequences. A sequence named "EXPENSE_SEQ" is selected, highlighted with a green bar at the bottom of the list.

The "Object Details" tab is active, showing the following properties for the sequence:

| EXPENSE_SEQ | |
|--------------|----------------------------------|
| Min Value | 1 |
| Max Value | 99999999999999999999999999999999 |
| Increment By | 1 |
| Cycle Flag | N |
| Order Flag | N |
| Cache Size | 0 |
| Last Number | 1 |

Below the table, there is a large, empty text area for writing SQL code.

M03.1-2. PK 자동 설정 : Trigger 생성 (1/3)

The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop' (which is highlighted with a red box), 'Team Development', 'App Gallery', and user information 'DE dev01'. Below the navigation is a toolbar with icons for Object Browser, SQL Commands (highlighted with a red box and labeled '1'), SQL Scripts, Utilities, and RESTful Services. To the right, there's an 'About' section describing the SQL Workshop as a collection of tools for managing database objects, and a 'Schema' section for selecting a default database schema. A 'Create Object' sidebar lists various database object types like Table, View, Index, Sequence, Type, Package, Procedure, Function, Trigger, Materialized View, and SODA Collection. At the bottom, a URL is displayed: <https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4500:1003:104959710011012::::>.

M03.1-2. PK 자동 설정 : Trigger 생성 (2/3)

트리거 생성

- APEX Workspace > SQL workshop > SQL command
 - Expense 테이블의 Insert 문 수행 전에 작동하는 트리거

```
create or replace trigger "EXPENSES_T1"
BEFORE
insert on "EXPENSES"
for each row
begin
if :NEW."EXPENSE_ID" is null then
  select "EXPENSE_SEQ".nextval into :NEW."EXPENSE_ID" from sys.dual;
end if;
end;
```

The screenshot shows the Oracle APEX SQL Workshop interface. In the top navigation bar, 'APEX' is selected. Below it, the tabs 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery' are visible. On the right side of the top bar, there are icons for search, user profile, help, and a dropdown menu labeled 'DE'. The main area is titled 'SQL Commands'. The 'Language' dropdown is set to 'SQL'. The 'Schema' dropdown is set to 'APEXWS'. The 'Run' button is highlighted with a red box and the number '3'. A blue box with the number '2' points to the text 'SQL command 입력' which is enclosed in a red box. The SQL code in the editor is:

```
1  create or replace trigger "EXPENSES_T1"
2  BEFORE
3  insert on "EXPENSES"
4  for each row
5  begin
6    if :NEW."EXPENSE_ID" is null then
7      select "EXPENSE_SEQ".nextval into :NEW."EXPENSE_ID" from sys.dual;
8    end if;
9  end;
```

Below the editor, there are two results panes. The left pane has tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. It contains the placeholder text 'Enter SQL statement or PL/SQL command and click Run to see the results.' The right pane also has tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. It displays the output: 'Trigger created.' and '0.09 seconds'. At the bottom of the interface, there are links for 'dev01', 'apexws', and 'en'. The copyright notice 'Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved.' and the version 'Application Express 20.2.0.00.20' are at the bottom.

M03.1-2. PK 자동 설정 : Trigger 생성 (3/3)

The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop (which is selected and highlighted with a red box), Team Development, and App Gallery. The right side of the header shows a user icon, the role DE, and the schema dev01. Below the header, the Schema is set to APEXWS. The main workspace is titled "EXPENSES_T1". On the left, there's an "Object Browser" panel with a dropdown menu set to "Triggers" and a search bar. A large green button labeled "4" is overlaid on the browser. The central area displays the "Object Details" tab for the trigger, with tabs for Code, Errors, and SQL also visible. The trigger details are listed in a table:

| | |
|-------------------|--|
| Object Status | VALID |
| Trigger Status | ENABLED |
| Trigger Type | BEFORE EACH ROW |
| Triggering Event | INSERT |
| Base Object Type | TABLE |
| Base Object Owner | APEXWS |
| Base Object Name | EXPENSES |
| Column Name | - |
| Referencing Names | REFERENCING NEW AS NEW OLD AS OLD |
| When Clause | - |
| Description | "EXPENSES_T1" BEFORE insert on "EXPENSES" for each row |
| Action Type | PL/SQL |

At the bottom of the workspace, there are sections for "Columns" and footer links for dev01, apexws, and en. The footer also includes copyright information for Oracle and a link to Application Express 20.2.0.0.0.20.

M03.1-2. PK 자동 설정 : 확인 (1/6)

The screenshot shows the Oracle Application Express (APEX) App Builder interface. The top navigation bar includes tabs for App Builder (selected), SQL Workshop, Team Development, and App Gallery, along with user information (DE dev01). A red box labeled '1' highlights the 'App Builder' tab. Below the navigation is a toolbar with icons for Create, Import, Dashboard, and Workspace Utilities, and a search bar.

The main area displays a recent item titled "100 슬기로운 익스펜스 생활" (100 Productive Expense Life) with a rocket ship icon, which is highlighted by a red box labeled '2'. To the right of the dashboard are sections for About, Recent, Tasks, and Migrations, each containing links to various application components.

At the bottom, a URL bar shows the page address: https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:1:104959710011012::NO:RP:FB_FLOW_ID,F4000_P1_FLOW,P0_FLOWPAGE,RECENT_PAGES:100,100,100, and the footer indicates Application Express 20.2.0.0.0.20.

M03.1-2. PK 자동 설정 : 확인 (2/6)

The screenshot shows the Oracle APEX App Builder interface for Application 100. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with user information for DE dev01. The main content area displays various application components: Run Application, Supporting Objects, Shared Components, Utilities, and Export / Import. Below these are sections for Recently Edited Pages and Tasks. The central part of the screen shows a grid of application pages, each with a thumbnail icon and a number. A red box highlights the thumbnail for page 31 - Expense, which is labeled with a large blue '3'. Other visible pages include 0 - Global Page - Desktop, 1 - Home, 21 - Employees Report, 22 - Employee Form, 32 - Expense Form, and 9999 - Login Page. The bottom right corner features a large red button with a white 'O' icon.

Application 100 - 슬기로운 익스펜스 생활

Edit Application Properties

About

Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click Create Page to add a page to the application.

Learn More ...

Tasks

Delete this Application >

Copy this Application >

Manage Backups >

Browse by Facets >

Recently Edited Pages

32. Expense Form

31. Expense

21. Employees Report

22. Employee Form

1. Home

9999. Login Page

0. Global Page - Desktop

31 - Expense

32 - Expense Form

21 - Employees Report

22 - Employee Form

1 - Home

9999 - Login Page

0. Global Page - Desktop

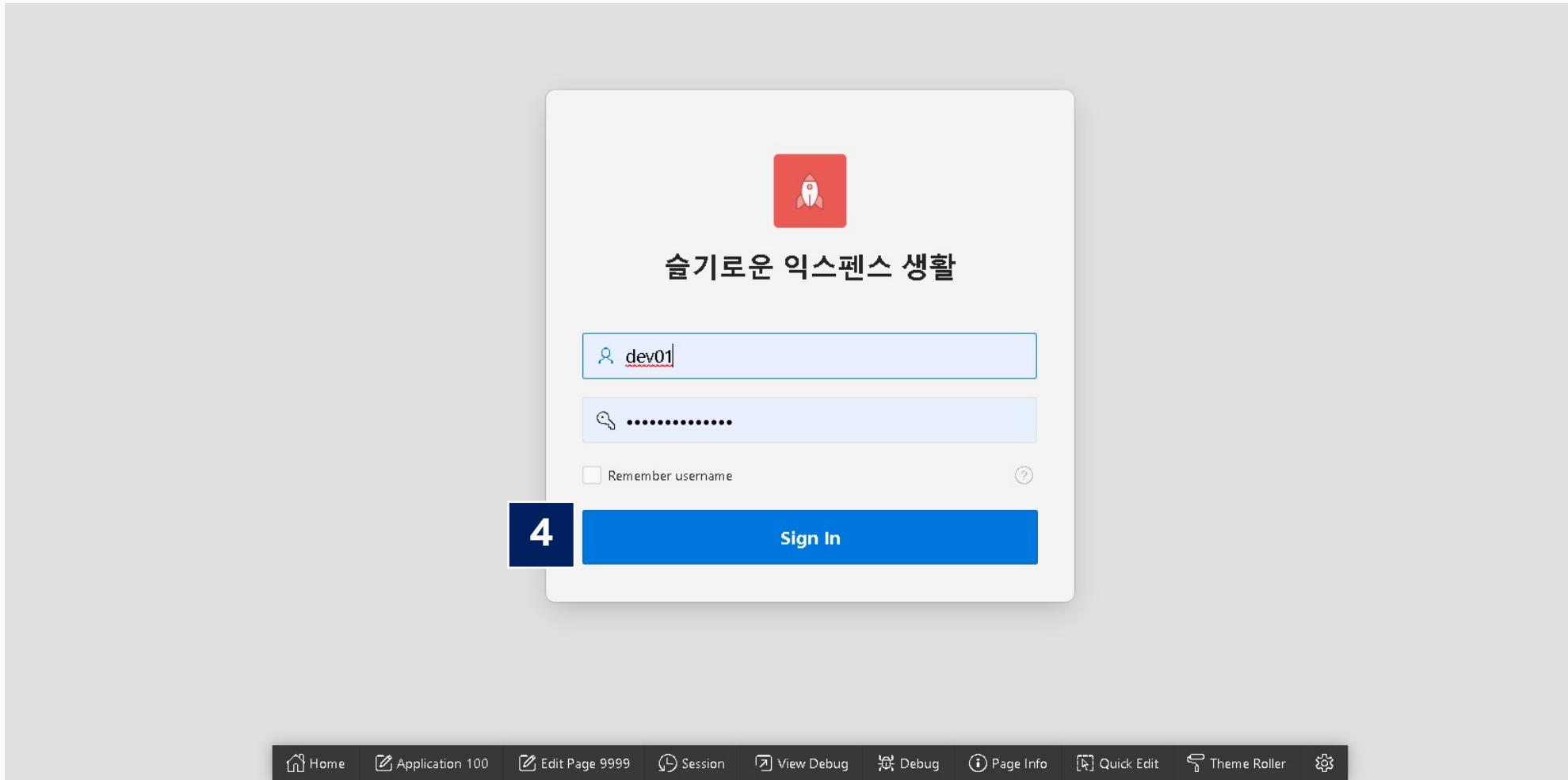
Last Backup

3

31 - Expense

1 - 7

M03.1-2. PK 자동 설정 : 확인 (3/6)



M03.1-2. PK 자동 설정 : 확인 (4/6)

☰ 슬기로운 익스펜스 생활

Actions ▾

5

Create

No data found.

Release 1.0

Home Application 100 Edit Page 31 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.1-2. PK 자동 설정 : 확인 (5/6)

Expense Form

Employee Id
flower

Type Id
1

Payment Amount
1

Title
1

Description
1

Receipt Status
1

Card Type
1

Receipt Pic
Choose File

Create

Release 1.0

Home Application 100 Edit Page 32 Session View Debug Debug Page Info Quick Edit Theme Roller

Form에 입력하면
Expense_ID (PK)가 자동
생성되고
Form 생성 가능

M03.1-2. PK 자동 설정 : 확인 (6/6)

| | Employee Id | Type Id | Payment Amount | Title | Description | Receipt Status | Card Type | Receipt Pic | Use Date | Cre Date |
|--|-------------|---------|----------------|-------|-------------|----------------|-----------|-------------|----------|----------|
| | flower | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 - 1 |

Form에 입력하면
Expense_ID (PK)가 자동
생성되고 → Form 생성
→ Report 생성 성공!

M03.1-3. 새로운 APEX 사용자 등록 (1/4)

The screenshot shows the Oracle APEX application builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The main dashboard displays sections for Top Apps, Top Users, and Messages. A red box highlights the 'Manage Users and Groups' link in the 'Administration' menu under the App Gallery sidebar.

Top Apps

| App Name | Count |
|--------------|-------|
| 슬기로운 익스펜스 생활 | 4 |

Top Users

| User Name | Count |
|-----------|-------|
| DE dev01 | 10 |

Messages

| Type | Count |
|-------------------|-------|
| Applications | 1 |
| Tables | 8 |
| Productivity Apps | 0 |
| Issues | 0 |

Administration

- Manage Service
- Manage Users and Groups** (highlighted with a red box)
- Monitor Activity
- Dashboards
- Change My Password

Sidebar

- 1 Application
- 8 Tables
- 0 Productivity Apps
- 0 Issues
- Resources
 - Community Site: apex.world
 - Blog
 - Hands-On Labs
 - Education
- Social
 - [Twitter](#)
 - [LinkedIn](#)
 - [Facebook](#)
 - [YouTube](#)

<https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4350:55:107525255312009::::>

M03.1-3. 새로운 APEX 사용자 등록 (2/4)

The screenshot shows the Oracle APEX 'Manage Users and Groups' page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The right side of the header shows a search icon, a user profile icon, a help icon, and the workspace name 'DE dev01'. The main content area has a title 'Manage Users and Groups' with a back arrow. Below it, there are tabs for 'Users' (selected), 'Groups', and 'Group Assignments'. A toolbar below the tabs includes a search icon, a 'Go' button, and icons for list view, grid view, and actions. To the right of the table, there is a sidebar titled 'Manage Users' with instructions for workspace administrators, application developers, and end users. It also lists 'Workspace administrators', 'Developers', and 'End users' with their respective descriptions. At the bottom of the sidebar is a 'Learn More ...' link. The main table displays user information with columns: User (sorted by ascending), Email, Account Type, Locked, Builder Last Login, and Created. Two rows are shown: 'APEXWS' (Workspace Administrator) and 'DEV01' (Workspace Administrator). A red box highlights the 'Create User >' button in the toolbar.

| User | Email | Account Type | Locked | Builder Last Login | Created |
|--------|----------------|-------------------------|--------|--------------------|------------|
| APEXWS | - | Workspace Administrator | No | 2 days ago | 2 days ago |
| DEV01 | demo@gmail.com | Workspace Administrator | No | 30 minutes ago | 2 days ago |

1 - 2

Manage Users
Use this page to control access for Application Express workspace administrators, application developers, and end users.

Workspace administrators can create and modify applications and database objects as well as manage user accounts, groups, and development services.

Developers can create and modify applications and database objects.

End users have no development privileges and can only access applications that do not use an external authentication scheme.

[Learn More ...](#)

Tasks

- [About Application Express >](#)
- [Monitor Activity >](#)
- [Manage Service >](#)
- [Manage User Groups >](#)
- [Create User >](#)
- [Create Multiple Users >](#)
- [Delete Multiple Users >](#)
- [Manage Interactive Report >](#)

M03.1-3. 새로운 APEX 사용자 등록 (3/4)

The screenshot shows the Oracle APEX 'Create User' interface. On the left, there's a sidebar with a large blue box containing the number '3'. The main form has tabs for 'User Identification', 'Account Privileges', and 'Group Assignments'. The 'Create User' button is highlighted with a red box. To the right is a table showing the created users:

| ID | MAIL | PW | Type |
|--------|----------------|----------------|-------|
| flower | demo@gmail.com | Welcome123456! | Admin |
| chuchu | demo@gmail.com | Welcome123456! | Admin |

A red callout box points from the user table to a text box containing the following message:

새로운 사용자(admin)
2명을 생성함.

M02. 직원 정보 관리
report에서 'ID: chuchu'
로 정보 입력 진행

On the 'Account Privileges' tab, several checkboxes are highlighted with red boxes: 'User developer', 'App Builder Access', 'DB_Veritshop Access', and 'Team Development Access'. In the 'Group Assignments' section, a checkbox for 'Multi-Client Developers' is also highlighted with a red box.

M03.1-3. 새로운 APEX 사용자 등록 (4/4)

The screenshot shows the Oracle APEX interface for managing users and groups. The top navigation bar includes links for App Builder, SQL Workshop, Team Development, and App Gallery. Below the navigation is a success message: "User created." with a green checkmark icon. The main content area has tabs for "Users" (selected), "Groups", and "Group Assignments". It features a search bar with a magnifying glass icon and a "Go" button, along with buttons for "Reset", "View Dashboard", "Create Multiple Users >", and a prominent green "Create User >" button. Below these controls is a table displaying user information:

| User | Email | Account Type | Locked | Builder Last Login | Created |
|--------|----------------|-------------------------|--------|--------------------|----------------|
| APEXWS | - | Workspace Administrator | No | 2 days ago | 2 days ago |
| CHUCHU | demo@gmail.com | Workspace Administrator | No | - | Now |
| DEV01 | demo@gmail.com | Workspace Administrator | No | 33 minutes ago | 2 days ago |
| FLOWER | demo@gmail.com | Workspace Administrator | No | - | 50 seconds ago |

Pagination at the bottom indicates "1 - 4".

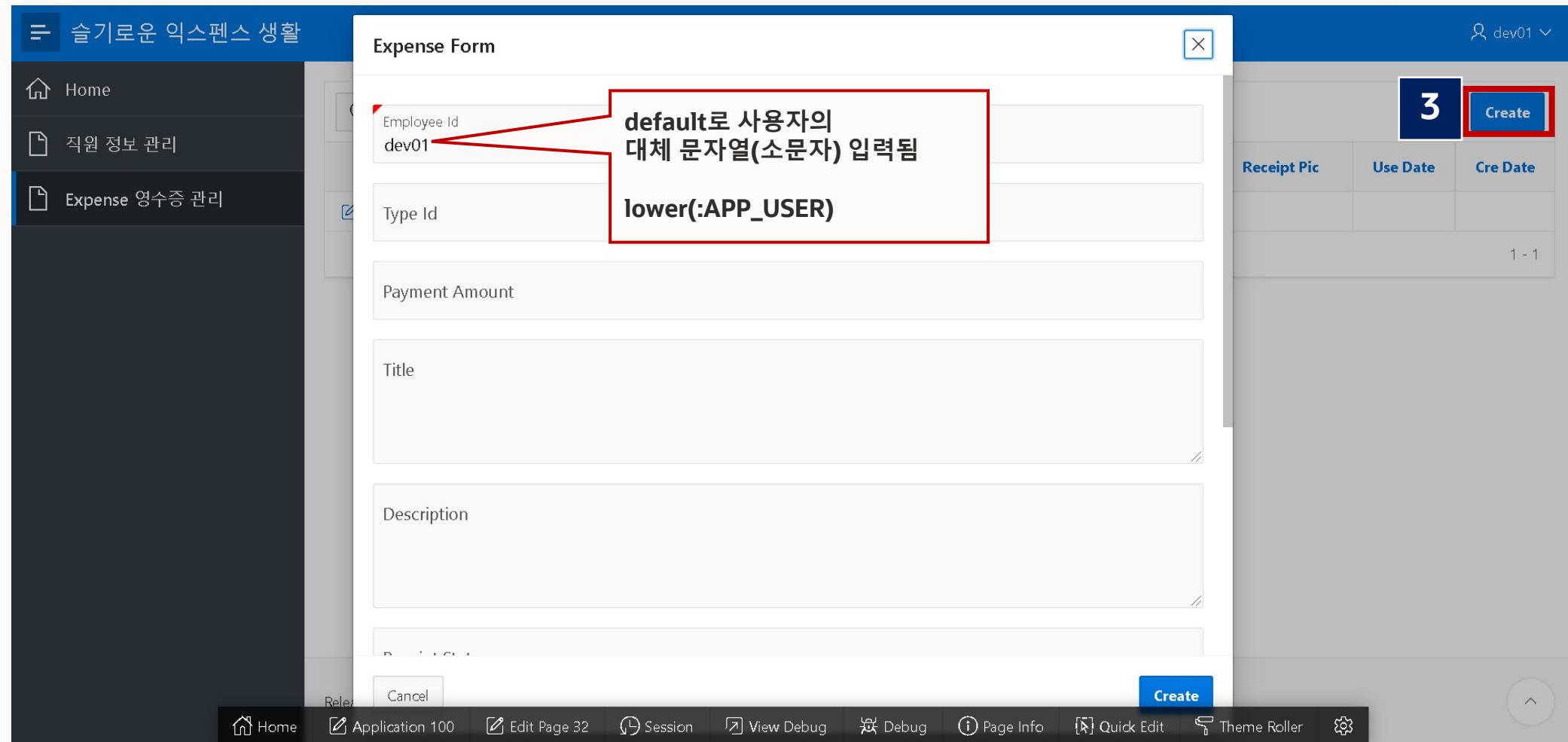
M03.1-4. 대체 문자열 설정 (1/2)

The screenshot shows the Oracle APEX App Builder interface. In the center, there's a preview of a page titled "Expense Form". On the left, the "Page Designer" sidebar shows a tree structure with "Regions" expanded, revealing "Content Body" and "Items". Under "Items", several input fields are listed, including "P32_EMPLOYEE_ID", "P32_TYPE_ID", "P32_PAYMENT_AMOUNT", "P32_TITLE", "P32_DESCRIPTION", "P32_RECEIPT_STATUS", "P32_CARD_TYPE", and "P32_RECEIPT_PIC". A red box labeled "1" highlights "P32_EMPLOYEE_ID". To the right, the "Source" panel is open for "P32_EMPLOYEE_ID". It shows the "Default" section with the expression "lower(:APP_USER)" highlighted by a red box. A red box labeled "2" points to this expression. At the top right, a success message box says "Changes saved. Dialog pages cannot be run directly from Page Designer. Review this page by running a page that launches this dialog." A red arrow points from this message to a "Save" button. Another red box contains the text "modal dialog는 32p : save → p31 : run 실행!".

로그인한 사용자가 p32 Form을 create를 클릭 후 생성할 때,
Employee_ID 칸에 default로 사용자 대체 문자열이 소문자가 들어가도록 설정
lower(:APP_USER)

modal dialog는 32p :
save → p31 : run 실행!

M03.1-4. 대체 문자열 설정 (2/2)



M03.1-5. 직원 정보 관리 Form 수정 - Hidden

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The page title is "Page Designer". The left sidebar lists various page items with icons: P32_EMPLOYEE_ID (text), P32_TYPE_ID (list), P32_PAYMENT_AMOUNT (text), P32_TITLE (text), P32_DESCRIPTION (text), P32_RECEIPT_STATUS (text), P32_CARD_TYPE (text), P32_RECEIPT_PIC (image), P32_USE_DATE (date), and P32_CRE_DATE (calendar). The item P32_CRE_DATE is highlighted with a red box. The central workspace shows a layout with a region titled "P32_USE_DATE" containing a date input field. Below it is a "DIALOG FOOTER" section with buttons for PREVIOUS, CLOSE, DELETE, CANCEL, and DELETE. At the bottom are buttons for CHANGE, EDIT, CREATE, SAVE, and CREATE. The right panel, titled "Page Item", displays the configuration for P32_CRE_DATE. Under the "Identification" section, the "Name" is P32_CRE_DATE and the "Type" is set to "Hidden" (highlighted with a red box). Under the "Default" section, the "Type" is set to "Expression" (highlighted with a red box), the "Language" is PL/SQL, and the "PL/SQL Expression" is sysdate.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

P32_USE_DATE

REGION CONTENT

SUB REGIONS

NEXT

DIALOG FOOTER

Buttons

PREVIOUS CLOSE DELETE

CANCEL DELETE

ITEMS

REGION CONTENT

SUB REGIONS

CHANGE EDIT CREATE

SAVE CREATE

Page Item

Filter

Identification

Name: P32_CRE_DATE

Type: Hidden

Default

Type: Expression

Language: PL/SQL

PL/SQL Expression: sysdate

M03.1-6. LOV 컴포넌트 생성, List of Values (1/18)

The screenshot shows the Oracle APEX App Builder interface. At the top, there is a navigation bar with links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side of the navigation bar are search, user profile, help, and DE buttons.

The main area displays the application properties for "Application 100 - 슬기로운 익스펜스 생활". Below the title, there are several icons representing different application components: Run Application, Supporting Objects, Shared Components (which is highlighted with a red box and a blue number '1' above it), Utilities, and Export / Import.

On the right side of the page, there is an "About" section with instructions on how to use the application home page to run, edit, import, export, copy, or delete an application. It also includes a "Create Page" button to add a new page to the application. Below the "About" section is a "Tasks" section with options like Delete this Application, Copy this Application, Manage Backups, and Browse by Facets. The "Recently Edited Pages" section lists pages such as 32. Expense Form, 31. Expense, 21. Employees Report, and 22. Employee Form.

At the bottom of the page, there is a URL: https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:9:1075255312009:::FB_FLOW_ID,FB_FLOW_PAGE_ID:100,32.

M03.1-6. LOV 컴포넌트 생성, List of Values (2/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The main content area is titled "Application 100 \ Shared Components".

The page is organized into four main sections:

- Application Logic:** Includes Application Definition Attributes, Application Items, Application Processes, Application Computations, Application Settings, Automations, and Build Options.
- Security:** Includes Security Attributes, Authentication Schemes, Authorization Schemes, Application Access Control, Session State Protection, and Web Credentials.
- Other Components:** Includes List of Values (highlighted with a red box and a large blue number 2), Plug-ins, Component Settings, Shortcuts, and Email Templates.
- About:** Describes shared components and provides links for Learn More, Export Application Components, Manage Supporting Objects, Edit Application Comment, and Developer Comments.

At the bottom of the page, there is a URL: <https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:4110:107525255312009::::>

M03.1-6. LOV 컴포넌트 생성, List of Values (3/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The current page is 'Application 100 \ Shared Components \ Lists of Values'. The main content area displays a table of existing lists of values, with a 'Create' button highlighted in red at the top right. A sidebar on the right provides information about the List of Values component and lists recently edited items.

| Name | Type | Updated | Entry Count | Subscribed From | Subscribers |
|-------------------------|--------|------------|-------------|-----------------|-------------|
| EMP TYPES | Local | 2 days ago | | | |
| GENDER TYPES | Static | 2 days ago | 2 | | |
| JOB TYPES | Local | 2 days ago | | | |
| LOGIN_REMEMBER_USERNAME | Static | 2 days ago | 1 | | |
| TEAMS | Local | 2 days ago | | | |

List of Values
A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source). [Learn More ...](#)

Recently Edited

- Gender Types
- Teams
- Emp Types
- Job Types
- Login Remember Username

M03.1-6. LOV 컴포넌트 생성, List of Values (4/18)

- EMPLOYEES

```
select employee_id r, emp_name || '(' || t.team_name||', '||t.team_full_name ||')' d  
from employees e, teams t  
where e.team_id = t.team_id
```

- Expense Types

```
select type_id as r, type_name as d from EXPENSE_TYPES  
order by 1
```

- Card Types

| Display | Return |
|---------|--------|
| 개인 카드 | Pc |
| 법인 카드 | Cc |

- Receipt Status

| Display | Return |
|---------|--------|
| 분실 | M |
| 보관 | K |

M03.1-6. LOV 컴포넌트 생성, List of Values (5/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are search, user profile, and help icons, along with a language switch for DE.

The main content area displays a modal dialog titled "Create List of Values". The dialog has a "Source" section with a green circular icon. Below it is a descriptive text: "A List of Values is a static or dynamic definition used to display a specific type of page item, such as popup lists of values, a select list, a check box, a radio group, or multiple select lists." There are two radio button options for creating the list: "From Scratch" (selected) and "As a Copy of an Existing List of Values".

On the right side of the dialog, there is a sidebar with the title "List of Values". It contains a detailed description of what a List of Values is, mentioning its uses and creation methods. Below the description are "Learn More ..." and "Recently Edited" sections, which list "Gender Types", "Teams", "Emp Types", "Job Types", and "Login Remember Username".

At the bottom of the dialog, there are "Cancel" and "Next >" buttons. The footer of the page includes copyright information: "Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved." and "Application Express 20.2.0.00.20". Navigation icons for dev01, apexws, and en are also present at the bottom left.

M03.1-6. LOV 컴포넌트 생성, List of Values (6/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The main content area is titled "Create List of Values". A progress bar at the top indicates the current step is "Name and Type". The main form fields include:

- * Name: Employees
- Type: Dynamic Static

A descriptive text below the form states: "Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source." To the right of the form is a sidebar titled "List of Values" which provides a brief overview and links to "Learn More ...". Below the sidebar, a "Recently Edited" section lists several items: Gender Types, Teams, Emp Types, Job Types, and Login Remember Username. The bottom of the screen displays standard APEX footer information: "Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved.", "Application Express 20.2.0.00.20", and user profile icons for dev01, apexws, and en.

M03.1-6. LOV 컴포넌트 생성, List of Values (7/18)

The screenshot shows the Oracle APEX App Builder interface with the title "Create List of Values". The wizard is at step 3, titled "List of Values Source".

Data Source: Local Database

*** Source Type:** SQL Query (selected)

*** Enter a SQL SELECT statement:**

```
1 select employee_id r, emp_name || '(' || t.team_name||', '||t.team_full_name || ')' d
2 from employees e, teams t
3 where e.team_id = t.team_id
4
```

Buttons: Back, Cancel, Next >

Right Panel: "List of Values" description, "Recently Edited" items (Gender Types, Teams, Emp Types, Job Types, Login Remember Username), and footer copyright information.

M03.1-6. LOV 컴포넌트 생성, List of Values (8/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are search, user profile, and help icons.

The main content area displays a modal dialog titled "Create List of Values". The dialog has four green checkmarks indicating completed steps. The first step, "Return Column", is set to "R". The second step, "Display Column", is set to "D" and is highlighted with a green dashed border. The third step, "Column Mappings", is shown as a green circle. The fourth step is partially visible on the right.

On the left, a sidebar lists various components: Application 100, Shared Components, Lists of Values (selected), Edit Null Text, and several type definitions like EMP TYPES, GENDER TYPES, JOB TYPES, and TEAM TYPES. Below these are LOGIN_REMEMBER_USERNAME and TEAMS.

The right sidebar contains a "List of Values" section with descriptive text about what it is and how it can be used. It also lists recently edited items: Gender Types, Teams, Emp Types, Job Types, and Login Remember Username.

At the bottom of the dialog, there are "Cancel" and "Create" buttons. The footer of the page includes copyright information for Oracle and the APEX version.

M03.1-6. LOV 컴포넌트 생성, List of Values (9/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and help icons. The main content area displays a modal dialog titled "Create List of Values". The dialog has a progress bar at the top with three steps: "Name and Type" (the current step, indicated by a green checkmark), "List of Values" (indicated by a green dot), and "Finish" (indicated by a grey dot). The "Name and Type" step contains instructions: "Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source." Below this, there are fields for "Name" (set to "Expense Types") and "Type" (set to "Dynamic"). The sidebar on the right shows a list of recently edited items: "List of Values", "Gender Types", "Teams", "Emp Types", "Job Types", and "Login Remember Username". The bottom of the screen shows user information (dev01, apexws, en) and copyright information (Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved.).

Create List of Values

Name and Type

Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source.

* Name: Expense Types

Type: Dynamic Static

Next >

Lists of Values

A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source).

Learn More ...

Recently Edited

- Gender Types
- Teams
- Emp Types
- Job Types
- Login Remember Username

1 - 6

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Application Express 20.2.0.0.20

M03.1-6. LOV 컴포넌트 생성, List of Values (10/18)

The screenshot shows the Oracle APEX App Builder interface with the 'App Builder' tab selected in the top navigation bar. The main content area displays the 'Create List of Values' wizard, which is the third step in a multi-step process. The title of the wizard is 'Create List of Values'. The current step is 'List of Values Source'. The 'Data Source' section is set to 'Local Database'. The 'Source Type' is selected as 'SQL Query'. The SQL query entered is:

```
1 select type_id as r, type_name as d from EXPENSE_TYPES
2 order by 1
3
```

The right sidebar contains a 'List of Values' section with a detailed description of what it is and how it can be used. It also lists recently edited items: 'Gender Types', 'Teams', 'Emp Types', 'Job Types', and 'Login Remember Username'. The bottom of the screen shows the footer with user information (dev01, apexws, en), copyright notice (Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved.), and application version (Application Express 20.2.0.00.20).

M03.1-6. LOV 컴포넌트 생성, List of Values (11/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are icons for search, user profile, help, and language selection (DE). The main content area displays a modal dialog titled "Create List of Values". The dialog has four green checkmarks indicating successful validation. It contains two dropdown menus: "Return Column" set to "R" and "Display Column" set to "D". To the right of the dialog, a sidebar titled "List of Values" provides a detailed description of what LOVs are and how they can be used. Below this, sections for "Recently Edited" components like "Gender Types", "Teams", "Emp Types", "Job Types", and "Login Remember Username" are listed. At the bottom of the dialog, there are "Cancel" and "Create" buttons. The footer of the page includes copyright information for Oracle and the Application Express version (20.2.0.00.20).

Create List of Values

Column Mappings

* Return Column: R

Display Column: D

List of Values

A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source).

Recently Edited

- Gender Types
- Teams
- Emp Types
- Job Types
- Login Remember Username

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Application Express 20.2.0.00.20

M03.1-6. LOV 컴포넌트 생성, List of Values (12/18)

The screenshot shows the Oracle Application Express (APEX) App Builder interface. A modal dialog titled "Create List of Values" is open in the center. The dialog has a "Source" section at the top, followed by a descriptive text: "A List of Values is a static or dynamic definition used to display a specific type of page item, such as popup lists of values, a select list, a check box, a radio group, or multiple select lists." Below this, there are two radio button options: "From Scratch" (selected) and "As a Copy of an Existing List of Values". At the bottom of the dialog are "Cancel" and "Next >" buttons. The background shows a list of existing "Lists of Values" on the left, including "EMP TYPES", "EMPLOYEES", "EXPENSE TYPES", "GENDER TYPES", "JOB TYPES", "LOGIN_REMEMBER_USERNAME", and "TEAMS". On the right, there's a sidebar with sections for "List of Values" (description), "Recently Edited" (Gender Types, Teams, Emp Types, Job Types, Login Remember Username), and footer links for "Copyright" and "Application Express 20.2.0.00.20".

APEX App Builder

SQL Workshop Team Development App Gallery

Application 100 Shared Components

Lists of Values Edit Null Text

Name ↑

EMP TYPES EMPLOYEES EXPENSE TYPES GENDER TYPES JOB TYPES LOGIN_REMEMBER_USERNAME TEAMS

Create List of Values

Source

A List of Values is a static or dynamic definition used to display a specific type of page item, such as popup lists of values, a select list, a check box, a radio group, or multiple select lists.

Create List of Values: From Scratch As a Copy of an Existing List of Values

Cancel Next >

List of Values

A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source).

Learn More ...

Recently Edited

Gender Types Teams Emp Types Job Types Login Remember Username

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Application Express 20.2.0.00.20

M03.1-6. LOV 컴포넌트 생성, List of Values (13/18)

The screenshot shows the Oracle Application Express (APEX) App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are search, user profile, help, and DE (Dark Edition) icons.

The main content area displays the "Create List of Values" dialog. The title bar says "Create List of Values". Below it, a progress bar shows the first step, "Name and Type".

The dialog contains the following fields:

- Name:** Card types
- Type:** Dynamic (unchecked) Static (checked)

A descriptive text below the fields states: "Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source."

At the bottom of the dialog are "Cancel" and "Next >" buttons. To the left of the dialog, a sidebar lists various shared components: EMP TYPES, EMPLOYEES, EXPENSE TYPES, GENDER TYPES, JOB TYPES, LOGIN_REMEMBER_USERNAME, and TEAMS. To the right of the dialog, a sidebar titled "List of Values" provides a detailed description of what LOVs are and how they can be used, along with a "Learn More ..." link and a "Recently Edited" section listing Gender Types, Teams, Emp Types, Job Types, and Login Remember Username.

The footer of the page includes copyright information: "Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved." and "Application Express 20.2.0.0.20". It also shows user session details: dev01, apexws, en.

M03.1-6. LOV 컴포넌트 생성, List of Values (14/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The main content area is titled "Create List of Values".

The dialog has four steps completed, indicated by green checkmarks. The current step is "Static Values".

The instructions in the dialog state: "Enter static display and return values. Values will display in the order entered. **Return Value** does not display, but is the value that is returned to the Application Express engine. If you do not specify a **Return Value** then it is equal to the **Display Value**. You can display additional attributes including build option controls and item level conditional display by editing the List of Values."

The "List of Values Name" is set to "CARD TYPES".

The table below lists the items:

| Sequence | Display Value | Return Value |
|----------|---------------|--------------|
| 1 | 개인 카드 | pc |
| 2 | 법인 카드 | cd |
| 3 | | |

At the bottom left are "Cancel" and "Create List of Values" buttons. The right side of the screen shows a sidebar with "List of Values" documentation and a "Recently Edited" section listing "Gender Types", "Teams", "Emp Types", "Job Types", and "Login Remember Username".

M03.1-6. LOV 컴포넌트 생성, List of Values (15/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The left sidebar lists various components like Application 100, Shared Components, Static List of Values created, Lists of Values, and several card types such as CARD TYPES, EMP TYPES, EMPLOYEES, EXPENSE TYPES, GENDER TYPES, JOB TYPES, LOGIN_REMEMBER_USERNAME, and TEAMS. The main content area displays a modal dialog titled "Create List of Values". The dialog has a "Source" section with a green circular icon. Below it is a descriptive text: "A List of Values is a static or dynamic definition used to display a specific type of page item, such as popup lists of values, a select list, a check box, a radio group, or multiple select lists." It offers two creation options: "From Scratch" (selected) and "As a Copy of an Existing List of Values". At the bottom of the dialog are "Cancel" and "Next >" buttons. To the right of the dialog, a sidebar provides information about Lists of Values, including a link to "Learn More ...", and a "Recently Edited" section listing Card Types, Expense Types, Employees, Gender Types, Teams, and Emp Types.

M03.1-6. LOV 컴포넌트 생성, List of Values (16/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The left sidebar lists various application components like CARD TYPES, EMP TYPES, EMPLOYEES, EXPENSE TYPES, GENDER TYPES, JOB TYPES, LOGIN_REMEMBER_USERNAME, and TEAMS. The main content area is titled "Create List of Values" and displays a success message: "Static List of Values created." Below this, it says "Name and Type". A description states: "Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source." The configuration section shows a name "Receipt status" and a type selection where "Static" is selected. The right sidebar contains a "List of Values" section with a detailed description and a "Learn More ..." link, followed by a "Recently Edited" section listing Card Types, Expense Types, Employees, Gender Types, Teams, and Emp Types.

Static List of Values created.

Create List of Values

Name and Type

Static lists are based on predefined pairs of display and return values. Dynamic lists are based on a dynamic data source of either Local Database, REST Enabled SQL or REST Data Source.

* Name: Receipt status

Type: Dynamic Static

Next >

List of Values

A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source).

Learn More ...

Recently Edited

- Card Types
- Expense Types
- Employees
- Gender Types
- Teams
- Emp Types

1 - 8

M03.1-6. LOV 컴포넌트 생성, List of Values (17/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the far right are search, user, help, and DE buttons.

The left sidebar lists various components: Application 100, Shared Components, Static List of Values created, Lists of Values (selected), Edit Null Text, CARD TYPES, EMP TYPES, EMPLOYEES, EXPENSE TYPES, GENDER TYPES, JOB TYPES, LOGIN_REMEMBER_USERNAME, and TEAMS.

The main content area is titled "Create List of Values". It has a progress bar with four steps: Static List of Values created, Static Values (current step), Static Display Value, and Static Return Value. A note states: "Enter static display and return values. Values will display in the order entered. **Return Value** does not display, but is the value that is returned to the Application Express engine. If you do not specify a **Return Value** then it is equal to the **Display Value**. You can display additional attributes including build option controls and item level conditional display by editing the List of Values." The "List of Values Name" is set to "RECEIPT STATUS". The table below contains three rows:

| Sequence | Display Value | Return Value |
|----------|---------------|--------------|
| 1 | 분실 | m |
| 2 | 보관 | k |
| 3 | | |

Buttons at the bottom include <, Cancel, and Create List of Values.

The right sidebar contains a "List of Values" section with a detailed description: "A List of Values can be referenced by page items as well as report fields. It controls the values displayed and limits the user's selection. Lists of Values can be static (based on values you enter), or dynamic (based on different data sources of either Local Database, REST Enabled SQL or REST Data Source)." It also includes "Learn More ...", "Recently Edited" (Card Types, Expense Types, Employees, Gender Types, Teams, Emp Types), and a footer with page numbers 1-8.

M03.1-6. LOV 컴포넌트 생성, List of Values (18/18)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The current page is 'Application 100 \ Shared Components \ Lists of Values'. A success message 'Static List of Values created.' is displayed. The main content area is titled 'List of Values' and contains a table listing various static lists. The table columns are: Name, Type, Updated, Entry Count, Subscribed From, and Subscribers. The rows listed are:

| Name | Type | Updated | Entry Count | Subscribed From | Subscribers |
|-------------------------|--------|-----------------|-------------|-----------------|-------------|
| CARD TYPES | Static | 54 seconds ago | 2 | | |
| EMP TYPES | Local | 2 days ago | | | |
| EMPLOYEES | Local | 3 minutes ago | | | |
| EXPENSE TYPES | Local | 117 seconds ago | | | |
| GENDER TYPES | Static | 2 days ago | 2 | | |
| JOB TYPES | Local | 2 days ago | | | |
| LOGIN_REMEMBER_USERNAME | Static | 2 days ago | 1 | | |
| RECEIPT STATUS | Static | Now | 2 | | |
| TEAMS | Local | 2 days ago | | | |

A sidebar on the right provides a summary of the List of Values component, stating it can be referenced by page items and report fields, controls values displayed and limits user selection, and can be static or dynamic. It also lists recently edited components: Receipt Status, Card Types, Expense Types, Employees, Gender Types, and Teams.

M03.1-7. Expense 영수증 관리 Form 수정 – LOV 적용 (1/6)

- **Page Item : List of Values 설정**

| Page Item | Identification Type | List of Values |
|--------------------|---------------------|-----------------------------------|
| P32_Employee_ID | Select List | Shared component / Employees |
| P32_Type_ID | Select List | Shared component / Expense Types |
| P32_Card_Type | Radio Group | Shared component / Card types |
| P32_Receipt_status | Radio Group | Shared component / Receipt status |

M03.1-7. Expense 영수증 관리 Form 수정 – LOV 적용 (2/6)

The screenshot shows the Oracle APEX App Builder interface for modifying a page item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and help icons. The current page is "Application 100 \ Page Designer".

The left sidebar displays the page structure: "Page 32: Expense Form" under "Pre-Rendering" and "Regions". The "Content Body" region contains an "Expense Form" item, which is expanded to show its items: P32_EXPENSE_ID, P32_EMPLOYEE_ID, P32_TYPE_ID, P32_PAYMENT_AMOUNT, P32_TITLE, P32_DESCRIPTION, P32_RECEIPT_STATUS, P32_CARD_TYPE, P32_RECEIPT_PIC, P32_USE_DATE, and P32_CRE_DATE. Item P32_EMPLOYEE_ID is highlighted with a red box and a blue number "1" above it.

The main workspace shows the "Expense Form" item with its properties. The "Page Item" section on the right shows the configuration for P32_EMPLOYEE_ID:

- Name:** P32_EMPLOYEE_ID
- Type:** Select List (highlighted with a red box)
- List of Values:** EMPLOYEES (highlighted with a red box)
- Display Extra Values:** Enabled (green switch)
- Display Null Value:** Enabled (green switch)

M03.1-7. Expense 영수증 관리 Form 수정 – LOV 적용 (3/6)

The screenshot shows the Oracle APEX App Builder interface for modifying a page item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user profile icons. The current workspace is Application 100 \ Page Designer.

The left sidebar displays the page structure: Page 32: Expense Form, Pre-Rendering, Regions (Dialog Header, Content Body), and Items (P32_EXPENSE_ID, P32_EMPLOYEE_ID, P32_TYPE_ID, P32_PAYMENT_AMOUNT, P32_TITLE, P32_DESCRIPTION, P32_RECEIPT_STATUS, P32_CARD_TYPE, P32_RECEIPT_PIC, P32_USE_DATE, P32_CRE_DATE). The item P32_TYPE_ID is highlighted with a red box and a blue number '2' indicating it is the focus of this step.

The central workspace shows the 'Expense Form' dialog header and content body. The 'ITEMS' section lists the page items, with P32_TYPE_ID currently selected and highlighted in green.

The right panel, titled 'Page Item', contains configuration details for P32_TYPE_ID:

- Name:** P32_TYPE_ID
- Type:** Select List (highlighted with a red box)
- Label:** (not expanded)
- Settings:** (not expanded)
- Layout:** (not expanded)
- Appearance:** (not expanded)
- Validation:** (not expanded)
- List of Values:** (expanded)
 - Type:** Shared Component
 - List of Values:** EXPENSE TYPES (highlighted with a red box)
 - Display Extra Values:** Enabled (green switch)
 - Display Null Value:** Enabled (green switch)

M03.1-7. Expense 영수증 관리 Form 수정 – LOV 적용 (4/6)

The screenshot shows the Oracle APEX App Builder interface for modifying a page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user profile icons. The page title is "Application 100 \ Page Designer".

The left sidebar displays the page structure under "Page 32: Expense Form". It shows the "Pre-Rendering" section and the "Regions" section, which contains the "Content Body" region. Within the Content Body region, there is a "Expense Form" item. The "Items" sub-section of this item is expanded, listing several input fields: P32_EXPENSE_ID, P32_EMPLOYEE_ID, P32_TYPE_ID, P32_PAYMENT_AMOUNT, P32_TITLE, P32_DESCRIPTION, P32_RECEIPT_STATUS, P32_CARD_TYPE, P32_RECEIPT_PIC, P32_USE_DATE, and P32_CRE_DATE.

A large blue number "3" is overlaid on the "P32_RECEIPT_STATUS" item in the list, indicating the current step or focus of the tutorial.

The right panel is the "Page Item" editor for the selected "P32_RECEIPT_STATUS" item. The "Identification" tab is active, showing the item's name as "P32_RECEIPT_STATUS" and its type as "Radio Group", both highlighted with red boxes. The "Settings" tab is also visible, showing settings like "Number of Columns" set to 2, "Page Action on Selection" set to "None", and a "List of values" section where "RECEIPT STATUS" is listed as a shared component. Two toggle switches in the "List of values" section are also highlighted with red boxes.

M03.1-7. Expense 영수증 관리 Form 수정 – LOV 적용 (5/6)

The screenshot shows the Oracle APEX App Builder interface for modifying a page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and user information (DE dev01). The main area displays 'Application 100 \ Page Designer' for 'Page 32: Expense Form'. On the left, the 'Regions' section is expanded, showing the 'Content Body' region which contains an 'Expense Form' item. This item has its own 'Items' section where several input fields are listed. One specific item, 'P32_CARD_TYPE', is highlighted with a red box and a large blue number '4' indicating it is the current focus. In the center, the 'Expense Form' item is shown with its various fields. On the right, the 'Page Item' settings panel is open for 'P32_CARD_TYPE'. The 'Type' dropdown is set to 'Radio Group' (highlighted with a red box). The 'Settings' tab is active, showing options like 'Number of Columns' (set to 2), 'Page Action on Selection' (None), and 'List of Values' (set to 'CARD TYPES'). Below these, there are checkboxes for 'Display Extra Values' and 'Display Null Value', both of which are checked (highlighted with red boxes). The bottom right corner of the slide features a red square with a white circle icon.

중간 결과물 - LOV 적용 (6/6)

▪ Employee_ID

Expense Form

Employee Id
dev01

김준완 (PDS, 소아과)
안정원 (OB&GY, 산부인과)
이익준 (OB&GY, 산부인과)
장겨울 (NS, 신경외과)
채승화 (EM, 응급의학과)

dev01

Description

Select list

Receipt Status
 분실 보관

Card Type

Cancel Create

Application 100 Edit Page 32 Session View Debug Debug Page Info Quick Edit The

▪ Type_ID

Expense Form

Employee Id
dev01

Type Id

대중교통비
중식
석식
음료/다과
세마나
도서구입
소모품

Receipt Status
 분실 보관

Card Type

Cancel Create

Application 100 Edit Page 32 Session View Debug Debug Page Info Quick Edit The

▪ Card_Type, Receipt_Status

Expense Form

type id

Payment Amount

Title

Description

Receipt Status
 분실 보관

Card Type
 개인 카드 법인 카드

Receipt Pic
Choose File

Cancel Create

Application 100 Edit Page 32 Session View Debug Debug Page Info Quick Edit The

M03.1-7. Expense 영수증 관리 Form 수정 - 한글화

The screenshot shows the Oracle APEX App Builder interface. In the top navigation bar, 'APEX' is selected. Below it, 'Application 100 \ Page Designer' is shown. The main area displays 'Page 32: Expense Form'. On the left, a tree view shows regions like 'Regions', 'Content Body', and 'Expense Form' which contains items such as 'P32_EMPLOYEE_ID', 'P32_TYPE_ID', etc. On the right, the 'Identification' section of the 'Expense Form' is detailed. The 'Name' field is 'P32_EMPLOYEE_ID', 'Type' is 'Select List', and the 'Label' field is '사용자' (User), which is highlighted with a red box. Other sections visible include 'Settings', 'Layout', 'Appearance', and 'Validation'.

Page 32: Expense Form

Regions

Content Body

Expense Form

Items

- P32_EMPLOYEE_ID
- P32_TYPE_ID
- P32_PAYMENT_AMOUNT
- P32_TITLE
- P32_DESCRIPTION
- P32_RECEIPT_STATUS
- P32_CARD_TYPE
- P32_RECEIPT_PIC
- P32_USE_DATE
- P32_CRE_DATE

Identification

Name: P32_EMPLOYEE_ID

Type: Select List

Label: 사용자

Settings

Page Action on Selection: None

Allow Multi Selection: Off

Layout

Appearance

Validation

| Page Item | Label |
|--------------------|--------|
| P32_Employee_ID | 사용자 |
| P32_Type_ID | 비용 유형 |
| P32_Payment_Amount | 결재금액 |
| P32_Title | 제목 |
| P32_Description | 설명 |
| P32_Receipt_Status | 영수증 상태 |
| P32_card_type | 카드 유형 |
| P32_receipt_pic | 영수증 등록 |
| P32_receipt_pic2 | 영수증 사진 |
| P32_use_date | 사용일 |

M03.1-7. Expense 영수증 관리 Form 수정 – Display Image

The screenshot displays two side-by-side configuration panels for Oracle ADF Faces components.

Left Panel (Original Item):

- Identification:**
 - Name: P32_RECEIPT_PIC
 - Type: File Browse... (highlighted by a red box)
 - Label: 영수증 등록
- Settings:**
 - Display As: Inline File Browse
 - Dropzone Title: (empty)
 - Storage Type: BLOB column specified in Item Source attribute (highlighted by a red box)
 - MIME Type Column: (empty)
 - Filename Column: (empty)
 - Character Set Column: (empty)

Center Panel (Modified Item):

- Identification:**
 - Name: P32_RECEIPT_PIC_1
 - Type: Display Image (highlighted by a red box)
 - Label: 영수증 사진

A red callout box points from the P32_RECEIPT_PIC_1 item to the text "Receipt_PIC을 duplicate함".

M03.1-7. Expense 영수증 관리 Form 수정 – Text field

The screenshot illustrates the modification of an 'Expense Form' in Oracle ADF. On the left, the 'Expense Form' window shows several fields: '비용 유형' (Expense Type), '결재금액' (Approval Amount), '제목' (Subject), '설명' (Description), '영수증 상태' (Receipt Status) with radio buttons for '분실' (Lost) and '보관' (Preserved), '카드 유형' (Card Type) with radio buttons for '개인 카드' (Personal Card) and '법인 카드' (Corporate Card), and '영수증 등록' (Receipt Registration). Below these is a 'Create' button. On the right, two 'Identification' dialog boxes show the configuration for fields 'P32_TITLE' and 'P32_DESCRIPTION'. For 'P32_TITLE', the 'Name' is 'P32_TITLE' and the 'Type' is 'Text Field'. For 'P32_DESCRIPTION', the 'Name' is 'P32_DESCRIPTION' and the 'Type' is 'Rich Text Editor'. Red callout boxes with arrows point from the 'Text Area' in the form to the 'Text Field' and 'Rich Text Editor' types in the dialogs, indicating the conversion process.

Expense Form

비용 유형

결재금액

제목

설명

영수증 상태
 분실 보관

카드 유형
 개인 카드 법인 카드

영수증 등록

Create

Text Area → Text Field로 변경

Text Area → Rich text editor로 변경(HTML 입력 가능)

Identification

Name: P32_TITLE

Type: Text Field

Identification

Name: P32_DESCRIPTION

Type: Rich Text Editor

중간 결과물

Expense Form

사용자 dev01

비용 유형

결재금액

제목

설명

Paragraph ▼ B I U S ② :: :: “” █ v ↔ ↔

영수증 상태

분실 보관

카드 유형

개인 카드 법인 카드

영수증 등록

Choose File [파일선택]

영수증 사진
사용일 [날짜선택]

Cancel Create

M03.1-7. Expense 영수증 관리 Form 수정 – Layout 변경(1/3)

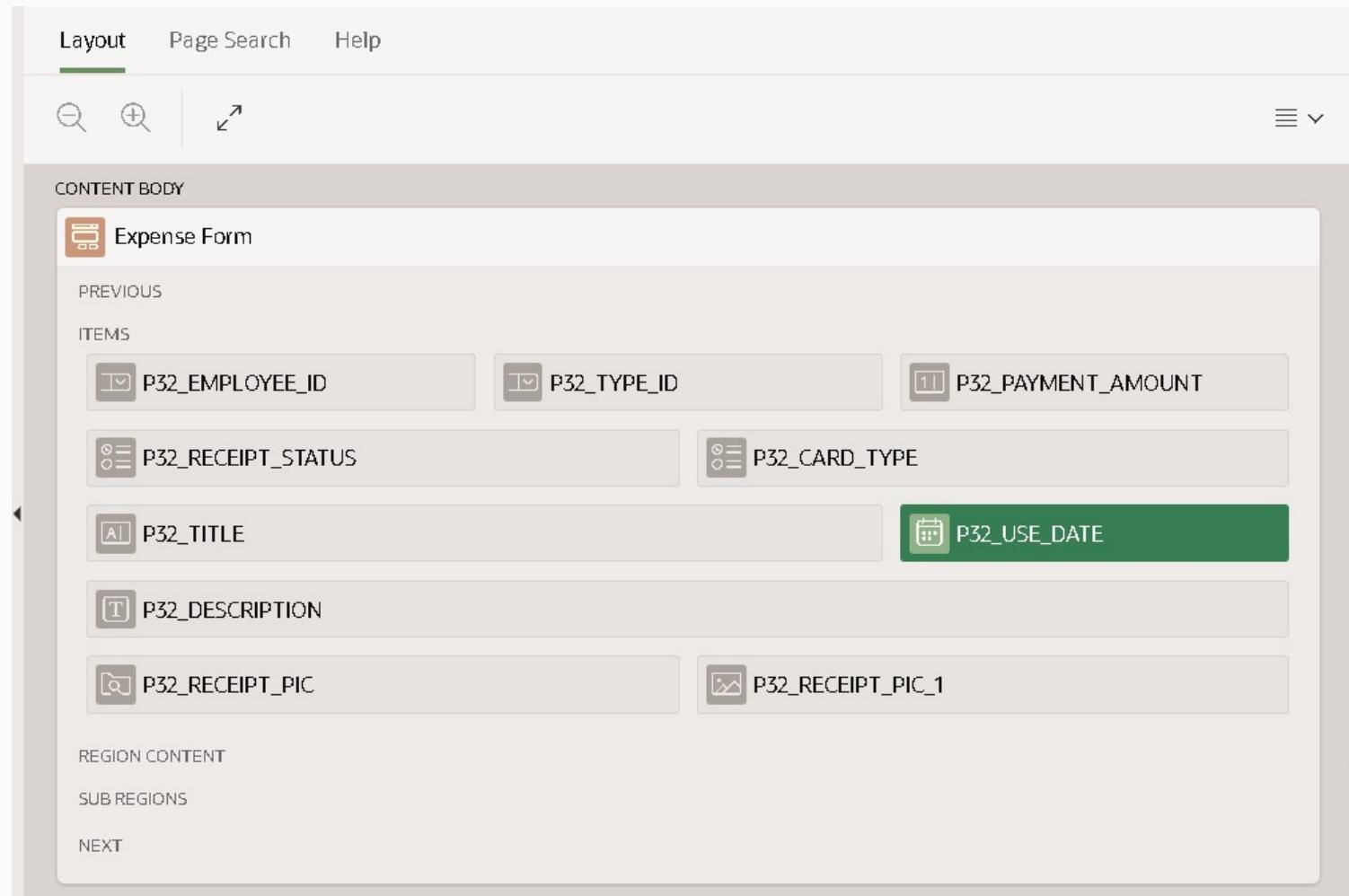
The screenshot shows the Oracle APEX App Builder Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user profile icons. The page title is "Application 100 \ Page Designer".

The left sidebar displays the page structure under "Page 32: Expense Form". It shows regions like "Pre-Rendering", "Regions" (including "Dialog Header" and "Content Body"), and "Items" (a list of form fields). The "P32_TYPE_ID" item is currently selected and highlighted with a green border.

The central workspace shows the "Expense Form" layout. It contains sections for "DIALOG HEADER" and "CONTENT BODY". The "CONTENT BODY" section displays the form fields: "P32_EMPLOYEE_ID", "P32_PAYMENT_AMOUNT", "P32_TITLE", "P32_DESCRIPTION", "P32_RECEIPT_STATUS", "P32_CARD_TYPE", "P32_RECEIPT_PIC", "P32_RECEIPT_PIC_1", "P32_USE_DATE", and "P32_CRF_DATE". The "P32_TYPE_ID" field is also visible here, positioned next to "P32_PAYMENT_AMOUNT".

The right panel, titled "Page Item", provides detailed settings for the selected "P32_TYPE_ID" item. The "Identification" section shows "Name: P32_TYPE_ID" and "Type: Select List". The "Label" section is collapsed. The "Settings" section is expanded, showing "Sequence: 30", "Region: Expense Form", and a toggle switch for "Start New Row" which is currently turned off (indicated by a red box). Other settings include "Column: Automatic", "New Column: On", "Column Span: Automatic", and "Column CSS Classes".

M03.1-7. Expense 영수증 관리 Form 수정 – Layout 변경(2/3)



M03.1-7. Expense 영수증 관리 Form 수정 – Layout 변경(3/3)

The screenshot shows the Oracle APEX App Builder interface in the 'Page Designer' mode for 'Page 32: Expense Form'. The 'Layout' tab is active. In the 'Page Item' panel, the 'Layout' section is highlighted with a red box. A red callout box points to the 'Column Span' dropdown, which is set to 4. The text in the callout box reads: 'Column 12칸 중에서 9칸 부터 시작해서 4칸(span)을 차지하도록 변경'.

Page Item

Layout

Sequence: 80
Region: Expense Form
Start New Row: Off
Column: 9
Column Span: 4
Column CSS Classes
Column Attributes

Column 12칸 중에서 9칸 부터 시작해서 4칸(span)을 차지하도록 변경

M03.1-7. Expense 영수증 관리 Form 수정 – Read only

Expense Form

사용자 dev01

비용 유형 결재금액

영수증 상태

분실 보관

카드 유형

개인 카드 법인 카드

제목 사용일

설명

Paragraph **B** *I* U ~~S~~ “ ” ↻ ↺

영수증 등록

Choose File

영수증 사진

Cancel Create

사용자 : employee_ID (dev01) 자동입력 된 후
변경되지 않도록 Read only= always 설정

Identification

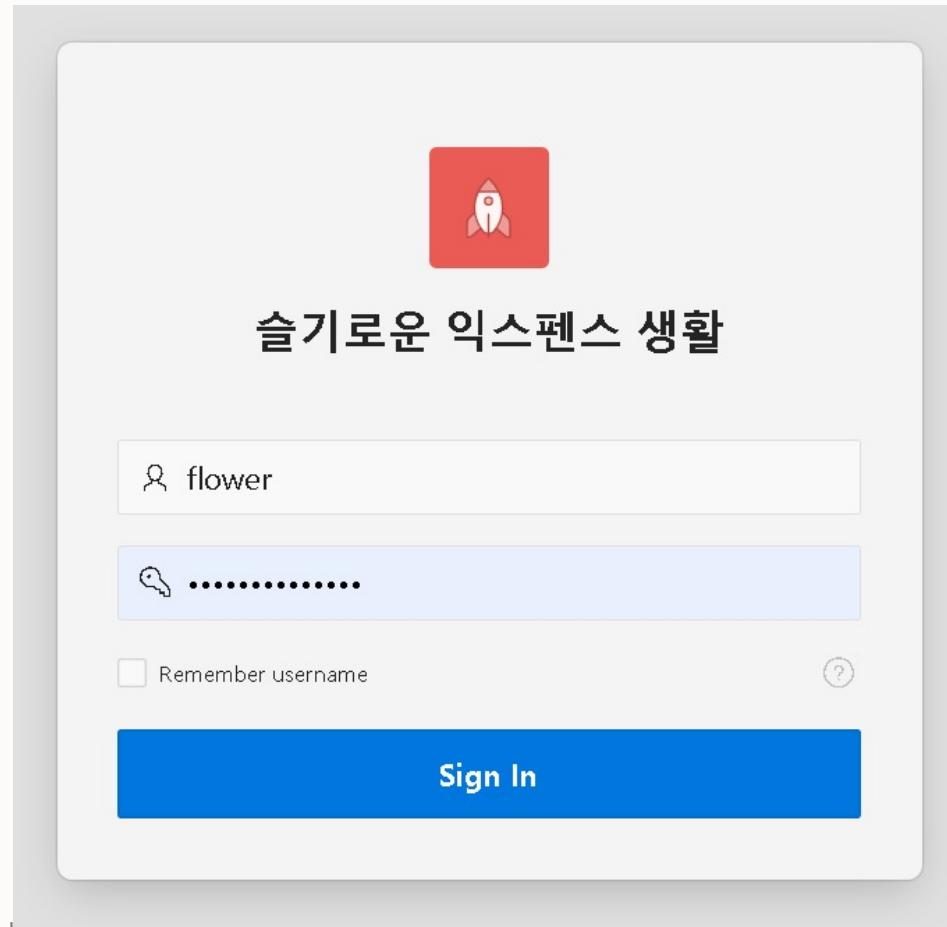
Name: P32_EMPLOYEE_ID

Type: Select List

Read Only

Type: Always

로그인 - flower



M03.1-7. Expense 영수증 관리 Form 수정 – CSS 등록

The image shows two versions of an "Expense Form" side-by-side, separated by a large blue arrow pointing from left to right.

Left Version: The receipt image is very blurry and low-quality, appearing as a dark, textured rectangle. A red box highlights this area, and text below it reads "Form 입력하면 사진 크기가 너무 큼" (The photo size is too large when inputting the form).

Right Version: The receipt image is clear and sharp, showing a detailed view of the document. A red box highlights this area, indicating the improvement in image quality.

Both versions of the form include fields for:

- 사용자: 채송화 (EM, 응급의학과)
- 비용 유형: 대중교통비
- 결제금액: 13000
- 영수증 상태: 분실 (radio button)
- 카드 유형: 개인 카드 (radio button)
- 제목: 대중교통비
- 사용일: 8/3/2021
- 설명: Choose heading (dropdown) and rich text editor containing the text "• 야근 후 택시비".
- 영수증 등록: Choose File and Download button.

At the bottom of each form are "Cancel" and "Delete" buttons, and a prominent "Apply Changes" button.

M03.1-7. Expense 영수증 관리 Form 수정 – CSS 등록

The screenshot shows the Oracle APEX App Builder interface. On the left, a sidebar lists the page structure with a red box around the 'Page 32: Expense Form' item. The main area displays the 'Expense Form' page design, which includes a header, content body, and various input fields. On the right, the 'Page' panel is open, showing the 'CSS' section. A red box highlights the 'Inline' CSS block, which contains the following code:

```
img {  
width: 200px;  
height: 300px;  
}
```

M03.1-7. Expense 영수증 관리 Form 수정 – Format mask

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The application is titled "Application 100 \ Page Designer". The left sidebar lists various page items, including P32_EMPLOYEE_ID, P32_TYPE_ID, P32_PAYMENT_AMOUNT, P32_RECEIPT_STATUS, P32_CARD_TYPE, P32_TITLE, P32_USE_DATE, P32_DESCRIPTION, P32_RECEIPT_PIC, P32_RECEIPT_PIC_1, and P32_CRE_DATE. The P32_USE_DATE item is highlighted with a red box and a blue number "1" indicating it is the current focus. The main content area displays a "Expense Form" dialog with fields for P32_EMPLOYEE_ID, P32_TYPE_ID, P32_PAYMENT_AMOUNT, P32_RECEIPT_STATUS, P32_CARD_TYPE, P32_TITLE, P32_DESCRIPTION, P32_RECEIPT_PIC, and P32_RECEIPT_PIC_1. The P32_USE_DATE field is also visible in the dialog. The right sidebar contains the "Page Item" configuration panel, which includes sections for Identification, Label, Settings, Layout, Appearance, and Validation. The "Format Mask" field is set to "YYYY-MM-DD" and is also highlighted with a red box. Other settings include "Width: 32 characters" and "Value Placeholder: ". The status bar at the bottom right shows the Oracle logo.

OCI Always Free – ATP (19C)

APEX Version: 20.2

2021.08.14



Low-code Dev

실습 참조 페이지

<https://bit.ly/3mtDGAH>



APEX

ADB

OCI

Oracle APEX - Beginner Workshop

Politics - 37% (1,549)

1.5K
1.2K
0.9K
0.6K
0.3K
0.0K

877
477
211
142
100
81
80
77

1,356

M03. 영수증 관리: 2. 법인카드 영수증 등록 – Interactive Report

United States

United Kingdom

France (395)

Germany (301)

Italy (230)

Nero
37 - 68

Politics

APEX

Karl Marx
1818 - 1883

OCI

Science and Technology

Marco Polo
1254 - 1324

Low-Code
Arts

M03.2-1. Expense 영수증 관리 Form 입력 (1/5)

The screenshot shows a web-based application interface for managing expense receipts. On the left, a sidebar menu includes 'Home', '직원 정보 관리', and 'Expense 영수증 관리'. A red box highlights the 'Expense 영수증 관리' item, with a red arrow pointing to the main content area. The main content area is titled 'Expense Form'. It contains fields for '사용자' (User) set to '채송화 (EM, 응급의학과)', '비용 유형' (Expense Type) set to '세미나', and '결재금액' (Approval Amount) set to '70000'. Below these are sections for '영수증 상태' (Receipt Status) with '분실' (Lost) and '보관' (In Storage) options, and '카드 유형' (Card Type) with '개인 카드' (Personal Card) and '법인 카드' (Corporate Card) options. The '제목' (Subject) field is filled with '세미나'. The '사용일' (Usage Date) is set to '2021-09-13'. A rich text editor toolbar is present below the subject field. The '설명' (Description) section contains the bullet point '• 세미나 지원'. At the bottom of the form, there are 'Choose heading' dropdown, bold/italic/underline/justify buttons, and a preview of a receipt document. The receipt document has Korean text: '영수증 고객님', '영수증 번호: 0000-0000-0000-0000', and '상호: 제이비티'. Navigation buttons 'Cancel' and 'Delete' are at the bottom left, and 'Apply Changes' is at the bottom right. The bottom navigation bar includes links for 'Home', 'Application 100', 'Edit Page 32', 'Session', 'View Debug', 'Debug', 'Page Info', 'Quick Edit', 'Theme Roller', and a help icon. To the right of the form, a list of expense records is displayed in a table with columns 'Card Type', 'Receipt Pic', 'Use Date', and 'Cre Date'. The table shows five entries, all with 'Download' under 'Receipt Pic' and dates from '8/3/2021' to '9/13/2021'. A 'Create' button is located at the top right of the table.

M03.2-1. Expense 영수증 관리 Form 입력 (2/5)

슬기로운 익스펜스 생활

flower

Home

직원 정보 관리

Expense 영수증 관리

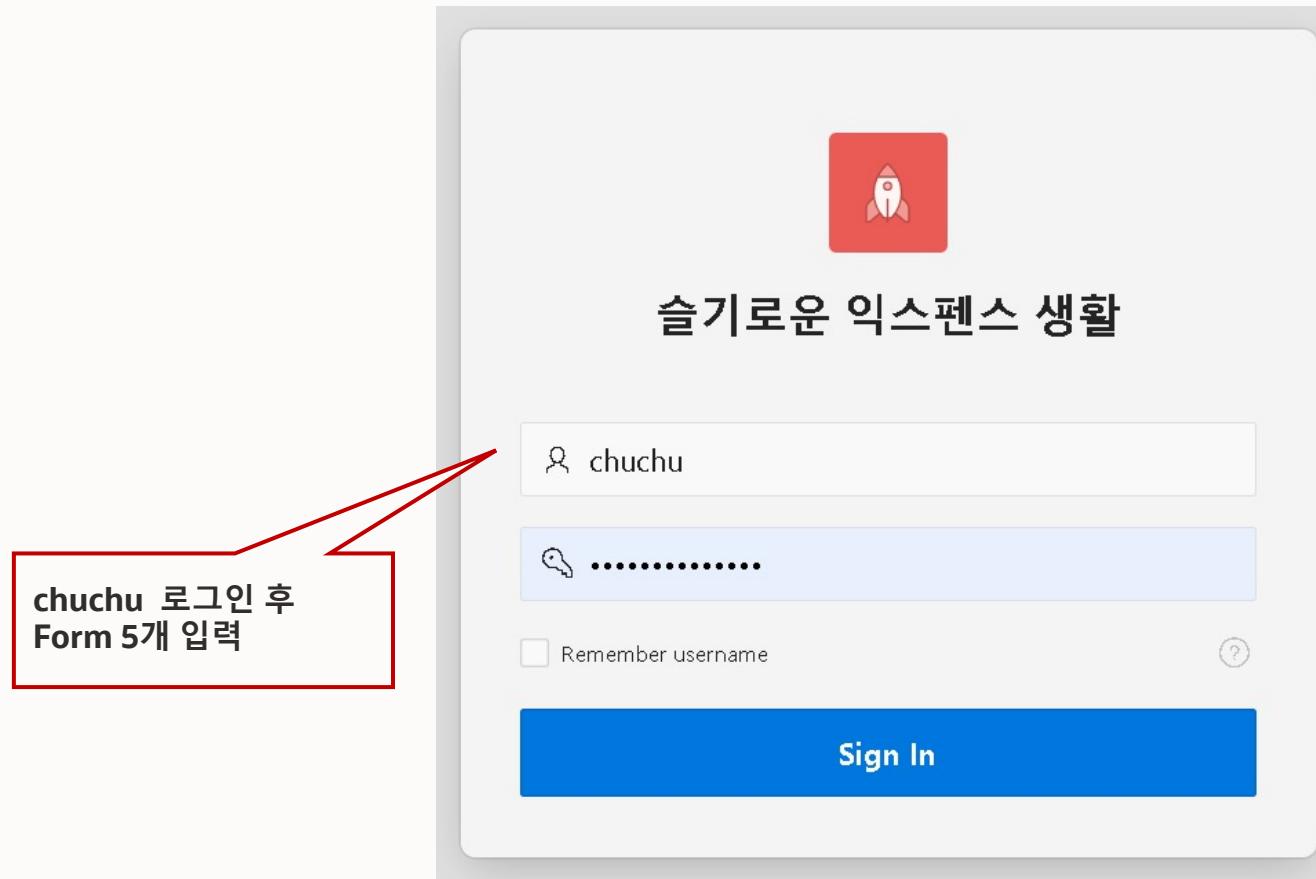
| | Employee Id | Type Id | Payment Amount | Title | Description | Receipt Status | Card Type | Receipt Pic | Use Date | Cre Date |
|--|-------------|---------|----------------|-------|----------------------------|----------------|-----------|-------------|-----------|----------|
| | flower | 1 | 13000 | 대중교통비 | 야근 후 택시비 | k | cc | Download | 8/3/2021 | 9/1/2021 |
| | flower | 2 | 23000 | 중식 | 점심 회의 식사 | k | cc | Download | 8/8/2021 | 9/1/2021 |
| | flower | 3 | 50000 | 석식 | 회의 후 석식 | k | cc | Download | 8/15/2021 | 9/1/2021 |
| | flower | 4 | 15000 | 음료/다과 | 회의 음료 다과 | k | cc | Download | 8/17/2021 | 9/1/2021 |
| | flower | 5 | 70000 | 세미나 | 세미나 지원 | k | cc | Download | 9/13/2021 | 9/1/2021 |

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Release 1.0

Home Application 100 Edit Page 31 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.2-1. Expense 영수증 관리 Form 입력 (3/5)



M03.2-1. Expense 영수증 관리 Form 입력 (4/5)

The screenshot shows a web-based application interface for managing expense receipts. On the left, a sidebar menu includes 'Home', '직원 정보 관리', and 'Expense 영수증 관리'. A red box highlights the 'Expense 영수증 관리' option, with a red arrow pointing to the main content area. The main area displays the 'Expense Form' dialog and a list of receipts.

Expense Form Dialog:

- 사용자:** 추민하 (NS, 신경외과)
- 비용 유형:** 도서구입
- 결재금액:** 20000
- 영수증 상태:** 보관 (selected)
- 카드 유형:** 법인 카드 (selected)
- 제목:** 도서구입
- 사용일:** 2021-08-10
- 설명:** 도서구입
- File Input:** 영수증 등록 (Choose File, Download button)
- Image Preview:** A thumbnail of a receipt document titled '영수증 (고객)' and '영수증 사진'.

Receipt List:

| Card Type | Receipt Pic | Use Date | Cre Date |
|-----------|-------------|-----------|----------|
| c | Download | 8/3/2021 | 9/1/2021 |
| c | Download | 8/10/2021 | 9/1/2021 |
| c | Download | 8/8/2021 | 9/1/2021 |
| c | Download | 8/15/2021 | 9/1/2021 |
| c | Download | 8/17/2021 | 9/1/2021 |
| c | Download | 9/13/2021 | 9/1/2021 |

Page Footer:

- Release 1.0
- Cancel, Delete buttons
- Apply Changes button
- Navigation icons: Home, Application 100, Edit Page 32, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller

M03.2-1. Expense 영수증 관리 Form 입력 (5/5)

☰ 슬기로운 익스펜스 생활

🔍 chuchu

Home

직원 정보 관리

Expense 영수증 관리

| | Employee Id | Type Id | Payment Amount | Title | Description | Receipt Status | Card Type | Receipt Pic | Use Date | Cre Date |
|--|-------------|---------|----------------|--------|---------------------------------|----------------|-----------|-------------|-----------|----------|
| | chuchu | 2 | 15000 | 중식 | 호의 비 | k | cc | Download | 8/10/2021 | 9/1/2021 |
| | chuchu | 7 | 70000 | 소모품 구매 | 소모품 구매 | k | cc | Download | 8/25/2021 | 9/1/2021 |
| | chuchu | 1 | 25000 | 대중교통비 | 야근 후 택시비 | k | cc | Download | 8/16/2021 | 9/1/2021 |
| | chuchu | 5 | 25000 | 세미나 | 제주도 학회 세미나 비용 | k | cc | Download | 8/18/2021 | 9/1/2021 |
| | flower | 1 | 13000 | 대중교통비 | 야근 후 택시비 | k | cc | Download | 8/3/2021 | 9/1/2021 |
| | chuchu | 6 | 20000 | 도서구입 | 도서구입 | k | cc | Download | 8/10/2021 | 9/1/2021 |
| | flower | 2 | 23000 | 중식 | 점심 회의 식사 | k | cc | Download | 8/8/2021 | 9/1/2021 |
| | flower | 3 | 50000 | 석식 | 호의 후 석식 | k | cc | Download | 8/15/2021 | 9/1/2021 |
| | flower | 4 | 15000 | 음료/다과 | 호의 음료 다과 | k | cc | Download | 8/17/2021 | 9/1/2021 |
| | flower | 5 | 70000 | 세미나 | 세미나 지원 | k | cc | Download | 9/13/2021 | 9/1/2021 |
| | chuchu | 4 | 25000 | 음료 다과 | 음료 다과 | k | cc | Download | 8/18/2021 | 9/1/2021 |

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Release 1.0

Home Application 100 Edit Page 31 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.2-2. Expense Report 수정 -로그인 User만 조회 가능 (1/3)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The page being edited is "Page 31: Expense".

Left Sidebar: Shows the page structure with a tree view. A blue box labeled "1" highlights the "Report 1" node under the "Content Body" section.

Top Bar: Includes navigation links for APEX, App Builder, SQL Workshop, Team Development, App Gallery, and user profile "chuchu". The page number "31" is also present in the top bar.

Right Panel: Contains configuration sections for the "Report 1" region. The "Identification" section shows "Title: Report 1" and "Type: Interactive Rep". The "Source" section shows "Location: Local Database" and "Type: SQL Query". The "SQL Query" field contains the following code:

```
select "EXPENSE_ID","EMPLOYEE_ID","TYPE_ID","PAYMENT_AMOUNT","TITLE","DESCRIPTION","RECEIPT_STATUS","CARD_TYPE",sys.dbms_lob.getlength("RECEIPT_PIC")"RECEIPT_PIC","USE_DATE","CREATE_DATE"from "EXPENSES"
```

A red box highlights the "SQL 쿼리 수정: 조회조건 추가" (Modify SQL Query: Add Query Conditions) text, which is overlaid on the right side of the report configuration area.

M03.2-2. Expense Report 수정 -로그인 User만 조회 가능 (2/3)

The screenshot shows the Oracle APEX App Builder interface. In the center, there is a modal window titled "리포트 조회 조건" (Report Query Conditions) containing the following text:

- 현재 로그인한 사용자만 자신의
영수증 정보를 볼 수 있도록

Below this text is a highlighted code snippet:

```
where employee_id = lower(:APP_USER)
```

The background of the App Builder shows the "Code Editor - SQL Query" tab with the following SQL code:

```
1 select "EXPENSE_ID", "EMPLOYEE_ID", "TYPE_ID", "PAYMENT_AMOUNT", "TITLE", "DESCRIPTION", "RECEIPT_STATUS", "CARD_TYPE", sys.  
2 where employee_id = lower(:APP_USER)  
3 |
```

The right side of the interface shows the "Source" panel with the "SQL Query" section expanded, displaying the same SQL code.

M03.2-2. Expense Report 수정 -로그인 User만 조회 가능 (3/3)

The screenshot shows a web-based expense report application interface. At the top, there is a blue header bar with the text "슬기로운 익스펜스 생활" on the left and a search bar with the placeholder "chuchu" on the right. Below the header is a toolbar with a magnifying glass icon, a "Go" button, and an "Actions" dropdown menu. A prominent "Create" button is located in the top right corner of the main content area.

The main content is a table listing six expense reports. The columns are labeled: Employee Id, Type Id, Payment Amount, Title, Description, Receipt Status, Card Type, Receipt Pic, Use Date, and Cre Date. Each row contains a small edit icon in the first column and a "Download" link in the "Receipt Pic" column. The "Description" column contains some HTML-like placeholder text.

| | Employee Id | Type Id | Payment Amount | Title | Description | Receipt Status | Card Type | Receipt Pic | Use Date | Cre Date |
|--|-------------|---------|----------------|--------|---------------------------------|----------------|-----------|--------------------------|-----------|----------|
| | chuchu | 2 | 15000 | 중식 | 호의 비 | k | cc | Download | 8/10/2021 | 9/1/2021 |
| | chuchu | 7 | 70000 | 소모품 구매 | 소모품 구매 | k | cc | Download | 8/25/2021 | 9/1/2021 |
| | chuchu | 1 | 25000 | 대중교통비 | 야근 후 택시비 | k | cc | Download | 8/16/2021 | 9/1/2021 |
| | chuchu | 5 | 25000 | 세미나 | 제주도 학회 세미나 비용 | k | cc | Download | 8/18/2021 | 9/1/2021 |
| | chuchu | 6 | 20000 | 도서구입 | 도서구입 | k | cc | Download | 8/10/2021 | 9/1/2021 |
| | chuchu | 4 | 25000 | 음료 다과 | 음료 다과 | k | cc | Download | 8/18/2021 | 9/1/2021 |

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Release 1.0

M03.2-3. Expense Report 수정 - 불필요 column 삭제

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and user profile 'chuchu'. The main workspace displays 'Application 100 \ Page Designer' for 'Page 31: Expense'. The left sidebar lists regions such as Pre-Rendering, Regions, Content Body, and Reports. Under Content Body, the 'Report 1' region is expanded, showing columns: EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, and RECEIPT_PIC. The 'RECEIPT_PIC' column is highlighted with a red box. The right sidebar contains the 'Identification' section for the 'RECEIPT_PIC' column, which is set to a 'Hidden Column' type. Other sections visible include Heading, Layout, Advanced, Server-side Condition, and Security.

| Column Name | Type |
|-------------|---------------|
| RECEIPT_PIC | Hidden Column |

M03.2-3. Expense Report 수정 - 불필요 column 삭제

The screenshot shows the Oracle APEX App Builder interface in 'Page Designer' mode. The left sidebar displays the application structure for 'Application 100 \ Page Designer'. The main area shows a page titled 'Expense' with a report component named 'Report 1'. The 'Report 1' configuration panel is open, showing various columns like EXPENSE_ID, EMPLOYEE_ID, etc., and a specific column 'CRE_DATE' highlighted with a red box. The right sidebar contains the 'Identification' section for the 'CRE_DATE' column, which is set to 'Hidden Column' type. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, App Gallery, and user 'chuchu'.

Page Designer

Application 100 \ Page Designer

Layout Page Search Help

Page 31: Expense

Pre-Rendering

Regions

Content Body

Report 1

Columns

EXPENSE_ID
EMPLOYEE_ID
TYPE_ID
PAYMENT_AMOUNT
TITLE
DESCRIPTION
RECEIPT_STATUS
CARD_TYPE
RECEIPT_PIC
USE_DATE
CRE_DATE

PAGE HEADER

Title: Expense
PAGE NAVIGATION BREADCRUMB BAR

BEFORE CONTENT BODY

Report 1

PREVIOUS
ITEMS
REGION CONTENT

SUB REGIONS
NEXT

FOOTER

RIGHT OF INTERACTIVE REPORT SEARCH BAR

CREATE

Column

Filter

Identification

Column Name: CRE_DATE

Type: Hidden Column

Heading: Cre Date

Layout: Sequence 11

Advanced: Static ID

Server-side Condition: Type - Select -

Security

M03.2-3. Expense Report 수정 - 컬럼 설정

| Column 이름 | 변경 헤더 이름 | 변경 설정 | 변경 설정 기능 위치 |
|--------------------|----------|--------------------|--|
| P31_Employee_ID | • 사용자 | • LOV Look up | • ID Type : Plain text based on LOV • List of Values : Employee |
| P31_Type_ID | • 비용 유형 | • LOV Look up | • ID Type : Plain text based on LOV • List of Values : Expense type |
| P31_Payment_amount | • 결재 금액 | • 포맷 지정 | |
| P31_Title | • 제목 | | |
| P31_Description | • 설명 | • Html 출력되지 않도록 | • ID type : Percent Graph |
| P31_Receipt_status | • 영수증 상태 | • LOV Look up | • ID Type : Plain text based on LOV • List of Values : Receipt status |
| P31_Card_type | • 카드 유형 | • LOV Look up | • ID Type : Plain text based on LOV • List of Values : card type |
| P31_receipt_pic | • 영수증 사진 | • Hidden 처리 | |
| P31_use_date | • 사용일 | • 포맷 설정 YYYY-MM-DD | |
| P31_cre_date | | • Hidden 처리 | |



M03.2-3. Expense Report 수정 - 컬럼 한글화

The screenshot shows the Oracle APEX App Builder interface for modifying an expense report page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The search bar contains a user icon labeled 'chuchu'. The main workspace is titled 'Application 100 \ Page Designer' and shows 'Page 31: Expense'. The left sidebar lists regions: Pre-Rendering, Regions (Content Body, Report 1, Columns), and various columns like EXPENSE_ID, TYPE_ID, PAYMENT_AMOUNT, etc. A red box highlights the 'EMPLOYEE_ID' column in the 'Report 1' section. The central content area displays the 'Expense' page with a title 'Expense' and a report section titled 'Report 1'. The right sidebar contains configuration panels for 'Identification' (Column Name: EMPLOYEE_ID, Type: Plain Text), 'Heading' (Heading: 사용자, checked), 'Alignment', 'Single Row View' (checked), and 'Layout' (Sequence: 2, Column Alignment: Left, Group: - Select -). A red box highlights the 'Heading' configuration. The bottom right corner features a large red button with a white circle icon.

M03.2-3. Expense Report 수정 - 컬럼 포맷

The screenshot shows the Oracle APEX App Builder interface for modifying an expense report page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and user profile 'chuchu'. The main workspace displays 'Application 100 \ Page Designer'. On the left, the page structure shows 'Page 31: Expense' with regions like Pre-Rendering, Content Body (Report 1), and various columns including EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, USE_DATE, and CRE_DATE. The 'USE_DATE' column is highlighted with a red box. The 'Report 1' section also lists items like PREVIOUS, ITEMS, REGION CONTENT, and SUB REGIONS. On the right, the 'Column' properties panel is open for the 'USE_DATE' column, showing 'Column Name' as 'USE_DATE', 'Type' as 'Plain Text', and an 'Appearance' section with a 'Format Mask' input field. A red box highlights the 'Format Mask' input field in the Appearance section. A modal dialog titled 'Pick Format Mask' is displayed, listing various date formats and their corresponding outputs. One specific format, '2004-01-12', is highlighted with a red box in the list.

Pick Format Mask

| Format Mask | Output |
|--------------------------|--------------------------|
| 12-JAN-04 | 12-JAN-04 |
| 12-JAN-2004 | 12-JAN-2004 |
| 12-JAN | 12-JAN |
| 04-JAN-12 | 04-JAN-12 |
| 2004-01-12 | 2004-01-12 |
| Monday, 12 January, 2004 | Monday, 12 January, 2004 |
| 12-JAN-2004 14:30 | 12-JAN-2004 14:30 |
| 12-JAN-2004 14:30:00 | 12-JAN-2004 14:30:00 |
| 12-JAN-2004 02:30PM | 12-JAN-2004 02:30PM |
| January | January |
| 16 hours ago | 16 hours ago |
| in 16h | in 16h |

Column

Identification

Column Name: USE_DATE
Type: Plain Text

Appearance

Format Mask:

Column Formatting

HTML Expression:

M03.2-3. Expense Report 수정 - LOV Value 대체(look up) (1/4)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current view is "Page Designer" for "Page 31: Expense".

The left sidebar lists regions: "Pre-Rendering", "Regions" (Content Body), and "Report1". Under "Report1", the columns are listed: EXPENSE_ID, EMPLOYEE_ID (highlighted with a red box), TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, and USE_DATE.

The center area displays the "Expense" page structure with sections: PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY. The "Report1" region is expanded, showing PREVIOUS, ITEMS, REGION CONTENT, SUB REGIONS, and NEXT buttons, along with a "CREATE" button.

The right sidebar is titled "Column" and contains a "Filter" search bar. It lists several configuration items under "Identification": Column Name (EMPLOYEE_ID), Type (Plain Text (based on List of Values)), and a "List of Values" entry for "EMPLOYEES". Other items include "List of Values" (highlighted with a red box), "Heading", "Single Row View", "Layout", and "Link".

M03.2-3. Expense Report 수정 - LOV Value 대체(look up) (2/4)

The screenshot shows the Oracle APEX Page Designer interface for an application named "Application 100". The current page is "Page 31: Expense". On the left, the "Regions" section is expanded, showing the "Content Body" region which contains a "Report1" item. The "Columns" section lists various expense-related fields: EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, and USE_DATE. The "TYPE_ID" field is highlighted with a red box. In the center, the "Report1" item is selected, displaying its structure with sections like "PREVIOUS", "ITEMS", "REGION CONTENT", "SUB REGIONS", and "NEXT". On the right, the "Column" configuration panel is open for the "TYPE_ID" column. The "Type" dropdown is set to "Plain Text (based on List of Values)". Below it, the "List of Values" dropdown is also set to "EXPENSE TYPES". Both of these dropdowns are also highlighted with red boxes.

M03.2-3. Expense Report 수정 - LOV Value 대체(look up) (3/4)

The screenshot shows the Oracle APEX App Builder interface for modifying an expense report page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The left sidebar displays the page structure for "Page 31: Expense". It shows regions like Pre-Rendering, Content Body (with a Report1 item), and various columns including EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, and USE_DATE. The RECEIPT_STATUS column is highlighted with a red border.

The central workspace shows the "Expense" page definition. Under the "CONTENT BODY" region, there is a "Report1" item. The "CREATE" button is visible next to it.

The right panel is titled "Column" and contains configuration settings for the RECEIPT_STATUS column. The "Identification" section shows "Column Name" as RECEIPT_STATUS and "Type" as "Plain Text (based on List of Values)". The "List of Values" section lists "RECEIPT STATUS" as the value. Other options like "Heading", "Single Row View", "Layout", and "Link" are also listed.

M03.2-3. Expense Report 수정 - LOV Value 대체(look up) (4/4)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current page is "Page Designer" for "Page 31: Expense".

In the left sidebar, under "Regions", the "Content Body" region is expanded, showing a "Report1" item. Within "Report1", the "Columns" section lists several columns: EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, and USE_DATE. The "CARD_TYPE" column is highlighted with a red border.

The main workspace displays the "Expense" page structure. The "CONTENT BODY" section contains a "Report1" item with "ITEMS" and "REGION CONTENT" sections. A "CREATE" button is located at the bottom right of the report area.

On the right side, the "Column" panel is open, showing the configuration for the "CARD_TYPE" column. The "Identification" section includes the "Column Name" (CARD_TYPE) and "Type" (Plain Text (based on List of Values)). The "List of Values" section shows a dropdown menu set to "CARD TYPES". Both the "Type" and "List of Values" sections are highlighted with red boxes.

M03.2-3. Expense Report 수정 – HTML 지원 설정

The screenshot shows the Oracle APEX App Builder interface for modifying an expense report page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and help icons.

The main workspace displays "Application 100 \ Page Designer". The left sidebar lists the page structure: Page 31: Expense, Pre-Rendering, Regions, Content Body, and Report 1. Under Report 1, the "Columns" section is expanded, showing columns such as EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, RECEIPT_STATUS, CARD_TYPE, RECEIPT_PIC, and USE_DATE. The "DESCRIPTION" column is highlighted with a red border.

The central area shows the "Expense" page template with regions like PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY. A modal window titled "Report 1" is open, showing sections for PREVIOUS, ITEMS, REGION CONTENT, and SUB REGIONS, with a "CREATE" button at the bottom right.

The right sidebar contains settings for "Identification", "Heading", "Single Row View", "Layout", and "Appearance". Under Identification, the "Type" is set to "Percent Graph". The Appearance section includes options for Background Color, Foreground Color, and Bar Width (pixels).

중간 결과물

☰ 슬기로운 익스펜스 생활

🔍 chudu ✎

Actions ▾ Create

| | 사용자 | 비용 유형 | 결재 금액 | 제목 | 설명 | 영수증 상태 | 카드 유형 | 사용일 |
|---|----------------|-------|-------|--------|-----------------|--------|-------|------------|
| ✍ | 추민하 (NS, 신경외과) | 중식 | 15000 | 중식 | • 회의 비 | 보관 | 법인 카드 | 2021-08-10 |
| ✍ | 추민하 (NS, 신경외과) | 소모품 | 70000 | 소모품 구매 | • 소모품 구매 | 보관 | 법인 카드 | 2021-08-25 |
| ✍ | 추민하 (NS, 신경외과) | 대중교통비 | 25000 | 대중교통비 | • 야근 후 택시비 | 보관 | 법인 카드 | 2021-08-16 |
| ✍ | 추민하 (NS, 신경외과) | 세미나 | 25000 | 세미나 | • 제주도 학회 세미나 비용 | 보관 | 법인 카드 | 2021-08-18 |
| ✍ | 추민하 (NS, 신경외과) | 도서구입 | 20000 | 도서구입 | • 도서구입 | 보관 | 법인 카드 | 2021-08-10 |
| ✍ | 추민하 (NS, 신경외과) | 음료/다과 | 25000 | 음료 다과 | • 음료 다과 | 보관 | 법인 카드 | 2021-08-18 |

1 - 6

Home Application 100 Edit Page 31 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.2-3. Expense Report 수정 – Hero (1/5)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current page is "Page Designer". The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. A green banner at the top right indicates "Changes saved".

The left sidebar displays the page structure with "Page 31: Expense". Under "Regions", the "Content Body" section is selected, highlighted with a red border. A dropdown menu is open over this section, with the option "Create Region" highlighted by a red box and the number "1" indicating it is the first step.

The main workspace shows two components: "Expense" and "Report1". The "Expense" component contains sections for PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY. The "Report1" component contains sections for PREVIOUS, ITEMS, REGION CONTENT, and NEXT. A "CREATE" button is located in the REGION CONTENT area of the Report1 component.

A message in the bottom right corner states "No components currently selected." with an exclamation mark icon.

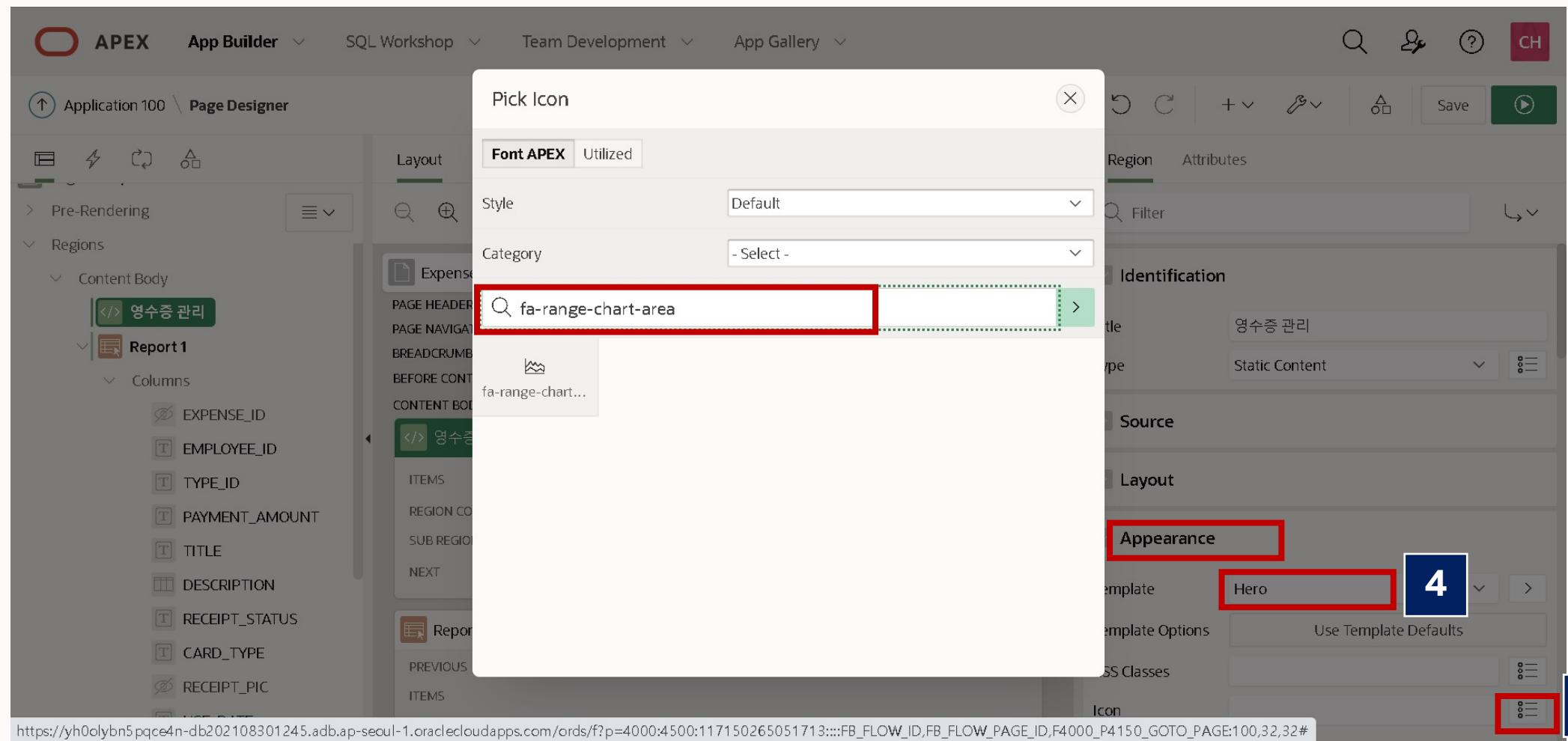
M03.2-3. Expense Report 수정 – Hero (2/5)

The screenshot shows the Oracle APEX App Builder interface for modifying an application page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main workspace displays the 'Page Designer' for 'Application 100'. The left sidebar shows the page structure with regions like 'Pre-Rendering', 'Regions' (including 'Content Body'), and 'Report 1'. The 'Content Body' region is currently selected, indicated by a red box labeled '위치 옮김' (Move Location) pointing to it.

The central area shows the page layout with a title 'Expense' and a content body containing the text '영수증 관리'. The right sidebar contains tabs for 'Region' and 'Attributes'. The 'Region' tab is active, showing the 'Identification' section where the title is set to '영수증 관리' (number 2). The 'Source' section contains the static content text: '<p> 영수증을 등록, 조회 관리하는 페이지입니다. </p>' (number 3).

M03.2-3. Expense Report 수정 – Hero (3/5)



M03.2-3. Expense Report 수정 – Hero (4/5)

☰ 슬기로운 익스펜스 생활

🔍 chudu ▾

영수증 관리

영수증을 등록, 조회 관리하는 페이지입니다.

| | 사용자 | 비용 유형 | 결재 금액 | 제목 | 설명 | 영수증 상태 | 카드 유형 | 사용일 |
|--|----------------|-------|-------|--------|-----------------|--------|-------|------------|
| | 추민하 (NS, 신경외과) | 중식 | 15000 | 중식 | • 회의 비 | 보관 | 법인 카드 | 2021-08-10 |
| | 추민하 (NS, 신경외과) | 소모품 | 70000 | 소모품 구매 | • 소모품 구매 | 보관 | 법인 카드 | 2021-08-25 |
| | 추민하 (NS, 신경외과) | 대중교통비 | 25000 | 대중교통비 | • 야근 후 택시비 | 보관 | 법인 카드 | 2021-08-16 |
| | 추민하 (NS, 신경외과) | 세미나 | 25000 | 세미나 | • 제주도 학회 세미나 비용 | 보관 | 법인 카드 | 2021-08-18 |
| | 추민하 (NS, 신경외과) | 도서구입 | 20000 | 도서구입 | • 도서구입 | 보관 | 법인 카드 | 2021-08-10 |
| | 추민하 (NS, 신경외과) | | | | | | | 2021-08-18 |

Home Application 100 Edit Page 31 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.2-3. Expense Report 수정 – Hero (5/5)

The screenshot shows the Oracle APEX Code Editor with a page template named "Page Definition". The template structure is as follows:

- Pre-Rendering
- Regions
 - Content Body
 - 영수증 관리
 - Report 1
 - Columns
 - EXPENSE
 - EMPLOYEE
 - TYPE_ID
 - PAYMENT
 - TITLE
 - DESCRIPTION
 - RECEIPT
 - CARD_TYPE
 - RECEIPT_DATE
 - USE_DATE

Source > Text에서
<p> </p> 뒤에
(&APP_USER.)을 추가하면 (Chuchu)
출력됨

영수증 관리

영수증을 등록, 조회 관리하는 페이지입니다.
(CHUCHU)

M03.2-4. Expense Report - 검색 기간 Default 설정 (1/13)

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main workspace displays the structure of the 'Expense' page. On the left, the 'Regions' panel shows the page's layout regions: Pre-Rendering, Content Body, PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY. The 'Content Body' region is currently selected and highlighted with a red box. A context menu is open over this region, with the 'Create Region' option also highlighted by a red box.

The central area shows the visual representation of the page components. The 'CONTENT BODY' region contains a report titled 'Report1' with sections for PREVIOUS, ITEMS, and REGION CONTENT. Below this, another report titled 'Report2' is partially visible with sections for ITEMS and REGION CONTENT.

The right side of the interface features the 'Property Editor' panel, which includes a search bar and a message stating 'No components currently selected.' There is also a small warning icon.

M03.2-4. Expense Report - 검색 기간 Default 설정 (2/13)

The screenshot shows the Oracle APEX Page Designer interface for a page titled "Page 31: Expense". The left sidebar displays the page structure with regions like "Content Body" and "Report1". The main area shows a "New" region being configured. The "Identification" tab in the properties panel is selected, with the "Title" field set to "Search". The "Source" tab is also visible, showing a "Text" input field. The "Layout" and "Appearance" tabs are present but not selected.

M03.2-4. Expense Report - 검색 기간 Default 설정 (3/13)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current page is "Page Designer" for "Page 31: Expense".

The left sidebar shows the page structure:

- Regions:
 - Content Body
 - Search (highlighted with a green border)
 - Report 1
 - Columns
 - EXPENSE_ID
 - EMPLOYEE_ID
 - TYPE_ID
 - PAYMENT_AMOUNT
 - TITLE
 - DESCRIPTION
 - RECEIPT_STATUS
 - CARD_TYPE
 - RECEIPT_PIC

The main area displays the "Search" region configuration. The "Region" tab is selected in the top right.

Identification section:

- Title: Search
- Type: Static Content

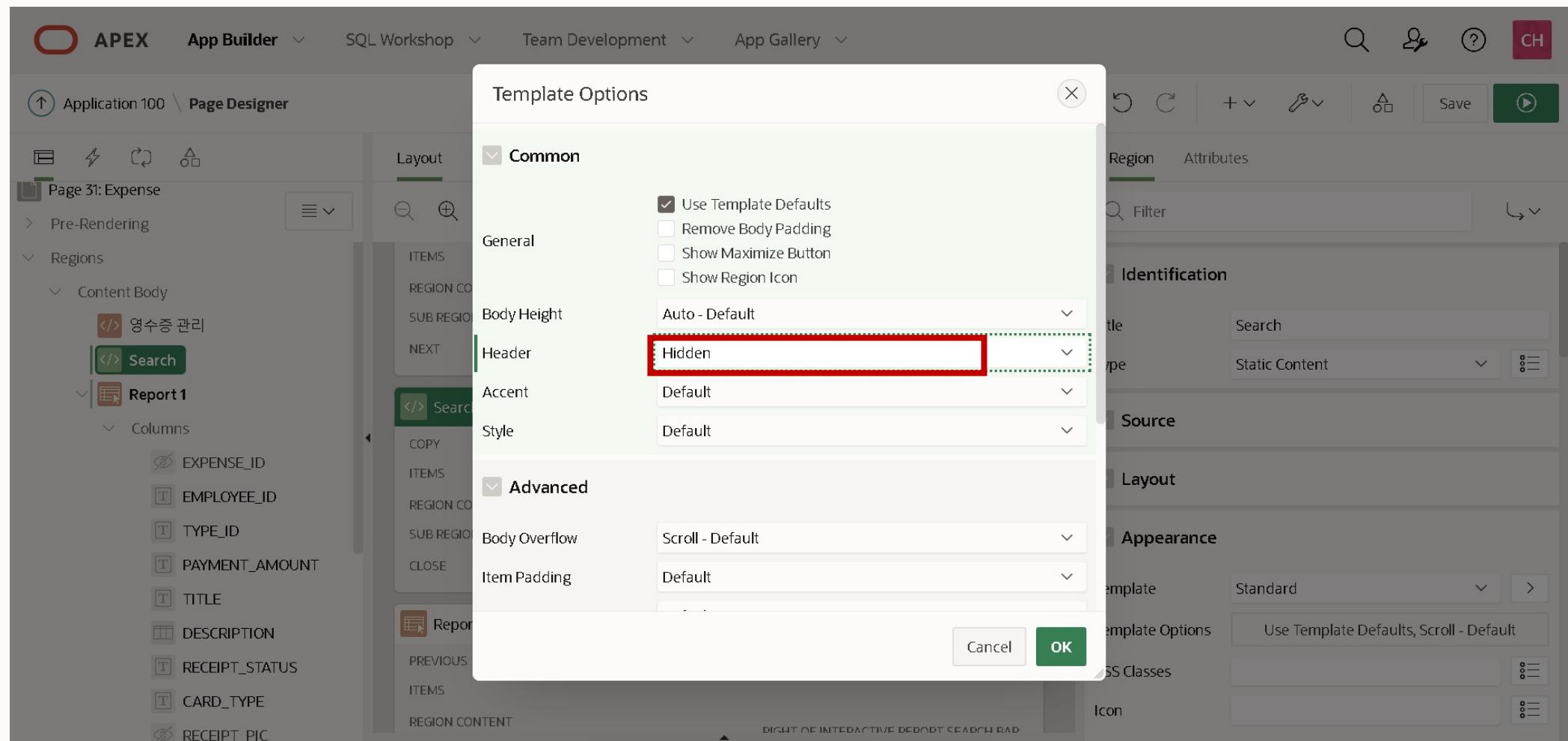
Source section (collapsed):

Layout section (collapsed):

Appearance section:

- Template: Standard
- Template Options: Use Template Defaults, Scroll - Default (highlighted with a red box)
- CSS Classes
- Icon

M03.2-4. Expense Report - 검색 기간 Default 설정 (4/13)



M03.2-4. Expense Report - 검색 기간 Default 설정 (5/13)

The screenshot shows the Oracle ADF Page Definition Editor interface. The left pane displays the page structure:

- Page 31: Expense
- > Pre-Rendering
- Regions
 - Content Body
 - Items
 - 영수증 관리
 - Search
 - Items
 - P31_NEW
 - P31_NEW_1
 - Region Buttons
 - New
 - Report 1
 - Columns

Search에서 우클릭 후

Page item 2 개,
Button 1 개

생성함

M03.2-4. Expense Report - 검색 기간 Default 설정 (6/13)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main area displays the layout of Page 31: Expense. On the left, the page structure tree shows the Content Body region containing a Search item, which is expanded to show its Items section. Two items are highlighted with blue boxes and numbers: Item 1, 'P31_SEARCH_FROM', is a Date Picker set to 'Search From' with a red border around its Name and Type fields; Item 2, 'P31_NEW_1', is another item in the same list. The right side of the screen shows the detailed configuration for Item 1, including sections for Identification, Label, and Settings, with various date-related fields like Minimum Date and Maximum Date.

M03.2-4. Expense Report - 검색 기간 Default 설정 (7/13)

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 31: Expense".

Left Sidebar: Shows the application structure with "Page 31: Expense" selected. Under "Regions", the "Content Body" region is expanded, showing "Search" items. Two items are highlighted with red boxes: "P31_SEARCH_FROM" (numbered 4) and "P31_SEARCH_TO" (numbered 3).

Page Designer: The "Layout" tab is selected. On the right, the "Page Item" panel displays the configuration for "P31_SEARCH_TO".

Page Item Configuration (Numbered 3):

- Name:** P31_SEARCH_TO
- Type:** Date Picker

Label: New

Settings:

- Highlighted Date: (empty)
- Minimum Date: (empty)
- Maximum Date: (empty)
- Show: On icon click
- Show other: (button)

M03.2-4. Expense Report - 검색 기간 Default 설정 (8/13)

The screenshot shows the Oracle APEX Page Designer interface for 'Page 31: Expense'. The left sidebar lists regions like 'Content Body' and 'Report 1', with items such as 'P31_SEARCH_FROM' and 'P31_SEARCH_TO'. The main area displays the 'ITEMS' section of the 'Search' region, showing two search items: 'P31_SEARCH_FROM' and 'P31_SEARCH_TO'. A large blue box labeled '5' is positioned over the 'Start New Row' toggle switch in the 'Layout' panel on the right. The 'Layout' panel also includes fields for Sequence (20), Region (Search), Column (Automatic), New Column (on), Column Span (Automatic), Column CSS Classes, and Column Attributes. The 'Appearance' panel at the bottom right shows 'Optional - Floating' as the template.

M03.2-4. Expense Report - 검색 기간 Default 설정 (9/13)

The screenshot shows the Oracle APEX App Builder interface for configuring a page item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main workspace displays "Application 100 \ Page Designer". On the left, the "Regions" section is expanded, showing "Content Body" with "Items" and "Search" regions. A red box labeled "6" highlights the "P31_SEARCH_FROM" item. In the center, a modal window titled "Search" is open, showing the "ITEMS" tab with "P31_SEARCH_FROM" selected. A red box labeled "7" highlights this item. On the right, the "Page Item" configuration panel is open, showing the "Default" section. The "Type" dropdown is set to "SQL Query", and a large red box labeled "SQL 쿼리 입력 - 뒷장 참고" (SQL query input - refer to back) highlights the "SQL Query" input field.

M03.2-4. Expense Report - 검색 기간 Default 설정 (10/13)

Default 설정

- P31_Search_From
- 영수증 날짜 중에서 가장 과거의 날짜가 기본으로 보이도록 설정

```
select min(use_date) from expenses  
where employee_id = lower(:APP_USER)
```

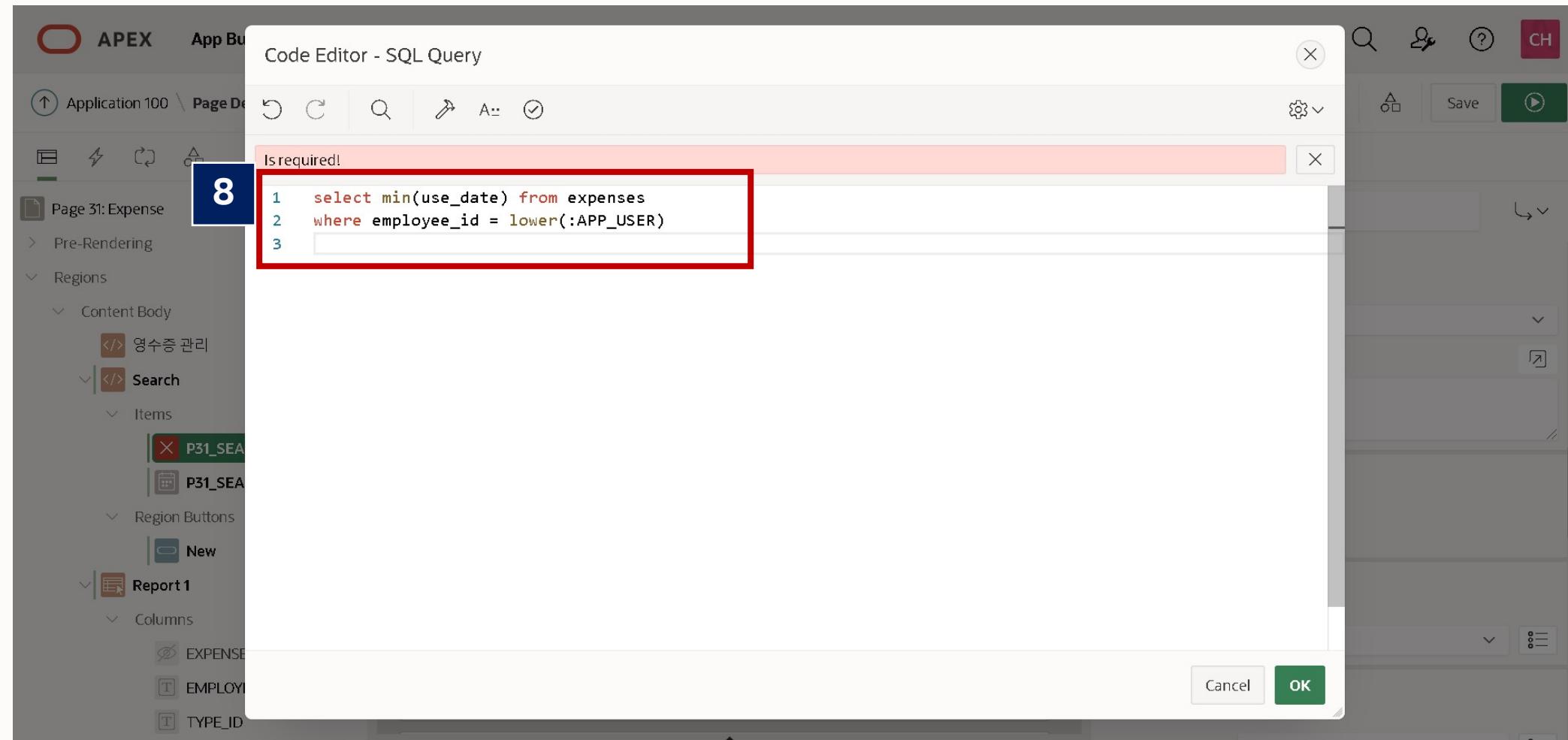
Default 설정

- P31_Search_To
- 영수증 날짜 중에서 가장 최근 날짜가 기본으로 보이도록 설정

```
select max(use_date) from expenses  
where employee_id = lower(:APP_USER)
```



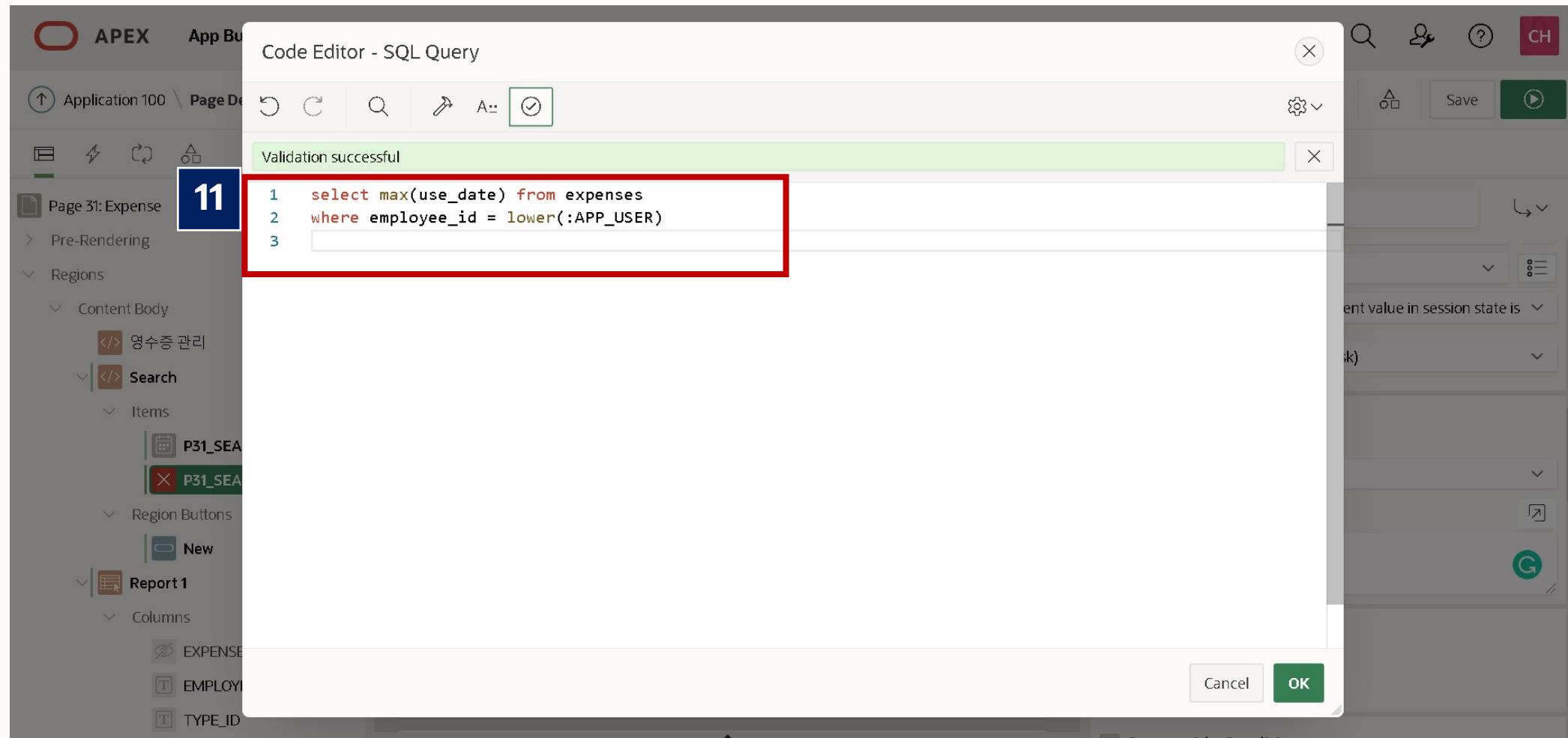
M03.2-4. Expense Report - 검색 기간 Default 설정 (11/13)



M03.2-4. Expense Report - 검색 기간 Default 설정 (12/13)

The screenshot shows the Oracle APEX App Builder interface for 'Application 100' in 'Page Designer'. The left sidebar lists the page structure: 'Page 31: Expense' with 'Pre-Rendering', 'Regions' (including 'Content Body' with '영수증 관리' and 'Search' items), and 'Report 1' with columns 'EXPENSE_ID', 'EMPLOYEE_ID', and 'TYPE_ID'. Two specific items are highlighted with red boxes: 'P31_SEARCH_FROM' (item 9) and 'P31_SEARCH_TO' (item 10). The 'Search' item dialog is open, showing the 'ITEMS' section with 'P31_SEARCH_FROM' and 'P31_SEARCH_TO'. The 'Type' dropdown menu on the right is open, with 'SQL Query' selected (item 10). Other options in the Type dropdown include 'Static', 'Item', 'Expression', 'Function Body', and 'Sequence'. The 'Default' section of the Type dropdown is also visible.

M03.2-4. Expense Report - 검색 기간 Default 설정 (13/13)



M03.2-5. Expense Report 수정 – 검색 한글화, 날짜 포맷

The screenshot shows the Oracle APEX App Builder interface for modifying a page item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main area displays "Application 100 \ Page Designer". On the left, the page structure is shown with "Page 31: Expense" containing regions like Pre-Rendering, Content Body, and a Search region. Item P31_SEARCH_FROM is highlighted with a red box and labeled "12".

In the center, the "ITEMS" section shows the "Search" item, which is currently selected and highlighted in green. It has fields for COPY, EDIT, PREVIOUS, and NEXT, and a sub-section for REGION CONTENT.

On the right, the "Page Item" configuration pane is open for the "P31_SEARCH_FROM" item. The "Label" field contains the Korean text "검색 시작일" (Search Start Date), which is also highlighted with a red box. The "Format Mask" field is set to "YYYY-MM-DD", also highlighted with a red box. Other settings include "Optional - Floating" template, "Use Template Defaults" template options, and "30" width.

M03.2-5. Expense Report 수정 – 검색 한글화, 날짜 포맷

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 31: Expense". The left sidebar lists regions like "Content Body" and "Report 1". In the center, a modal dialog is open for a "Search" item. The right panel displays the "Page Item" configuration for this search item, specifically focusing on the "Label" and "Format Mask" settings.

Page Item Configuration:

- Label:** 검색 종료일 (Search End Date)
- Format Mask:** YYYY-MM-DD

중간 결과물

The screenshot shows a web-based expense report management system. At the top, there is a blue header bar with the text "슬기로운 익스펜스 생활" (Life of a Frugal Expenditure) on the left and a search icon with the text "chuchu" on the right. Below the header is a title section with a blue icon of a document with a line graph, the text "영수증 관리" (Expense Report Management), and a subtitle "영수증을 등록, 조회 관리하는 페이지입니다. (CHUCHU)".

Below the title is a search and filter section with two date fields: "검색 시작일" (Search Start Date) set to "2021-08-10" and "검색 종료일" (Search End Date) set to "2021-08-25". There are also "New" and "Create" buttons.

The main content area is a table listing expense reports. The columns are: 사용자 (User), 비용 유형 (Expense Type), 결재 금액 (Approval Amount), 제목 (Subject), 설명 (Description), 영수증 상태 (Receipt Status), 카드 유형 (Card Type), and 사용일 (Usage Date). The table contains three rows of data:

| 사용자 | 비용 유형 | 결재 금액 | 제목 | 설명 | 영수증 상태 | 카드 유형 | 사용일 |
|----------------|-------|-------|--------|------------|--------|-------|------------|
| 주민하 (NS, 신경외과) | 중식 | 15000 | 중식 | • 회의 비 | 보관 | 법인 카드 | 2021-08-10 |
| 주민하 (NS, 신경외과) | 소모품 | 70000 | 소모품 구매 | • 소모품 구매 | 보관 | 법인 카드 | 2021-08-25 |
| 주민하 (NS, 신경외과) | 대중교통비 | 25000 | 대중교통비 | • 야근 후 택시비 | 보관 | 법인 카드 | 2021-08-16 |

At the bottom of the page, there is a navigation bar with links: Home, Application 100, Edit Page 31, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a settings gear icon.

M03.2-6. Expense Report 검색 (1/3)

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode for Application 100, Page 31: Expense. The left sidebar shows the page structure with a 'Report1' item selected (highlighted with a red box). The main area displays the 'Search' region configuration. The 'Source' section on the right contains the following SQL query:

```
select
  "EXPENSE_ID","EMPLOYEE_ID","TYPE_ID","PAYMENT_AMOUNT","TITLE",
  "DESCRIPTION","RECEIPT_STATUS","CARD_TYPE",sys.dbms_lob.getlength("RECEIPT_PIC")"RECEIPT_PIC","USE_DATE","CRE_DATE"
from "EXPENSES"
where employee_id = lower(:APP_USER)
```

M03.2-6. Expense Report 검색 (2/3)

The screenshot shows the Oracle APEX SQL Query editor. The validation message "Validation successful" is displayed at the top. The query code is:

```
1 select "EXPENSE_ID", "EMPLOYEE_ID", "TYPE_ID", "PAYMENT_AMOUNT", "TITLE", "DESCRIPTION", "RECEIPT_STATUS", "CARD_
2 where EMPLOYEE_ID = lower(:APP_USER)
3 and USE_DATE >= TO_DATE(:P31_SEARCH_FROM, 'YYYY-MM-DD')
4 and USE_DATE <= TO_DATE(:P31_SEARCH_TO, 'YYYY-MM-DD')
```

A red box highlights the "Content Body" section of the page definition tree, which contains the text "Where 교체 !! (추가 아님)". A blue box labeled "15" points to the "Content Body" section. A red arrow points from the text "Where 교체 !! (추가 아님)" to the "Content Body" section.

검색 where 절 설정

- Default 날짜 중에서 검색 하도록

where EMPLOYEE_ID = lower(:APP_USER)
and USE_DATE >= TO_DATE(:P31_SEARCH_FROM, 'YYYY-MM-DD')
and USE_DATE <= TO_DATE(:P31_SEARCH_TO, 'YYYY-MM-DD')

M03.2-6. Expense Report 검색 (3/3)

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 31: Expense". The left sidebar displays the page structure, including regions like "Content Body" and "Search", and items such as "P31_SEARCH_FROM" and "P31_SEARCH_TO". The main area shows a "Search" region with fields for "P31_SEARCH_FROM" and "P31_SEARCH_TO". The right panel is the "Button" configuration screen, which includes tabs for "Identification", "Layout", and "Appearance". The "Identification" tab shows the "Button Name" as "Search" and the "Label" as "New". The "Appearance" tab has "Hot" status turned on for both the "Text" and "Image" button templates. A red box highlights the "Search" button name field and the "Hot" toggle switch.

16

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

ITEMS

REGION CONTENT

SUB REGIONS

NEXT

Search

COPY EDIT PREVIOUS NEXT

ITEMS

P31_SEARCH_FROM P31_SEARCH_TO

REGION CONTENT

SUB REGIONS

CLOSE HELP DELETE CHANGE CREATE

BELLOW REGION

New

Button

Filter

Identification

Button Name: Search

Label: New

Layout

Appearance

Hot

Text

Image

Hot

Use Template Defaults

Template Options

CSS Classes

Icon

M03.2-7. Expense Report - Dynamic Search (1/11)

The screenshot shows the Oracle APEX application builder interface. On the left, the page structure is visible with a red box highlighting item 'P31_SE'. In the center, a modal window titled 'P31_SEARCH_FROM' is open, showing a date picker. On the right, the 'Page Item' properties for 'P31_SEARCH_FROM' are being configured, with the 'Name' set to 'P31_SEARCH_FROM' and 'Type' set to 'Date Picker'. The 'Label' is '검색 시작일' (Search Start Date). The 'Appearance' tab is selected, showing 'Optional - Floating' as the template.

1

APEX App E

Create Page Item
Create Button
Create Computation
Create Validation
Create Dynamic Action
Duplicate
Delete Del
Copy to other Page...
Page Search
Expand All Below
Collapse All Below

P31: Expense
Pre-Rendering
Regions
Content Body
Search
Items
Report 1
Columns
EXPENSE_ID
EMPLOYEE_ID
TYPE_ID

Team Development App Gallery

Page Search Help

EDIT PREVIOUS NEXT

P31_SEARCH_FROM P31_SEARCH_TO

REGION CONTENT

SUB REGIONS

CLOSE HELP DELETE CHANGE CREATE

BELOW REGION

Search

Page Item

Filter

Identification

Name: P31_SEARCH_FROM
Type: Date Picker

Label

Label: 검색 시작일

Settings

Layout

Appearance

Template: Optional - Floating
Template Options: Use Template Defaults

M03.2-7. Expense Report - Dynamic Search (2/11)

The screenshot shows the Oracle APEX App Builder interface for creating a dynamic search on Page 31: Expense.

Left Sidebar: Shows the page structure with regions like Content Body, Regions, and Dynamic Actions.

Dynamic Action Creation: A new dynamic action is being created, indicated by the "New" button highlighted with a red box and the number 1.

Search Item: A search item "P31_SEARCH_FROM" is selected in the "Items" section of the Content Body.

Dynamic Action Configuration:

- Identification:** The name is set to "change from".
- Execution Options:** Sequence is 20.
- When:** Event is "Change", Selection Type is "Item(s)", and Item(s) is "P31_SEARCH_FROM".
- Client-side Condition:** Type is "- Select -".

A red box highlights the "Name" field in the Identification section, and another red box highlights the "조건 확인" (Condition Confirmation) button in the When section.

M03.2-7. Expense Report - Dynamic Search (3/11)

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 31: Expense".

Left Panel (Regions):

- Content Body
 - Pre-Rendering
 - Regions
 - Content Body
 - 영수증 관리
 - Search
 - Items
 - P31_SEARCH_FROM
 - Dynamic Actions
 - change from
 - True
 - False
 - Refresh (highlighted with a red box and labeled 3)
 - P31_SEARCH_TO
 - Region Buttons
 - Search

Center Panel (ITEMS):

- ITEMS
- REGION CONTENT
- SUB REGIONS
- NEXT

Right Panel (Action):

- Action: Refresh (highlighted with a red box and labeled 4)
- Affected Elements
- Selection Type: Region
- Region: Report 1
- Execution Opt: Report 1 (highlighted with a blue box and labeled 5)
- Sequence: Search
- Event: change from
- Fire When Event Result Is: True
- Fire on Initialization: Off

M03.2-7. Expense Report - Dynamic Search (4/11)

The screenshot shows the Oracle APEX App Builder interface for creating a dynamic search item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main workspace is titled "Application 100 \ Page Designer". On the left, the page structure tree shows a "Search" item under "Items", which contains "P31_SEARCH_FROM" and "P31_SEARCH_TO" items. The "P31_SEARCH_TO" item has a "Dynamic Actions" section with a "New" button highlighted by a red box and labeled "6".

The central workspace displays the "REGION CONTENT" and "SUB REGIONS" sections. A modal window titled "Report1" is open, showing "ITEMS", "REGION CONTENT", and "SUB REGIONS" sections, with a "CREATE" button at the bottom right.

The right panel is titled "Dynamic Action" and contains the configuration for a new dynamic action. The "Identification" section shows the "Name" field set to "change to" (highlighted by a red box and labeled "7"). The "Execution Options" section includes a "Sequence" value of 30. The "When" section specifies an "Event" of "Change" and a "Selection Type" of "Item(s)" with "P31_SEARCH_TO" selected. A "Client-side Condition" section is present with a dropdown menu set to "- Select -".

A red callout box labeled "조건 확인" (Condition Check) points to the "When" section of the dynamic action configuration.

M03.2-7. Expense Report - Dynamic Search (5/11)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current view is "Page Designer".

Left Sidebar: Shows the page structure with regions like "영수증 관리", "Search", and "Items". Under "Items", there are two sections: "P31_SEARCH_FROM" and "P31_SEARCH_TO", each with "Dynamic Actions". The "change from" action for "P31_SEARCH_FROM" is set to "True" and has a "Refresh" button (numbered 8). The "change to" action for "P31_SEARCH_TO" is set to "True" and also has a "Refresh" button (numbered 8).

Center Panel: Shows the "REGION CONTENT" section with options to "CLOSE", "HELP", "DELETE", "CHANGE", and "CREATE". Below it is the "Report1" region.

Right Panel: Shows the "Action" configuration for the "refresh" dynamic action. It includes:

- Action:** Refresh (numbered 9)
- Affected Elements:** Selection Type: Region; Region: Report1 (numbered 10)
- Execution Options:** Sequence: 10; Event: change to; Fire When Event Result Is: True; Fire on Initialization: Off

M03.2-7. Expense Report - Dynamic Search (6/11)

The screenshot shows the Oracle APEX App Builder interface for creating an application named "Application 100".

Left Panel (Report Structure): Shows the report structure with a tree view. A node labeled "Report 1" is highlighted with a red box and labeled "11".

Middle Panel (Report Content): Displays the "Search" region content. It includes two date input fields: "P31_SEARCH_FROM" and "P31_SEARCH_TO". Below these fields is a "Search" button.

Right Panel (Properties and SQL):

- Region:** Set to "Identification".
- Title:** "Report 1".
- Type:** "Interactive Report".
- Source:**
 - Location:** "Local Database".
 - Type:** "SQL Query".
 - SQL Query:** The query is defined as follows:

```
select
    "EXPENSE_ID", "EMPLOYEE_ID", "TYPE_ID", "PAYMENT_AMOUNT", "TITLE",
    "DESCRIPTION", "RECEIPT_STATUS", "CARD_TYPE",
    sys.dbms_lob.getlength("RECEIPT_PIC") "RECEIPT_PIC",
    "USE_DATE", "CRE_DATE"
from
    "EXPENSES"
where
    EMPLOYEE_ID = lower(:APP_USER)
    and USE_DATE >= TO_DATE(:P31_SEARCH_FROM, 'YYYY-MM-DD')
    and USE_DATE <= TO_DATE(:P31_SEARCH_TO, 'YYYY-MM-DD')
```

Bottom Right Panel (Page Items to Submit): A section labeled "Page Items to Submit" is highlighted with a red box and labeled "12". It contains a "CREATE" button and a "Page Item" icon.

M03.2-7. Expense Report - Dynamic Search (7/11)

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current page is "Page Designer". A modal window titled "Pick Page Items to Submit" is open, listing two items: "P31_SEARCH_FROM" and "P31_SEARCH_TO". The "Label" column contains Korean text: "검색 시작일" for P31_SEARCH_FROM and "검색 종료일" for P31_SEARCH_TO. A red box highlights these two items. A large green arrow points from the bottom right of the modal to a text input field at the bottom right of the page, which also contains the values "P31_SEARCH_FROM,P31_SEARCH_TO".

Pick Page Items to Submit

| Name | Label |
|-----------------|--------|
| P31_SEARCH_FROM | 검색 시작일 |
| P31_SEARCH_TO | 검색 종료일 |

각각 클릭

Page Items to Submit
P31_SEARCH_FROM,P31_SEARCH_TO

M03.2-7. Expense Report - Dynamic Search (8/11)

The screenshot shows the Oracle APEX App Builder interface for Page 31: Expense. The left sidebar displays the page structure with regions like Content Body and Search. The main area shows a 'Search' region with two input fields: P31_SEARCH_FROM and P31_SEARCH_TO. The right sidebar contains the 'Action' configuration panel, which is expanded to show the 'Identification' section. In the 'Affected Elements' section, the 'Region' is set to 'Report 1'. Under 'Execution Options', the sequence is 10, the event is 'change from', and the condition 'Fire When Event Result Is True' is selected. A red box highlights the 'Fire on Initialization' checkbox, which is also checked. The status bar at the bottom indicates 'RIGHT OF INTERACTIVE REPORT SEARCH BAR'.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

Search

P31_SEARCH_FROM P31_SEARCH_TO

Report 1

PREVIOUS ITEMS REGION CONTENT SUB REGIONS

CREATE RIGHT OF INTERACTIVE REPORT SEARCH BAR

Action

Filter

Identification

Action Refresh

Affected Elements

Selection Type Region

Region Report 1

Execution Options

Sequence 10

Event change from

Fire When Event Result Is True

Comments

Fire on Initialization

M03.2-7. Expense Report - Dynamic Search (9/11)

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 31: Expense".

Left Sidebar: Shows the page structure with a "Regions" section expanded, containing "Content Body" and "Search" regions.

Search Region: Contains two input fields: "P31_SEARCH_FROM" and "P31_SEARCH_TO". Below them is a "REGION CONTENT" section with buttons for CLOSE, HELP, DELETE, CHANGE, and CREATE. A "Search" button is located at the bottom right of this section.

Report Region: Contains buttons for PREVIOUS, ITEMS, REGION CONTENT, and CREATE. A note "RIGHT OF INTERACTIVE REPORT SEARCH BAR" is visible above the "CREATE" button.

Action Panel (Right Side):

- Action:** Refresh
- Affected Elements:** Selection Type: Region; Region: Report 1
- Execution Options:**
 - Sequence: 10
 - Event: change to
 - Fire When Event Result Is: True
 - Fire on Initialization:** This checkbox is highlighted with a red rectangle.
- Comments:** Comments

M03.2-7. Expense Report - Dynamic Search (10/11)

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right, there are search, user profile, and save buttons.

The main workspace displays a page titled "Application 100 \ Page Designer". The left sidebar contains a tree view of page items, including sections like "True", "P31_SEARCH_FROM", "P31_SEARCH_TO", and "Search". A context menu is open over the "Search" item, with the "Delete" option highlighted by a red box.

The central content area shows a search interface with fields "P31_SEARCH_FROM" and "P31_SEARCH_TO", and a "Search" button. Below this is a report titled "Report 1" with columns "EXPENSE_ID", "EMPLOYEE_ID", "TYPE_ID", "PAYMENT_AMOUNT", and "TITLE".

The right panel contains the configuration for the "Search" button, divided into sections: Identification, Layout, Appearance, and Behavior. The "Identification" section shows "Button Name: Search" and "Label: Search". The "Appearance" section has "Button Template: Text" and "Hot: On". The "Behavior" section has "Action: Submit Page" and "Execute Validations: On".

M03.2-7. Expense Report - Dynamic Search (11/11)

The screenshot shows the Oracle Application Express (APEX) Page Designer. A red box highlights a message in Korean: "사이트에서 나가시겠습니까? 변경사항이 저장되지 않을 수 있습니다." (Are you leaving the site? Changes may not be saved.) A red arrow points from this message to a red box containing the text "메시지가 과도할 경우 Advanced > ignore !".

The main area displays the Page Designer interface for "Page 31: Expense". It includes a "Layout" tab, a "Search" section with two date input fields ("P31_SEARCH_FROM" and "P31_SEARCH_TO"), and a "Report1" section below it.

A blue box labeled "17" is overlaid on the "Advanced" section of the "Page Items" panel. This panel contains settings for "Warn on Unsaved Changes" (with "Ignore" selected), "Source" (set to "Page Default"), and "Form Region" (set to "Ignore").

The top navigation bar shows "p Builder", "SQL Workshop", "Team Development", and "App Gallery". The right side of the screen has various status icons and a user profile for "chuchu".



Low-code Dev

Oracle APEX - Beginner Workshop

M03. 영수증 관리: 3. Expense Report – Master Detail 생성

United Kingdom

France (395)

Germany (300)

Italy (230)

Nero

37 - 68

Politics

APEX

Karl Marx

1818 - 1883

Science and Technology

OCI

Marco Polo

1254 - 1324

Low-Code

Arts

[참고] Expense_Reports 테이블 설명

| APEXWS.EXPENSE_REPORTS | |
|--|---------------|
| P * EXPENSE_REPORT_ID | NUMBER (9) |
| * EMPLOYEE_ID | VARCHAR2 (50) |
| * REPORT_TITLE | VARCHAR2 (50) |
| COMPANY_CARD_RECEIPT_NUM | NUMBER (3) |
| PRIVATE_CARD_RECEIPT_NUM | NUMBER (3) |
| COMPANY_CARD_AMOUNT | NUMBER (9) |
| PRIVATE_CARD_AMOUNT | NUMBER (9) |
| CRE_DATE | DATE |
| EXPENSE_REPORTS_PK (EXPENSE_REPORT_ID) | |
| EXPENSE_REPORTS_EMPLOYEE_ID_FK (EMPLOYEE_ID) | |
| U EXPENSE_REPORTS_PK (EXPENSE_REPORT_ID) | |

```
CREATE TABLE EXPENSE_REPORTS (
    expense_report_id number(9) not null,
    employee_id      VARCHAR2(50) not null,
    report_title     VARCHAR2(50) not null,
    company_card_receipt_num number(3),
    private_card_receipt_num number(3),
    company_card_amount number(9),
    private_card_amount number(9),
    cre_date         DATE,
    CONSTRAINT expense_reports_pk PRIMARY KEY (expense_report_id),
    CONSTRAINT expense_reports_employee_id_fk
        FOREIGN KEY (employee_id) references EMPLOYEES
);
```



M03.3-1. Master Detail 생성과 데이터 소스 연결(1/6)

The screenshot shows the Oracle APEX App Builder interface. At the top, there are navigation links: APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are icons for search, refresh, help, and a user profile labeled "flower".

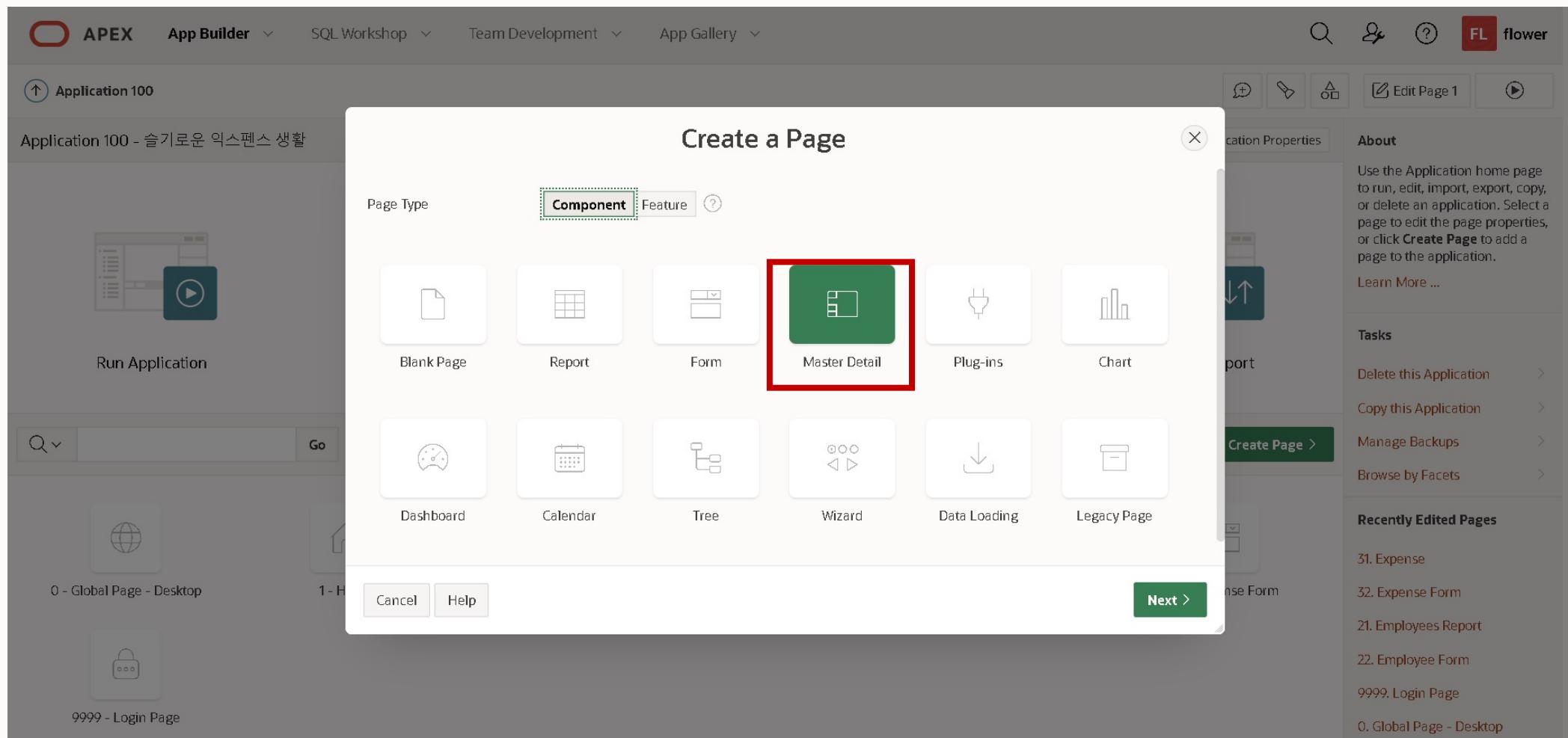
The main area displays "Application 100 - 슬기로운 익스펜스 생활". Below the title, there are five categories with icons: Run Application, Supporting Objects, Shared Components, Utilities, and Export / Import. A "Create Page >" button is highlighted with a red box.

Below these categories, there is a search bar and a toolbar with "Actions" dropdown. Underneath, a grid of page thumbnails is shown:

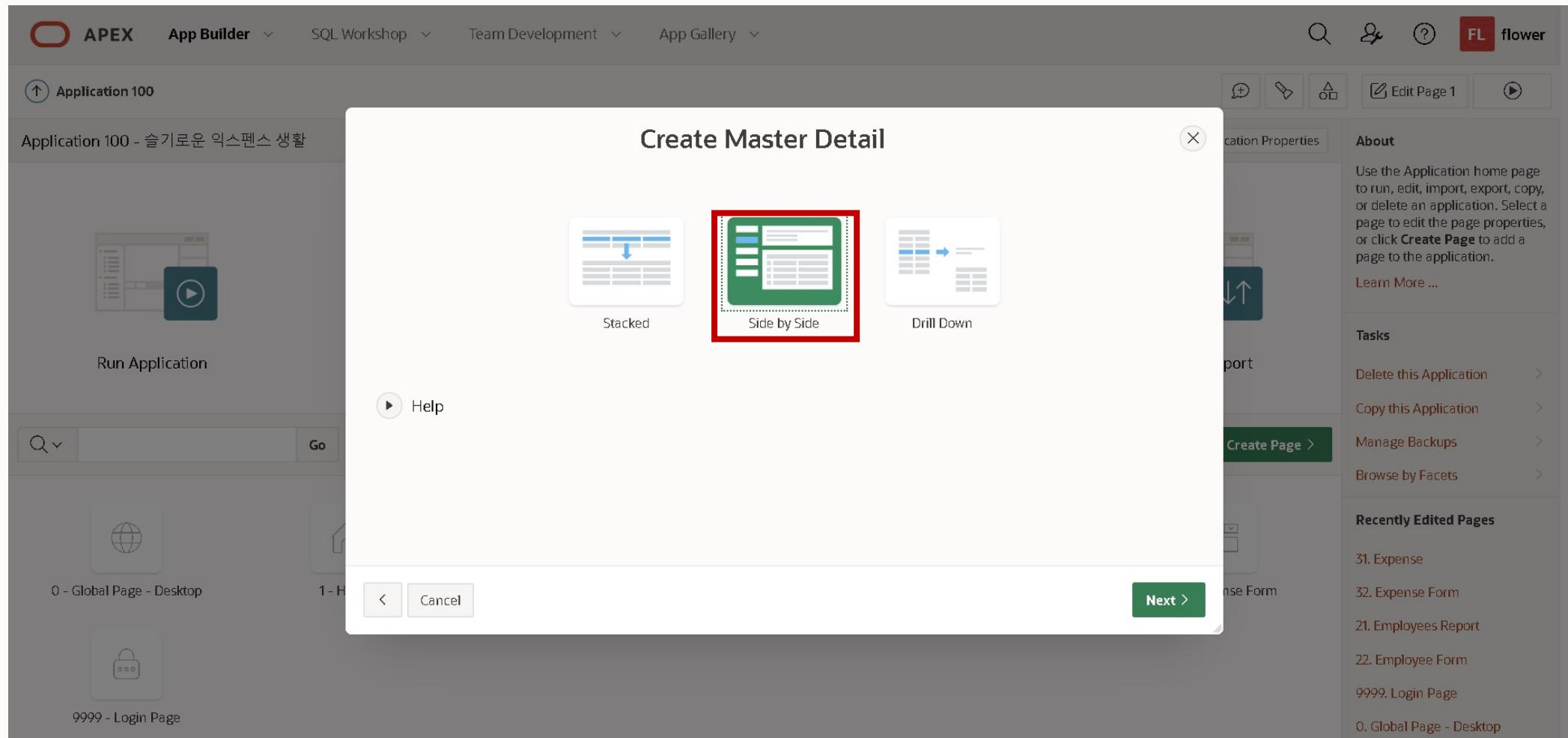
- 0 - Global Page - Desktop
- 1 - Home
- 21 - Employees Report
- 22 - Employee Form
- 31 - Expense
- 32 - Expense Form
- 9999 - Login Page

On the right side, there is a sidebar with sections for "About", "Tasks", and "Recently Edited Pages". The "About" section provides instructions for running, editing, importing, exporting, copying, or deleting an application. The "Tasks" section lists options like Delete this Application, Copy this Application, Manage Backups, and Browse by Facets. The "Recently Edited Pages" section lists pages such as 31. Expense, 32. Expense Form, 21. Employees Report, 22. Employee Form, 9999. Login Page, and 0. Global Page - Desktop.

M03.3-1. Master Detail 생성과 데이터 소스 연결(2/6)



M03.3-1. Master Detail 생성과 데이터 소스 연결(3/6)



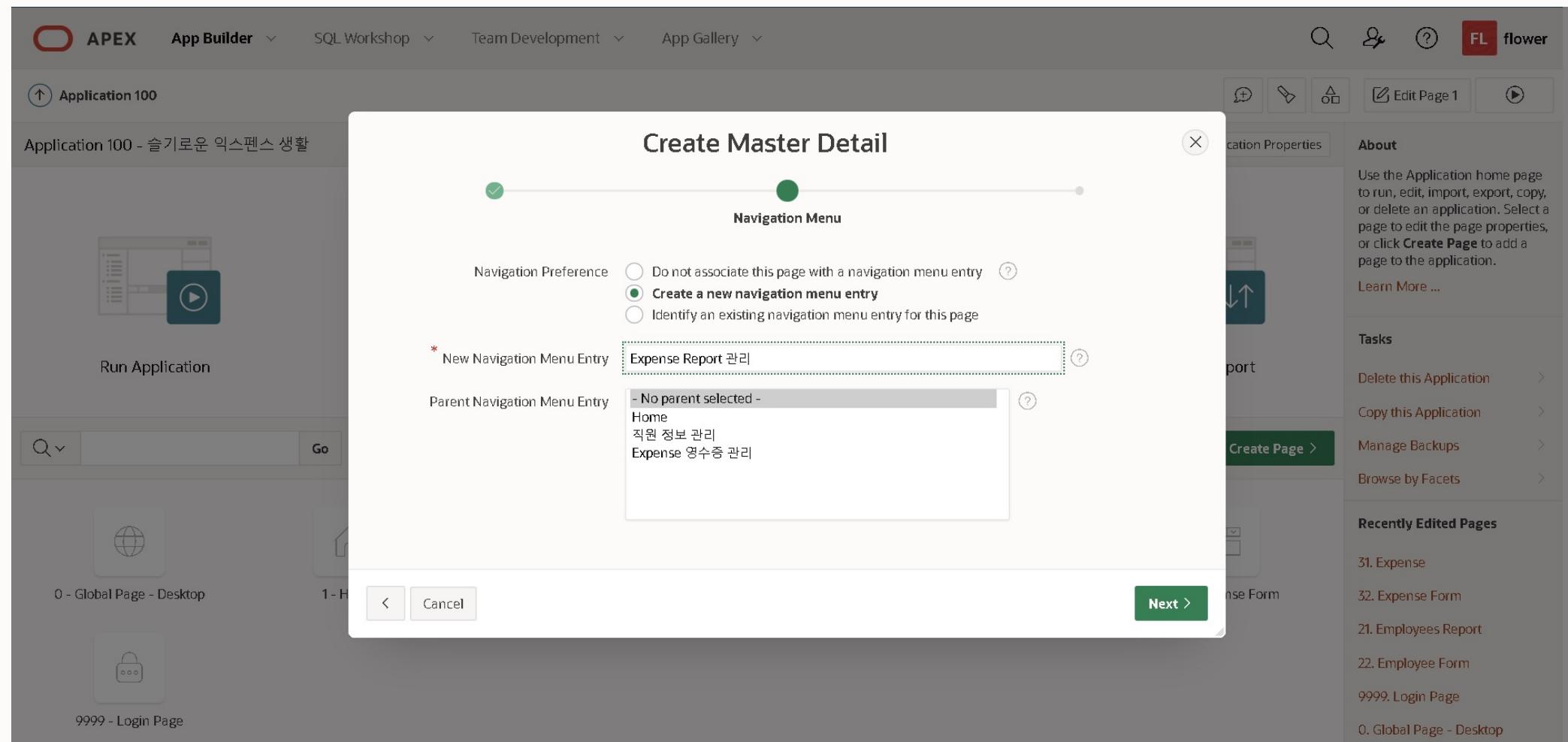
M03.3-1. Master Detail 생성과 데이터 소스 연결(4/6)

The screenshot shows the Oracle APEX App Builder interface. A modal dialog titled "Create Master Detail" is open in the center. The dialog has a progress bar at the top with three steps: "Page Attributes" (green), "Master Detail Regions" (grey), and "Finish" (grey). The "Page Attributes" step is active. It contains the following fields:

- * Starting Page Number: 41
- * Master Detail Page Name: Expense Report
- Breadcrumb: - do not add breadcrumb region to page -

At the bottom of the dialog are "Cancel" and "Next >" buttons. To the right of the dialog, the application's sidebar shows "Application Properties" and "About" sections. The "About" section includes a "Tasks" list with options like "Delete this Application", "Copy this Application", and "Manage Backups". Below that is a "Recently Edited Pages" list with items such as "31. Expense", "32. Expense Form", "21. Employees Report", etc.

M03.3-1. Master Detail 생성과 데이터 소스 연결(5/6)



M03.3-1. Master Detail 생성과 데이터 소스 연결(6/6)

The screenshot shows the Oracle APEX App Builder interface. A modal dialog titled "Create Master Detail" is open in the center. The dialog has several input fields:

- * Table / View Owner: APEXWS
- * Master Table: EXPENSE_REPORTS (table)
- * Primary Display Column: REPORT_TITLE (Varchar2)
- * Secondary Display Column: CRE_DATE (Date)
- * Detail Table: EXPENSE_REPORT_ITEMS
- Detail Table 2: - Select Value -

At the bottom right of the dialog, there are two buttons: "Advanced" and "Create". The "Create" button is highlighted with a red box.

In the background, the main APEX interface shows Application 100 with a title "Application 100 - 슬기로운 익스펜스 생활". On the left, there's a "Run Application" button and a search bar. On the right, there are sections for "About", "Tasks", and "Recently Edited Pages".

Master Detail 페이지 생성

The screenshot displays a Master Detail page titled "Expense Report". The left sidebar contains navigation links: Home, 직원 정보 관리, Expense 영수증 관리, and Expense Report 관리. The "Expense Report 관리" link is highlighted with a blue border. The main content area shows a search bar with placeholder text "Search..." and a message "No Record Selected". Below it, another message says "No Records Found". The bottom navigation bar includes links for Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon. The footer indicates "Release 1.0".

M03.3-2. PK 자동 설정 : Sequence 생성 (1/5)

The screenshot shows the Oracle SQL Workshop interface. At the top, there are tabs for APEX, App B, and SQL Workshop (which is highlighted with a red box). Below the tabs are several icons representing different tools: Object Browser (highlighted with a red box and labeled '2'), SQL Commands, SQL Scripts, Utilities, and RESTful Services. To the right, there's an 'About' section describing the SQL Workshop as a collection of tools to manage database objects, a 'Schema' section for selecting a default database schema, and a 'Create Object' menu with options like Table, View, Index, Sequence, Type, Package, Procedure, Function, Trigger, and Materialized View. The main area displays 'Recently Created Tables' and 'Recent SQL Commands'. The 'Recently Created Tables' table lists tables like TEAMS, EXPENSE_REPORT_ITEMS, EXPENSE_REPORTS, EXPENSES, EXPENSE_TYPES, EMPLOYEES, USER_TYPES, and JOB_TYPES, all created 3 days ago. The 'Recent SQL Commands' table shows 'No SQL commands found'. The 'Recent SQL Scripts' table shows a single script named 'base_table.sql' created 3 days ago.

| Recently Created Tables | Recent SQL Commands | Recent SQL Scripts |
|---|-----------------------|------------------------------|
| TEAMS EXPENSE_REPORT_ITEMS EXPENSE_REPORTS EXPENSES EXPENSE_TYPES EMPLOYEES USER_TYPES JOB_TYPES | No SQL commands found | base_table.sql 3 days ago |

yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/...

M03.3-2. PK 자동 설정 : Sequence 생성 (2/5)

The screenshot shows the Oracle Application Express (APEX) interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop (which is currently selected), Team Development, and App Gallery. The search bar contains the text "flower". The schema dropdown is set to "APEXWS".

The left sidebar is titled "Object Browser" and has a dropdown menu set to "Tables". It lists several tables: EMPLOYEES, EXPENSES, EXPENSE_REPORTS, EXPENSE_REPORT_ITEMS, EXPENSE_TYPES, JOB_TYPES, TEAMS, and USER_TYPES.

The main workspace shows a modal dialog for creating a new object. The "Type" dropdown menu is open, with the "Sequence" option highlighted and a red box drawn around it. A blue box with the number "3" is placed over the "Sequence" button in the bottom-left corner of the dialog.

M03.3-2. PK 자동 설정 : Sequence 생성 (3/5)

Create Sequence

Define

Schema: APEXWS [?](#)

* Sequence Name: EXPENSE_REPORT_SEQ [?](#)

Preserve Case

Start With: 1 [?](#)

Minimum Value: [?](#)

Maximum Value: [?](#)

Increment By: 1 [?](#)

Cycle

Number to Cache: [?](#)

Order

Database sequences are database objects used to generate integer values according to rules defined when the sequence is created. Database sequences are generally used to populate table primary keys.

[Cancel](#) [Next >](#)

M03.3-2. PK 자동 설정 : Sequence 생성 (4/5)

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there are navigation tabs: APEX, App Builder, SQL Workshop (which is selected), Team Development, and App Gallery. On the right side, there are search, user profile, and help icons, along with a red 'flower' button.

In the main area, a green circular icon with an upward arrow and the text 'Create Sequence' is visible. Below it, the title 'Create Sequence' is centered. To the left of the title is a green checkmark icon, and to the right is a green circle labeled 'Confirm'.

The 'Schema' field is set to 'APEXWS'. The 'Sequence Name' field contains 'EXPENSE_REPORT_SEQ'. Below these fields is a 'SQL' tab with a checked checkbox, showing the generated SQL code:

```
create sequence "EXPENSE_REPORT_SEQ"
start with 1
increment by 1
nocache
nocycle
noorder
/
```

M03.3-2. PK 자동 설정 : Sequence 생성 (5/5)

The screenshot shows the Oracle Application Express (APEX) interface in the SQL Workshop tab. The left sidebar displays the Object Browser with the Sequences category selected. A sequence named "EXPENSE_REPORT_SEQ" is highlighted. The main panel shows the details for this sequence under the "Object Details" tab. The sequence is named "EXPENSE_REPORT_SEQ". The configuration parameters are as follows:

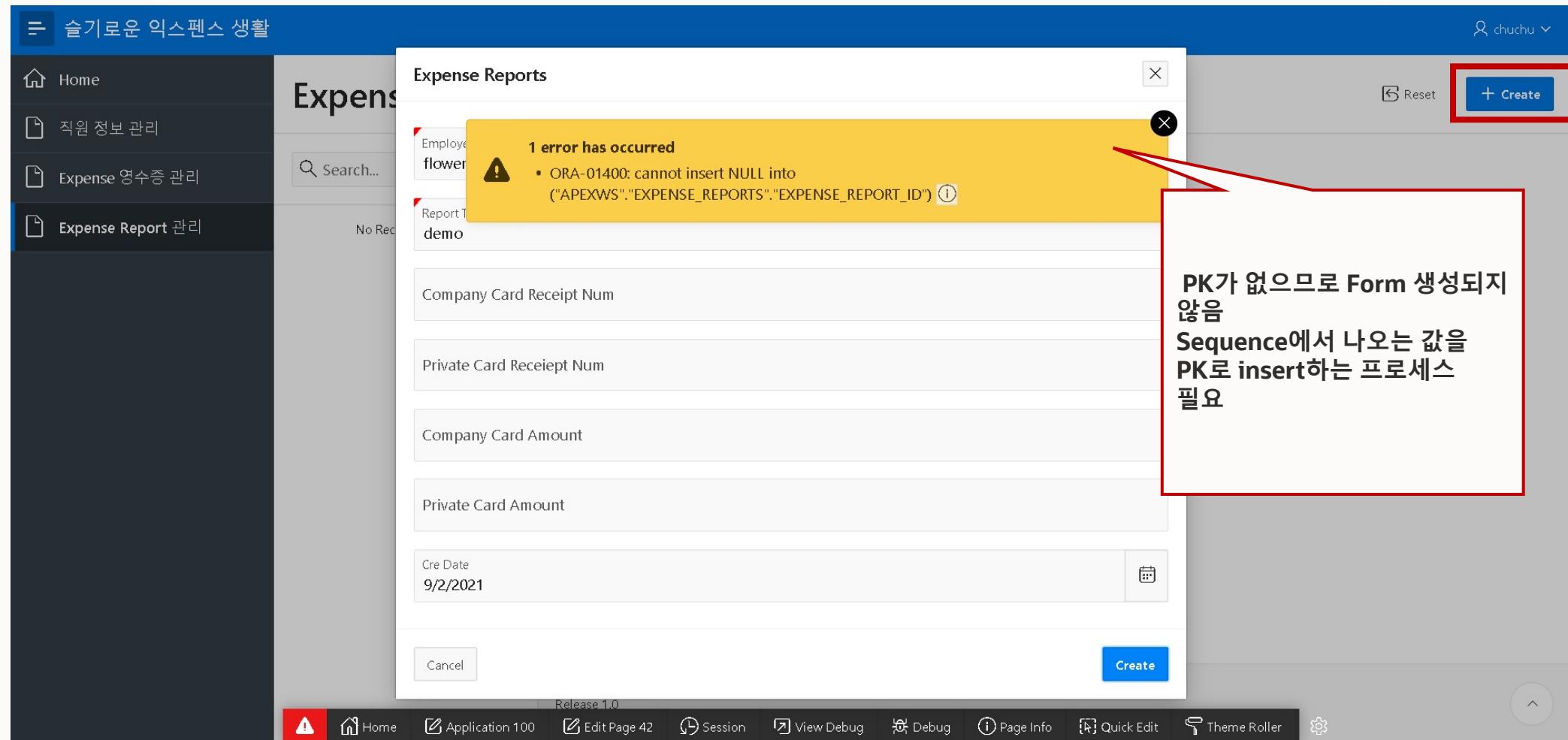
| Setting | Value |
|--------------|----------------------------------|
| Min Value | 1 |
| Max Value | 99999999999999999999999999999999 |
| Increment By | 1 |
| Cycle Flag | N |
| Order Flag | N |
| Cache Size | 0 |
| Last Number | 1 |

At the bottom of the main panel, there are "Alter" and "Drop" buttons. The schema is set to "APEXWS".

M03.3-3. PK 자동 설정 : Process 등록 (1/8)

The screenshot shows the Oracle Application Express (APEX) App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user profile icons. On the left, there are four main buttons: Create (with a plus icon), Import (with an upward arrow icon), Dashboard (with a clock icon), and Workspace Utilities (with a wrench icon). Below these are search, go, and actions buttons, followed by a red 'Create >' button. A red box highlights the first item in the list view, which is titled '슬기로운 익스펜스 생활' (Travel Expenses Life) with a count of 100. The right sidebar contains sections for About, Recent (with a link to '100 슬기로운 익스펜스 생활'), Tasks (with links to 'Install Sample App', 'Install Productivity App', 'Manage Backups', and 'Browse by Facets'), and Migrations (with a link to 'Oracle Forms Migrations').

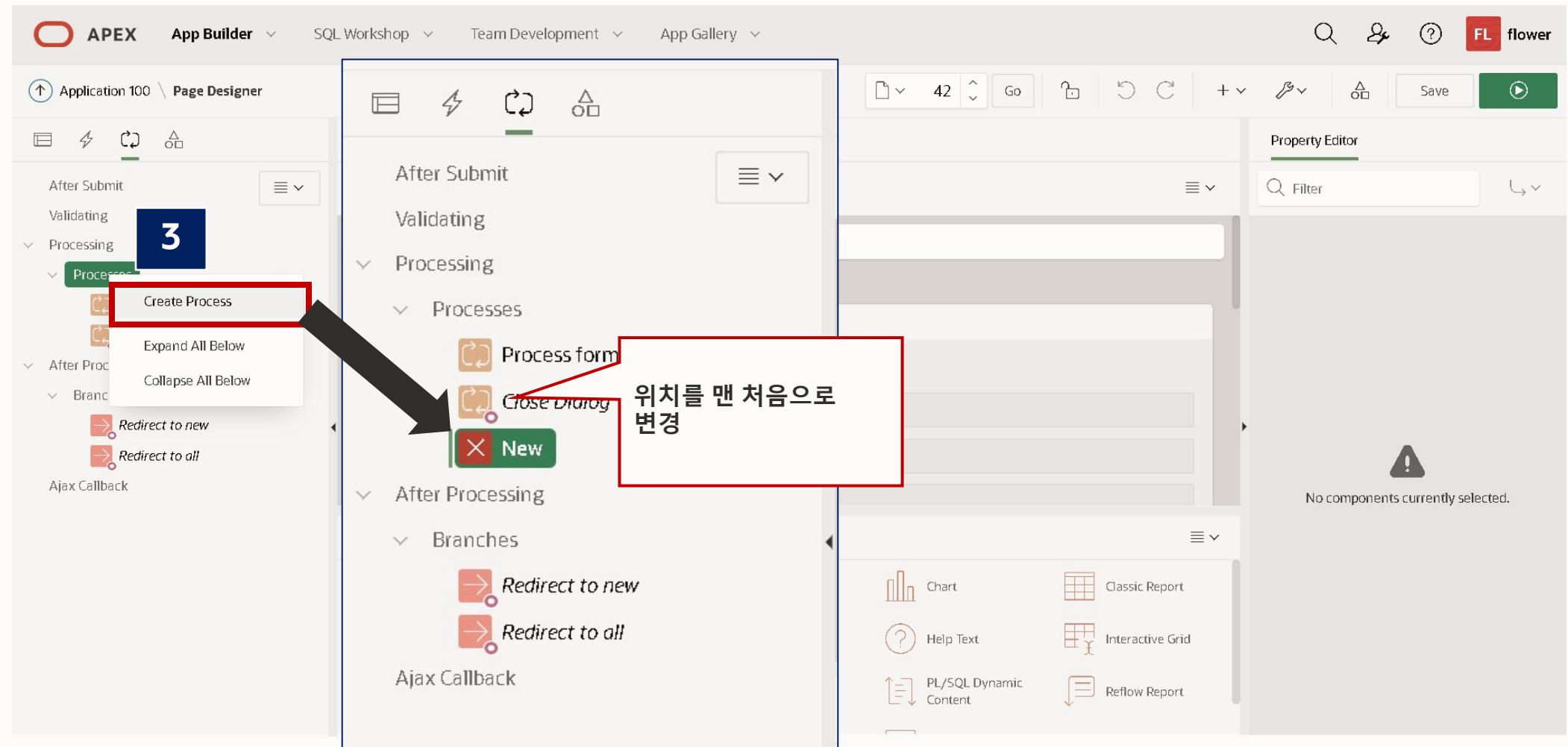
M03.3-3. PK 자동 설정 : Process 등록 (2/8)



M03.3-3. PK 자동 설정 : Process 등록 (3/8)

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The top navigation bar includes tabs for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The title bar has a page number '1' and a search bar with the text 'flower'. The left sidebar contains sections for After Submit, Validating, Processing (with sub-sections for Processes and After Processing), and Ajax Callback. A red box highlights the 'Processes' icon under 'Processing'. The main workspace displays a modal dialog titled 'Expense Reports' with fields for P42_EMPLOYEE_ID, P42_REPORT_TITLE, and P42 COMPANY CARD RECEIPT NUM. The right sidebar shows the 'Identification' section with Name set to 'Expense Reports', Page Alias to 'expense-reports', Title to 'Expense Reports', and Page Group to '- Select -'. The 'Appearance' section shows User Interface as 'Desktop' and Page Mode as 'Modal Dialog'. The 'Dialog' section is partially visible. At the bottom, there are tabs for Regions, Items, and Buttons, followed by a grid of various report and chart components.

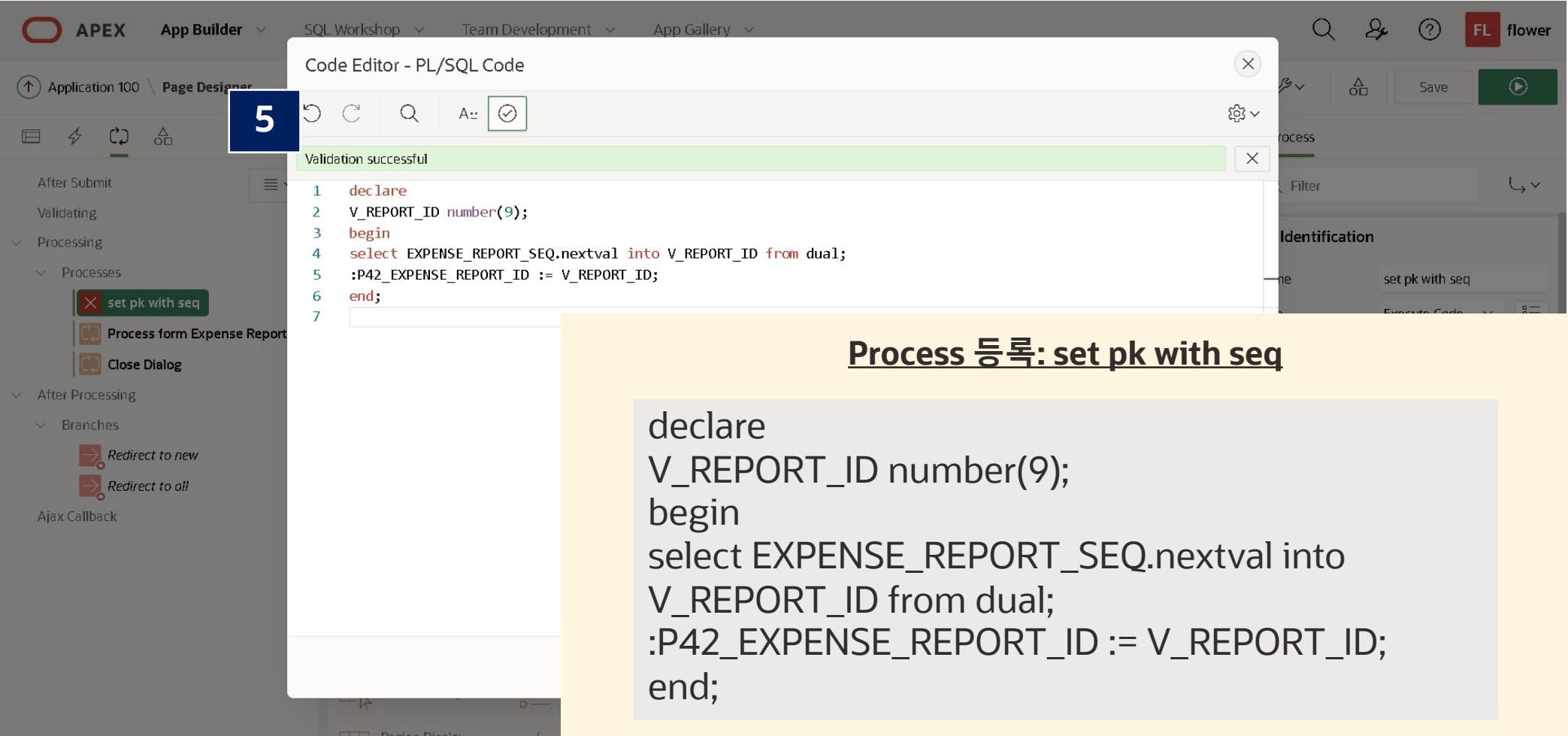
M03.3-3. PK 자동 설정 : Process 등록 (4/8)



M03.3-3. PK 자동 설정 : Process 등록 (5/8)

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and a user icon. The main workspace displays a page titled "Expense Reports" with various items like P42_EMPLOYEE_ID, P42_REPORT_TITLE, and P42 COMPANY CARD RECEIPT NUM. On the left, a sidebar lists processing events such as After Submit, Validating, Processing, and After Processing, each with associated processes like "set pk with seq". The right sidebar is focused on the configuration of a process named "set pk with seq". It shows fields for Name ("set pk with seq"), Type ("Execute Code"), Source ("Local Database", "PL/SQL"), PL/SQL Code (containing "Code 입력" highlighted with a red box), Sequence (10), Point ("Processing"), and Run Process ("Once Per Page Visit").

M03.3-3. PK 자동 설정 : Process 등록 (6/8)



Code Editor - PL/SQL Code

Validation successful

```
1 declare
2   V_REPORT_ID number(9);
3 begin
4   select EXPENSE_REPORT_SEQ.nextval into V_REPORT_ID from dual;
5   :P42_EXPENSE_REPORT_ID := V_REPORT_ID;
6 end;
7
```

Process 등록: set pk with seq

```
declare
V_REPORT_ID number(9);
begin
select EXPENSE_REPORT_SEQ.nextval into
V_REPORT_ID from dual;
:P42_EXPENSE_REPORT_ID := V_REPORT_ID;
end;
```

M03.3-3. PK 자동 설정 : Process 등록 (7/8)

The screenshot shows a web-based application interface for managing expense reports. On the left, a sidebar menu includes 'Home', '직원 정보 관리', 'Expense 영수증 관리', and 'Expense Report 관리'. The 'Expense Report 관리' item is selected. The main content area has a title 'Expense Report' and a search bar. A green success message 'Row created.' is displayed at the top right. Below it are two sections: 'Expense Reports' and 'Expense Report Items'. The 'Expense Reports' section shows a single row with Employee Id 'flower' and Report Title 'demo'. The 'Expense Report Items' section displays the message 'No data found.' A red callout box points to the 'Expense Reports' section with the text 'PK가 있으므로 Form 생성 가능, Master detail 생성 가능'.

Expense Reports

| | |
|--------------|--------|
| Employee Id | flower |
| Report Title | demo |

Expense Report Items

No data found.

PK가 있으므로 Form 생성 가능, Master detail 생성 가능

M03.3-3. PK 자동 설정 : Process 등록 (8/8)

Form에서 Create 버튼을
클릭할 경우에만 PK 설정되는
프로세스가 실행하도록 설정

6

M03.3-4. Form 수정 – Hidden

The screenshot shows the Oracle APEX App Builder interface in the 'Page Designer' mode. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and save buttons. The current application is 'Application 100 \ Page Designer'.

The left sidebar displays the page structure with regions like 'Pre-Rendering', 'Regions' (Dialog Header, Content Body, Dialog Footer), and 'Buttons'. The 'Content Body' region is currently active, showing items such as P42_EMPLOYEE_ID, P42_REPORT_TITLE, and four fields grouped together: P42_COMPANY_CARD_RECEIPT_NUM, P42_PRIVATE_CARD_RECEIPT_NUM, P42_COMPANY_CARD_AMOUNT, and P42_PRIVATE_CARD_AMOUNT. A red box highlights the first of these four fields.

The main workspace shows the 'Expense Reports' page with its header and body content. The body content includes a previous section and several items, with the last four items being the ones highlighted by the red box.

The right panel, titled 'Page Items', contains a 'Type' dropdown set to 'Number Field'. Below it, under 'Layout', the 'Hidden' option is highlighted with a blue box, indicating it is the selected item type for the highlighted field.

M03.3-4. Form 설정 – LOV Value 대체 (look up)

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 42: Expense Reports". The left sidebar displays the page structure with regions like "Content Body" and "Expense Reports". In the "Expense Reports" region, the "Items" section lists several items, including "P42_EMPLOYEE_ID" which is highlighted with a red box. The right panel shows the configuration for this item. The "Identification" section has "Name" set to "P42_EMPLOYEE_ID" and "Type" set to "Select List". The "Default" section contains a "PL/SQL Expression" field with the value "lower(:APP_USER)" and a "Type" field set to "Always". The "List of Values" section shows "Type" set to "Shared Component" and "List of Values" set to "EMPLOYEES". Several fields in the "Default" and "List of Values" sections are also highlighted with red boxes.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

Page Item

Identification

Name: P42_EMPLOYEE_ID

Type: Select List

Label

Settings

PL/SQL Expression: lower(:APP_USER)

Default

Type: Expression

Language: PL/SQL

PL/SQL Expression

Read Only

Type: Always

List of Values

Type: Shared Component

List of Values: EMPLOYEES

M03.3-4. Form 수정 – 날짜 자동 설정

The screenshot shows the Oracle APEX App Builder interface in the 'Page Designer' mode for Application 100, Page 42: Expense Reports. The left sidebar lists page regions: Pre-Rendering, Regions (Dialog Header, Content Body, Expense Reports), Items (P42_EMPLOYEE_ID, P42_REPORT_TITLE, P42_COMPANY_CARD_RECEIPT_NUM, P42_PRIVATE_CARD_RECEIPT_NUM, P42_COMPANY_CARD_AMOUNT, P42_PRIVATE_CARD_AMOUNT, P42_CRE_DATE), and Buttons (CANCEL). The main area displays the 'Expense Reports' page with a 'PREVIOUS' button and several input fields for items like P42_EMPLOYEE_ID, P42_REPORT_TITLE, and P42_CRE_DATE. The 'P42_CRE_DATE' field is highlighted with a red box. The right sidebar contains configuration panels for 'Page Item' settings. Two specific sections are highlighted with red boxes: 'Default' settings where 'PL/SQL Expression' is set to 'sysdate', and 'Read Only' settings where 'Type' is set to 'Always'. Other visible settings include 'Type: Expression', 'Language: PL/SQL', and 'Server-side Condition'.

Default

- Type: Expression
- Language: PL/SQL
- PL/SQL Expression: sysdate

Read Only

- Type: Always

중간 결과물

The screenshot shows a web application interface for managing expense reports. The top navigation bar is blue with the title "슬기로운 익스펜스 생활". On the left, a sidebar menu includes "Home", "직원 정보 관리", "Expense 영수증 관리", and "Expense Report 관리", with "Expense Report 관리" currently selected. The main content area has a title "Expense Report" and a search bar. A modal window titled "Expense Reports" is open, showing fields for "Employee Id" (填写), "Report Title", and "Cre Date" (填写). At the bottom of the modal are "Cancel" and "Create" buttons. The footer contains links for "Home", "Application 100", "Edit Page 42", "Session", "View Debug", "Debug", "Page Info", "Quick Edit", "Theme Roller", and "Release 1.0".

M03.3-4. Form 수정 - 한글화

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode for Application 100, Page 42: Expense Reports. The left sidebar lists various regions and items. The main content area shows the expense report form with several input fields. The right panel, titled 'Page Item', details the configuration for the 'P42_EMPLOYEE_ID' item, specifically changing its label to '작성자'.

Page Item Configuration:

- Name:** P42_EMPLOYEE_ID
- Type:** Select List
- Label:** 작성자 (highlighted with a red box)
- Settings:** (button)
- Layout:** (button)
- Appearance:** (button)
- Validation:** (button)
- List of Values:**
 - Type:** Shared Component
 - List of Values:** EMPLOYEES

M03.3-4. Form 수정 - 한글화

The screenshot shows the Oracle APEX App Builder interface in the 'Page Designer' mode for 'Page 42: Expense Reports'. The left sidebar lists various regions and items, including 'Expense Reports' under 'Content Body' which contains items like P42_EMPLOYEE_ID, P42_REPORT_TITLE, and P42_CRE_DATE. The main workspace displays the 'Expense Reports' page with its 'DIALOG HEADER' and 'CONTENT BODY'. In the 'CONTENT BODY', the 'ITEMS' section shows the 'P42_REPORT_TITLE' item highlighted with a green background. The right panel, titled 'Page Item', shows the configuration for this item. The 'Identification' tab has 'Name' set to 'P42_REPORT_TITLE' and 'Type' set to 'Text Field'. The 'Label' tab is open, showing the label '리포트 이름' (Report Name) in Korean, which is highlighted with a red rectangle. Other tabs include 'Settings', 'Layout', 'Appearance', 'Validation', 'Advanced', and 'Source'.

M03.3-4. Form 수정 - 한글화

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The application is titled "Application 100 \ Page Designer". The left sidebar shows the page structure with regions like "Pre-Rendering", "Regions", "Content Body", and "Buttons". The main area displays a dialog header titled "Expense Reports" with a content body containing items such as "P42_EMPLOYEE_ID", "P42_REPORT_TITLE", and "P42_CRE_DATE". The "P42_CRE_DATE" item is currently selected, and its properties are visible in the right-hand panel. The "Label" field is set to "P42_CRE_DATE" and has a red box around it, indicating it is being edited. Other properties shown include "Type: Date Picker" and a "Source" dropdown set to "Expense Report".



Low-code Dev

Oracle APEX - Beginner Workshop

M03. 영수증 관리: 3. Expense Report – Master Detail 생성

Politics - 37% (1,549)

United Kingdom - 31% (1,300)

France - 11% (477)

Germany - 8% (395)

Italy - 6% (230)

Nero - 37 - 68

Politics

Politics - 37% (1,549)

United Kingdom - 31% (1,300)

France - 11% (477)

Germany - 8% (395)

Italy - 6% (230)

Nero - 37 - 68

Politics

Karl Marx - 1818 - 1883

Science and Technology

Marco Polo - 1254 - 1324

Arts

Low-Code

Oracle

APEX

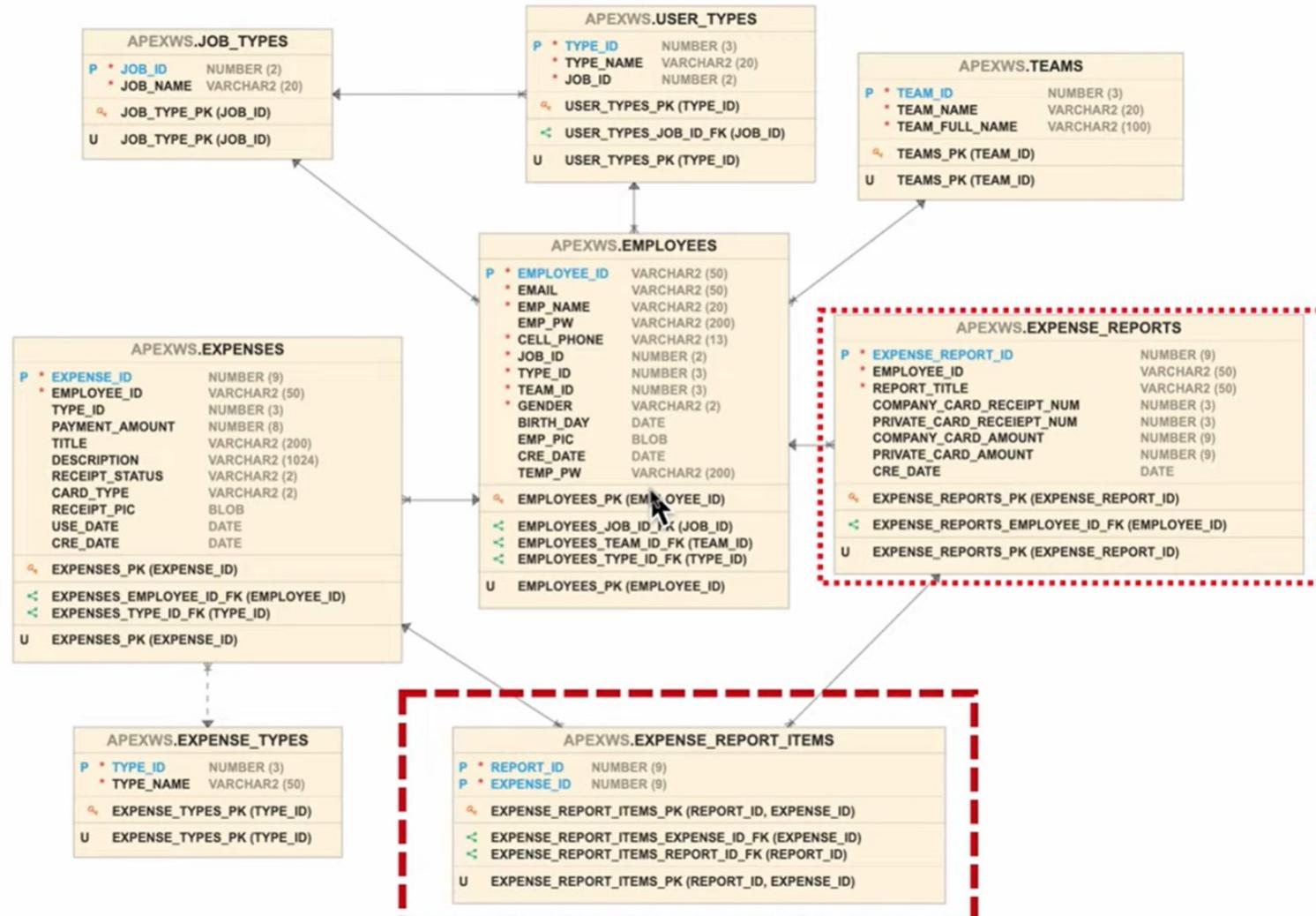
OCI

ADB

APL

[참고] Expense_Reports, Expense_Report_Items 테이블 설명

M03



작업 대상 – P43. Expense Report Items

The screenshot shows a web application interface for managing expense reports. The main title is 'Expense Report'. On the left, there's a sidebar with navigation links: Home, Employee Information Management, Expense Item Management, and Expense Report Management (which is currently selected). A search bar at the top right contains the text 'chuchu'. The main content area displays an 'Expense Reports' section with fields for Employee Id ('flower') and Report Title ('demo'). Below it is an 'Expense Report Items' section which shows a message 'No data found.' A modal dialog is open, titled 'Expense Report Items'. It contains two input fields: 'Report Id' (with value '1') and 'Expense Id' (with value 'P43', which is highlighted with a red box). At the bottom of the modal are 'Cancel' and 'Create' buttons. A red callout box points from the text 'Expense ID 부분에 대한 설정' to the 'Expense Id' field in the modal. The bottom of the screen shows a navigation bar with links like Home, Application 100, Edit Page 43, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a logo.

Expense ID 부분에
대한 설정

P43

Report Id

Expense Id

Expense Report Items

No data found.

Expense Reports

Employee Id flower

Report Title demo

Expense Report Items

Report Id 1

Expense Id P43

Create

Cancel

Release 1.0

Home Application 100 Edit Page 43 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.4-1. 리포트 아이템 수정 - Hidden

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The page being edited is 'Page 43: Expense Report Items'. On the left, the page structure tree shows the 'Content Body' region containing an 'Expense Report Items' item, which is expanded to show 'Items' P43_ROWID, P43_REPORT_ID, and P43_EXPENSE_ID. The 'P43_REPORT_ID' item is highlighted with a red box. The right side of the screen displays the 'Page Item' properties for the 'P43_REPORT_ID' item. The 'Identification' section shows the name 'P43_REPORT_ID' and the type set to 'Hidden' (which is also highlighted with a red box). The 'Source' section shows the form region as 'Expense Repor', column as 'REPORT_ID', data type as 'NUMBER', and both 'Query Only' and 'Primary Key' options disabled.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

Page Item

Filter

Identification

Name: P43_REPORT_ID

Type: Hidden

Settings

Layout

Appearance

Advanced

Source

Form Region: Expense Repor

Column: REPORT_ID

Data Type: NUMBER

Query Only

Primary Key

Regions Items Buttons

Breadcrumb Calendar Cards Chart Classic Report

Column Toggle Report Faceted Search Form Help Text Interactive Grid

Interactive Report List List View PL/SQL Dynamic Content Reflow Report

M03.4-1. 리포트 아이템 수정 - LOV, SQL 쿼리 적용 (1/4)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The page being edited is 'Page 43: Expense Report Items'. On the left, the page structure tree shows the 'Expense Report Items' region, which contains a 'Content Body' section with an 'Expense Report Items' item. This item has three items under it: 'P43_ROWID', 'P43_REPORT_ID', and 'P43_EXPENSE_ID'. The 'P43_EXPENSE_ID' item is highlighted with a red border. The right side of the screen displays the 'Page Item' configuration for 'P43_EXPENSE_ID'. The 'Identification' section shows the name 'P43_EXPENSE_ID' and the type 'Select List', which is also highlighted with a red border. The 'Label' section shows the label 'Expense Id'. The 'List of Values' section is expanded, showing the 'Type' dropdown set to 'Select List'. Below the configuration area, there is a grid of various report item components.

M03.4-1. 리포트 아이템 수정 - LOV, SQL 쿼리 적용 (2/4)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The page title is "Page 43: Expense Report Items".

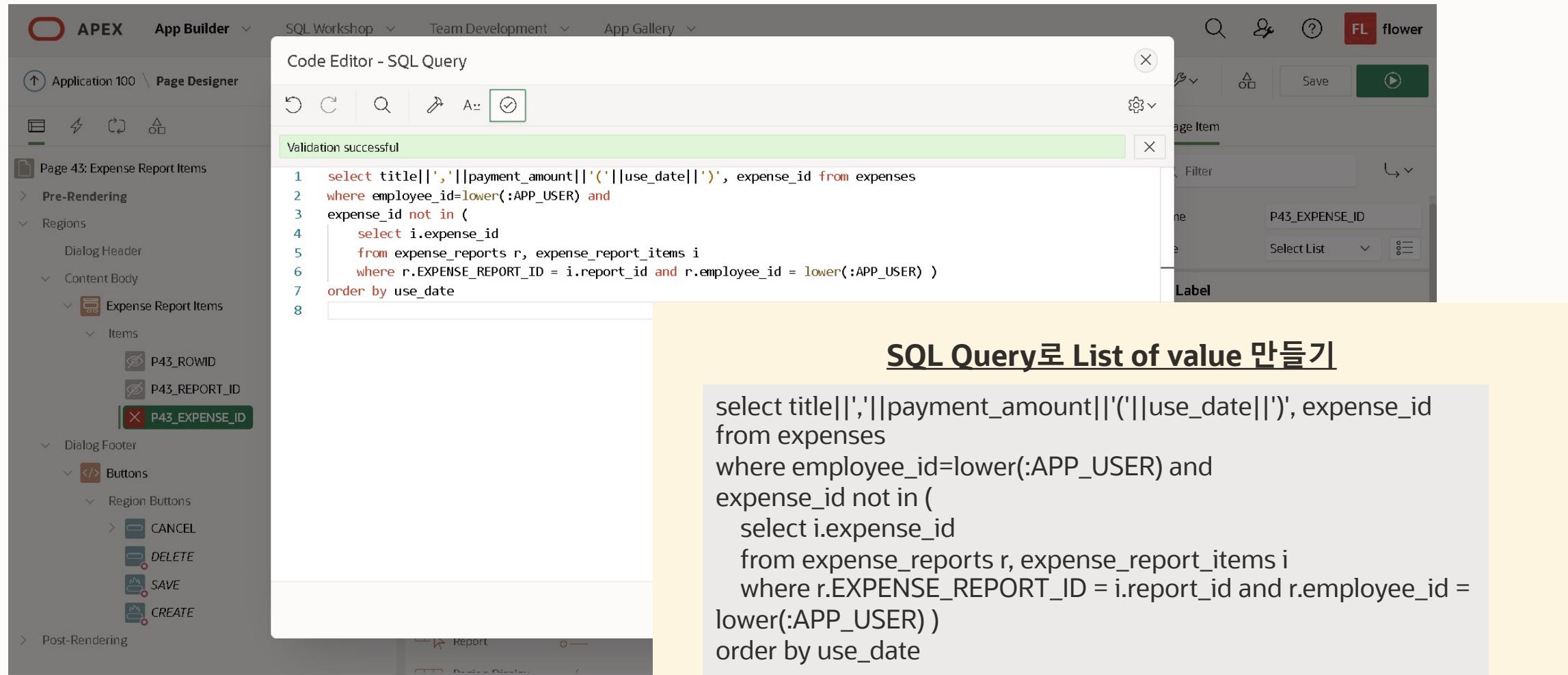
The left sidebar shows the page structure:

- Pre-Rendering
- Regions
 - Dialog Header
 - Content Body
 - Expense Report Items
 - Items
 - P43_ROWID
 - P43_REPORT_ID
 - P43_EXPENSE_ID** (highlighted with a red border)
 - Dialog Footer
 - Buttons
 - CANCEL
 - DELETE
 - SAVE
 - CREATE
- Post-Rendering

The central workspace displays the "Expense Report Items" region, which contains a "PREVIOUS" section and an "ITEMS" section. The "ITEMS" section lists the item "P43_EXPENSE_ID", which is also highlighted with a red border.

The right panel shows the "Page Item" configuration for "P43_EXPENSE_ID". The "Type" is set to "Select List". The "List of Values" section is expanded, showing the "Type" is set to "SQL Query".

M03.4-1. 리포트 아이템 수정 - LOV, SQL 쿼리 적용 (3/4)



The screenshot shows the Oracle APEX interface with the "SQL Workshop" tab selected. In the center is a "Code Editor - SQL Query" window displaying the following SQL code:

```
1 select title||','||payment_amount||'('||use_date||')', expense_id from expenses
2 where employee_id=lower(:APP_USER) and
3 expense_id not in (
4     select i.expense_id
5     from expense_reports r, expense_report_items i
6     where r.EXPENSE_REPORT_ID = i.report_id and r.employee_id = lower(:APP_USER) )
7 order by use_date
8
```

A green banner at the top of the editor says "Validation successful". To the right of the editor, there's a "Page Item" configuration panel with a "Label" section containing "P43_EXPENSE_ID".

SQL Query로 List of value 만들기

```
select title||','||payment_amount||'('||use_date||')', expense_id
from expenses
where employee_id=lower(:APP_USER) and
expense_id not in (
    select i.expense_id
    from expense_reports r, expense_report_items i
    where r.EXPENSE_REPORT_ID = i.report_id and r.employee_id =
lower(:APP_USER) )
order by use_date
```

M03.4-1. 리포트 아이템 수정 - LOV, SQL 쿼리 적용 (4/4)

The screenshot shows a web application interface for managing expense reports. The main page title is "Expense Report". On the left sidebar, under "Expense Report 관리", the "Expense Report Items" item is selected. In the center, there is a search bar and a table titled "Expense Reports" with columns "Employee Id" and "Report Description". One row in the table is visible, showing "Employee Id" as "flower" and the report description as "demo". A modal dialog titled "Expense Report Items" is open, listing several expense items:

| Expense Id | Report Description |
|------------|--------------------|
| 도서구입 | 20000(8/10/2021) |
| 중식 | 15000(8/10/2021) |
| 대중교통비 | 25000(8/16/2021) |
| 음료 다과 | 25000(8/18/2021) |
| 세미나 | 25000(8/18/2021) |
| 소모품 구매 | 70000(8/25/2021) |

A red callout box with the text "(p41) + 기호 수정" points to the "+" button located in the bottom right corner of the modal dialog.

M03.4-1. 리포트 아이템 수정 - 버튼 설정 (1/3)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. On the left, the page structure tree shows a region named P41_SEARCH with various items like Master Records, Content Body, and Expense Reports. A specific item, POP_EXPENSE_REPORT_ITEMS, is highlighted with a red box and labeled '1'.

In the center, a preview window displays a modal dialog titled 'ITEMS' with buttons for CLOSE, HELP, DELETE, CHANGE, and CREATE. Below it, another modal shows 'No Record Selected'.

On the right, the 'Button' configuration panel is open, showing the following details:

- Identification**:
 - Button Name: POP_EXPENSE_REPORT_ITEMS
 - Label: 영수증 추가 (highlighted with a red box and labeled '2')
- Layout**: Sequence 10, Region: Expense Report Items, Button Position: Edit.
- Appearance**: Button Template: Icon, Hot: Off, Template Options: Use Template Defaults, Remove UI Decoration, CSS Classes, Icon: fa-plus.

At the bottom, a toolbar provides icons for Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

M03.4-1. 리포트 아이템 수정 - 버튼 설정 (2/3)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar displays the page structure with regions like 'Master Records' and 'Expense Reports'. The central area shows a report item titled 'POP_EXPENSE_REPORT_ITEMS' with a green header bar. The right panel is the 'Button' configuration screen for this item. The 'Identification' section shows the button name 'POP_EXPENSE_REPORT_ITEMS' and label '영수증 추가'. The 'Layout' section sets the sequence to 10 and the region to 'Expense Report Items'. The 'Appearance' section is highlighted with a red box, showing the 'Button Template' set to 'Text with Icon', 'Hot' state with 'Icon' selected, 'Template Options' with 'Text' selected, 'CSS Classes' with 'Text with Icon' selected, and 'Icon' with 'fa-plus' selected. A large blue number '3' is overlaid in the bottom right corner of the appearance section.

M03.4-1. 리포트 아이템 수정 - 버튼 설정 (3/3)

The screenshot shows a web application interface for managing expense reports. The top navigation bar includes a logo, the title '슬기로운 익스펜스 생활', a search bar with placeholder 'flower', and a user icon. The left sidebar has a dark theme with links: Home, 직원 정보 관리, Expense 영수증 관리, and Expense Report 관리, with 'Expense Report 관리' being the active tab. The main content area is titled 'Expense Report'. It displays 'Expense Reports' with details: Employee Id (flower) and Report Title (demo). Below this is a section for 'Expense Report Items' which shows 'No data found.' A red box highlights the '+ Create' button in the top right corner of this section. At the bottom, there's a footer with links: Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon. A small circular arrow icon is also present.

M03.4-1. 리포트 아이템 수정 - 한글화

The screenshot shows the Oracle APEX App Builder interface for modifying a report item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with user profile and search icons.

The main workspace displays the "Page Designer" for "Application 100 \ Page Designer". On the left, the page structure tree shows the "Expense Report Items" region, which is expanded to show "Pre-Rendering", "Regions", "Content Body", and "Buttons". In the "Content Body" section, the "Expense Report Items" item is selected, and its properties are displayed in the central panel. The "Label" field is highlighted with a red border and contains the Korean text "대상 영수증".

The bottom panel shows a grid of various report item types, including Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

A large blue number "3" is located in the bottom right corner of the interface.



Low-code Dev

Oracle APEX - Beginner Workshop

M03. 영수증 관리: 3. Expense Report – 영수증 목록 개선

United Kingdom (1,300)

France (395)

Germany (361)

Italy (230)

Nero

37 - 68

Politics

APEX

Karl Marx

1818 - 1883

Science and Technology

OCI

Marco Polo

1254 - 1324

Low-Code

1,356

877

47

47

47

47

47

47

47

47

47

47

[참고] Expense_Report_Items의 View 설명

The screenshot shows a web application interface for managing expense reports. The top navigation bar includes a logo, the title '슬기로운 익스펜스 생활' (Smart Expense Life), a search bar with placeholder 'flower', and a user icon. The main content area has a title 'Expense Report' and a sub-section 'Expense Reports' with fields for 'Employee Id' (flower) and 'Report Title' (demo). Below this is a section titled 'Expense Report Items' which displays a message 'No data found.' A red box highlights this message, and a red callout points to it with the text '기존 Table 대신 View를 참조' (Refer to View instead of Table) and '→ View를 source로 등록 필요' (Register View as source). The bottom navigation bar contains links for Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon.

기존 Table 대신 View를 참조
→ View를 source로 등록 필요

[참고] Expense_Report_Items의 View 설명

Expense & Expense_Report_Items

```
CREATE OR REPLACE VIEW EXPENSE_REPORT_ITEMS_V AS
select i.REPORT_ID, i.EXPENSE_ID,
       e.EMPLOYEE_ID, e.TYPE_ID, e.PAYMENT_AMOUNT,
       e.title, e.DESCRIPTION, e.USE_DATE, e.cre_date
  from EXPENSE_REPORT_ITEMS i,
       EXPENSES e
 where i.EXPENSE_ID=e.EXPENSE_ID
```

[참고] Expense_report_items_V

The screenshot shows the Oracle SQL Workshop interface. At the top, there are navigation links: APEX, App Builder, SQL Workshop (which is currently selected), Team Development, and App Gallery. On the right side, there are icons for search, user profile, help, and a red 'flower' icon. Below the navigation bar, there are five main tabs: Object Browser, SQL Commands, SQL Scripts, Utilities, and RESTful Services. The 'Object Browser' tab is highlighted with a red box. To the right of the tabs, there is an 'About' section describing the SQL Workshop as a collection of tools to manage database objects, with a 'Learn More ...' link. Below the tabs, there are three sections: 'Recently Created Tables', 'Recent SQL Commands', and 'Recent SQL Scripts'. The 'Recently Created Tables' section lists several tables: TEAMS, EXPENSE_REPORT_ITEMS, EXPENSE_REPORTS, EXPENSES, EXPENSE_TYPES, EMPLOYEES, USER_TYPES, and JOB_TYPES, all created 3 days ago. The 'Recent SQL Commands' section shows the creation of a sequence and a script named 'base_table.sql' both created 88 minutes ago. The 'Recent SQL Scripts' section shows the same 'base_table.sql' script created 3 days ago. On the far right, there is a sidebar titled 'Create Object' with options for Table, View, Index, Sequence, Type, Package, Procedure, Function, Trigger, and Materialized View. A dropdown menu 'APEXWS' with a 'Set' button is also visible. At the bottom left, there is a URL: <https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4500:1001:128662376901908::::>.

| Recently Created Tables | | Recent SQL Commands | | Recent SQL Scripts | |
|-------------------------|------------|---|----------------|--------------------|------------|
| TEAMS | 3 days ago | create sequence "EXPENSE_REPORT_SEQ..." | 88 minutes ago | base_table.sql | 3 days ago |
| EXPENSE_REPORT_ITEMS | 3 days ago | | | | |
| EXPENSE_REPORTS | 3 days ago | | | | |
| EXPENSES | 3 days ago | | | | |
| EXPENSE_TYPES | 3 days ago | | | | |
| EMPLOYEES | 3 days ago | | | | |
| USER_TYPES | 3 days ago | | | | |
| JOB_TYPES | 3 days ago | | | | |

[참고] Expense_report_items_V

The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop (which is selected), Team Development, and App Gallery. The right side of the header shows a user profile for 'flower' and a schema dropdown set to 'APEXWS'. The main area is titled 'EXPENSE_REPORT_ITEMS_V' and displays its structure. On the left, there's a sidebar with a 'Views' dropdown menu, a search bar, and a list of objects including 'EXPENSE_REPORT_ITEMS_V' (which is highlighted in green). Below the title, a toolbar has buttons for View, Code, Data, UI Defaults, Dependencies, SQL, REST, Compile, and Drop. The central part of the screen is a table defining the columns of the view:

| Column Name | Data Type | Nullable |
|----------------|----------------|----------|
| REPORT_ID | NUMBER(9,0) | No |
| EXPENSE_ID | NUMBER(9,0) | No |
| EMPLOYEE_ID | VARCHAR2(50) | No |
| TYPE_ID | NUMBER(3,0) | Yes |
| PAYMENT_AMOUNT | NUMBER(8,0) | Yes |
| TITLE | VARCHAR2(200) | Yes |
| DESCRIPTION | VARCHAR2(1024) | Yes |
| USE_DATE | DATE | Yes |
| CRE_DATE | DATE | Yes |

M03.5-1. 영수증 목록 개선 – Source : View로 변경 (1/3)

1

2

Table → View로
바꿔도 where절
그대로

M03.5-1. 영수증 목록 개선 – Source : View로 변경 (2/3)

The screenshot shows the Oracle APEX Page Designer interface. A modal dialog box titled "Pick Table Name" is open in the center. The "Views" tab is selected in the top navigation bar of the dialog. The main table lists a single item: "EXPENSE_REPORT_ITEMS_V". The "Source" section on the right side of the dialog is configured with the following settings:

- Location: Local Database
- Type: Table / View
- Table Owner: Parsing Schema
- Table Name: EXPENSE_REPORT_ITEMS
- Include ROWID Column: Enabled (green switch)
- Where Clause: "REPORT_ID" = :P41_EXPENSE_REPORT_ID
- Order By: (empty field)
- Page Items to Cache: (empty field)

The background of the page designer shows the structure of the application, including regions like "P41_SEARCH", "Master Records", and "Expense Reports".

M03.5-1. 영수증 목록 개선 – Source : View로 변경 (3/3)

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar displays the page structure with regions like P41_SEARCH, Master Records, Content Body, and Expense Report Items. The main area shows a report item titled "Expense Report Items" with a green header bar. The report content area displays the message "No Record Selected". The right panel contains the "Source" configuration for this report item, including fields for Title, Type, Location, Type, Table Owner, Table Name, and Order By. Two specific items in the configuration are highlighted with red boxes and numbered 4 and 5:

- Number 4 points to the "Where Clause" field, which contains the expression `REPORT_ID = :P41_EXPENSE_REPORT_ID`.
- Number 5 points to the "Order By" field, which contains the expression `expense_id`.

M03.5-2. 영수증 Reports items 추가

The screenshot shows a web-based application interface for managing expense reports. At the top, there's a blue header bar with the text "슬기로운 익스펜스 생활" and a search bar labeled "chuchu". Below the header, the main title is "Expense Report". On the left, there's a sidebar with a search field and a list item "demo". The main content area displays an "Expense Reports" table with one row: "Employee Id" is "flower" and "Report Title" is "flower". Below this table is a modal window titled "Expense Report Items" containing a single item: "대상 영수증 도서구입,20000(8/10/2021)". There are "Cancel" and "Create" buttons at the bottom of the modal. To the right of the modal, there's a button labeled "영수증 추가 +". A red callout box with a red arrow points from the text "영수증 추가 누르고 4개 create 합니다" to the "+ Create" button in the modal. At the bottom of the page, there's a footer with "Release 1.0" and various navigation links like Home, Application 100, Edit Page 43, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon.

영수증 추가 누르고
4개 create 합니다

M03.5-2. 영수증 Reports items 추가

현재 1개씩 삭제 대신
일괄 삭제 버튼으로
수정

| Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date |
|------------|-------------|---------|----------------|--------|---------------------------------|-----------|----------|
| 9 | chuchu | 6 | 20000 | 도서구입 | 도서구입 | 8/10/2021 | 9/1/2021 |
| 10 | chuchu | 7 | 70000 | 소모품 구매 | 소모품 구매 | 8/25/2021 | 9/1/2021 |
| 11 | chuchu | 1 | 25000 | 대중교통비 | 야근 후 택시비 | 8/16/2021 | 9/1/2021 |
| 12 | chuchu | 5 | 25000 | 세미나 | 제주도 학회 세미나 비용 | 8/18/2021 | 9/1/2021 |

M03.5-3. 영수증 Reports items – Select All UI 생성 (1/10)

The screenshot shows the Oracle APEX App Builder interface for creating a report item. The left sidebar shows the page structure under 'P41_SEARCH' with sections like 'Master Records', 'Content Body', and 'Items'. The 'Items' section is expanded, showing 'P41_EXPENSE_REPORT_ID' which is highlighted with a red box and labeled '1'. The main workspace displays the 'Expense Report Items' configuration screen. The 'Source' section is highlighted with a red box and labeled '2'. The 'Table / View' option is selected under 'Type', and 'SQL Query' is selected under 'Table Name'. The 'SQL Query' input field contains the following code:

```
REPORT_ID = :P41_EXPENSE_REPORT_ID
```

The bottom navigation bar shows various report item types: Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

M03.5-3. 영수증 Reports items – Select All UI 생성 (2/10)

The screenshot shows the Oracle APEX App Builder interface. On the left, the page designer tree is visible, with a blue box labeled '3' highlighting the 'Items' node under 'Expense Reports'. The main area is a 'Code Editor - SQL Query' window containing the following code:

```
1 select ROWID,  
2      REPORT_ID,  
3      EXPENSE_ID,  
4      EMPLOYEE_ID,  
5      TYPE_ID,  
6      PAYMENT_AMOUNT,  
7      TITLE,  
8      DESCRIPTION,  
9      USE_DATE,  
10     CRE_DATE  
11    from EXPENSE_REPORT_ITEMS_V  
12   where REPORT_ID = :P41_EXPENSE_REPORT_ID  
13  order by expense_id
```

A yellow tooltip box titled 'SQL Query 변경' (SQL Query Change) is overlaid on the right side of the screen, displaying the modified SQL query:

```
select  
      REPORT_ID,  
      EXPENSE_ID,  
      EMPLOYEE_ID,  
      TYPE_ID,  
      PAYMENT_AMOUNT,  
      TITLE,  
      DESCRIPTION,  
      USE_DATE,  
      CRE_DATE  
  from EXPENSE_REPORT_ITEMS_V  
 where REPORT_ID = :P41_EXPENSE_REPORT_ID  
  order by expense_id
```

M03.5-3. 영수증 Reports items – Select All UI 생성 (3/10)

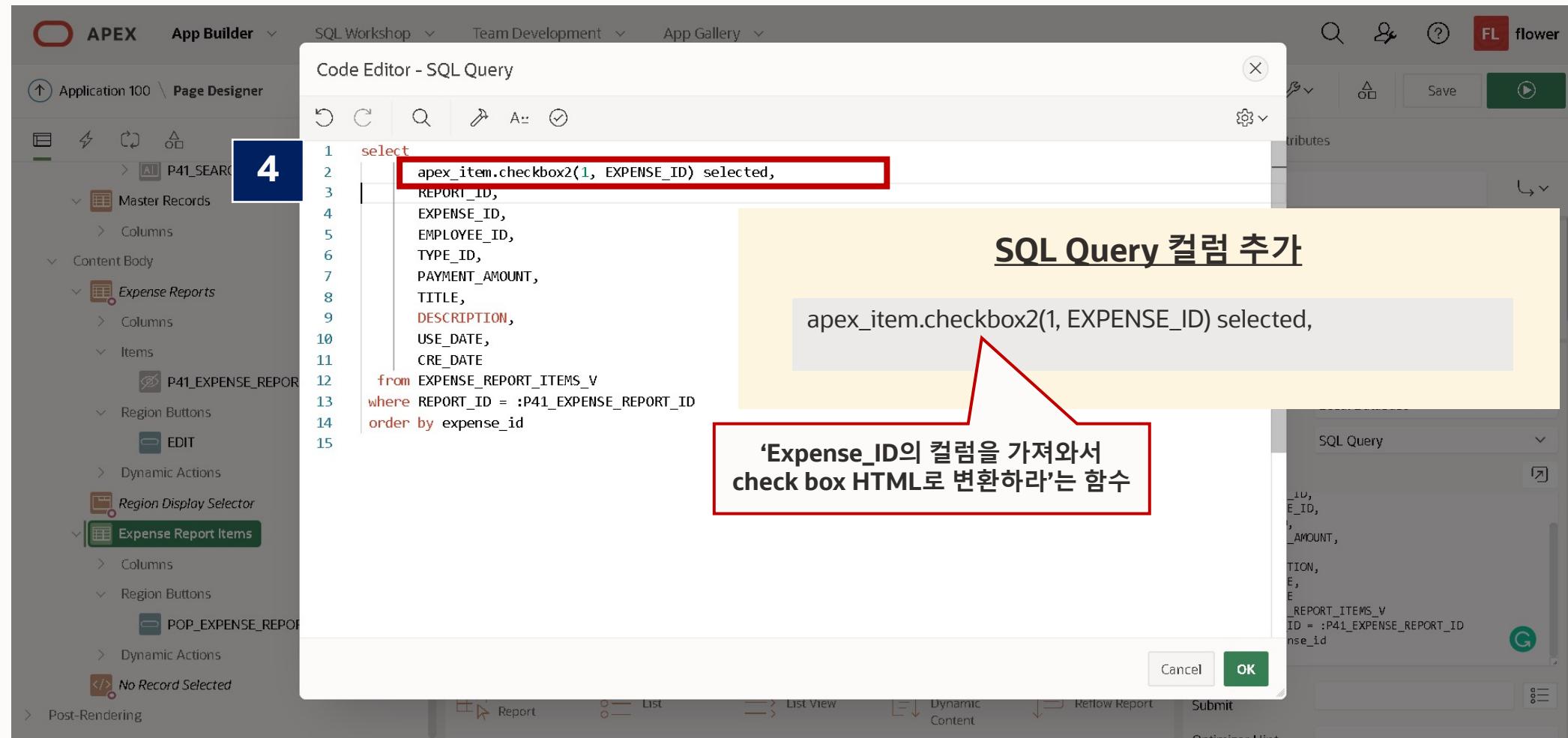
The screenshot shows the Oracle APEX App Builder interface. The left sidebar displays the application structure for "Application 100 \ Page Designer". Under "Content Body", there is a section for "Expense Reports" which contains a "Region Buttons" item named "P41_EXPENSE_REPORT_ITEMS". This item is currently selected, as indicated by the green border around its name in the sidebar.

The main area is a "Code Editor - SQL Query" window containing the following SQL code:

```
1 | select
2 |   REPORT_ID,
3 |   EXPENSE_ID,
4 |   EMPLOYEE_ID,
5 |   TYPE_ID,
6 |   PAYMENT_AMOUNT,
7 |   TITLE,
8 |   DESCRIPTION,
9 |   USE_DATE,
10 |  CRE_DATE
11 | from EXPENSE_REPORT_ITEMS_V
12 | where REPORT_ID = :P41_EXPENSE_REPORT_ID
13 | order by expense_id
14 |
```

The code editor has standard toolbar icons for Undo, Redo, Find, and Save. On the right side of the editor, there is a preview pane showing the results of the query. The preview pane title is "Expense Report Items" and it shows a single row of data with columns: ID, E_ID, E, _AMOUNT, TION, E, E. Below the preview pane, there are buttons for Cancel and OK.

M03.5-3. 영수증 Reports items – Select All UI 생성 (4/10)



The screenshot shows the Oracle APEX SQL Workshop interface. On the left, the application structure is visible, including 'Application 100 \ Page Designer' and a tree view of 'Master Records', 'Content Body', 'Expense Reports', 'Items', and 'Region Buttons'. A blue box labeled '4' is positioned over the 'Items' node. In the center, the 'Code Editor - SQL Query' window displays the following SQL code:

```
1 select
2     apex_item.checkbox2(1, EXPENSE_ID) selected,
3     REPORT_ID,
4     EXPENSE_ID,
5     EMPLOYEE_ID,
6     TYPE_ID,
7     PAYMENT_AMOUNT,
8     TITLE,
9     DESCRIPTION,
10    USE_DATE,
11    CRE_DATE
12   from EXPENSE_REPORT_ITEMS_V
13  where REPORT_ID = :P41_EXPENSE_REPORT_ID
14  order by expense_id
15
```

A red box highlights the line 'apex_item.checkbox2(1, EXPENSE_ID) selected,'. To the right of the editor, a modal window titled 'SQL Query 컬럼 추가' (SQL Query Column Add) contains the same highlighted line. Below this, a red box contains the Korean text: '‘Expense_ID의 컬럼을 가져와서 check box HTML로 변환하라’는 함수' (A function to convert the Expense_ID column into a checkbox HTML). At the bottom of the modal, there are 'Cancel' and 'OK' buttons.

M03.5-3. 영수증 Reports items – Select All UI 생성 (5/10)

The screenshot shows a web-based application interface for managing expense reports. The top navigation bar includes a logo, a search bar with placeholder 'chuchu', and links for 'Reset' and '+ Create'. On the left, a sidebar menu lists 'Home', '직원 정보 관리', 'Expense 영수증 관리', and 'Expense Report 관리', with 'Expense Report 관리' currently selected. The main content area has a title 'Expense Report' and a sub-section 'Expense Reports' containing fields for 'Employee Id' (set to 'flower') and 'Report Title' (set to 'demo'). Below this is a table titled 'Expense Report Items' with columns: Expense Id, Employee Id, Type Id, Payment Amount, Title, Description, Use Date, Cre Date, and Selected. The table contains four rows of data. A red callout box points to the 'Selected' column header, with the text '새로운 checkbox HTML 태그가 등록됨' (New checkbox HTML tag registered). At the bottom of the table, there is a button labeled '영수증 추가 +'.

| Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date | Selected |
|------------|-------------|---------|----------------|--------|---------------------------------|-----------|----------|---|
| 9 | chuchu | 6 | 20000 | 도서구입 | 도서구입 | 8/10/2021 | 9/1/2021 | <input type="checkbox" name="f01" value="9" /> |
| 10 | chuchu | 7 | 70000 | 소모품 구매 | 소모품 구매 | 8/25/2021 | 9/1/2021 | <input type="checkbox" name="f01" value="10" /> |
| 11 | chuchu | 1 | 25000 | 대중교통비 | 야근 후 택시비 | 8/16/2021 | 9/1/2021 | <input type="checkbox" name="f01" value="11" /> |
| 12 | chuchu | 5 | 25000 | 세미나 | 제주도 학회 세미나 비용 | 8/18/2021 | 9/1/2021 | <input type="checkbox" name="f01" value="12" /> |

M03.5-3. 영수증 Reports items – Select All UI 생성 (6/10)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the navigation pane displays sections like Region Buttons, Dynamic Actions, Region Display Selector, Expense Report Items, and Columns. Under Columns, several fields are listed: REPORT_ID, EXPENSE_ID, EMPLOYEE_ID, TYPE_ID, PAYMENT_AMOUNT, TITLE, DESCRIPTION, USE_DATE, CRE_DATE, and SELECTED. The 'SELECTED' field is highlighted with a red box and a callout bubble containing the Korean text '맨 위로 위치 옮김' (Move to top position). In the center, a modal window titled 'Expense Report Items' is open, showing a list of items with a 'POP_EXPENSE_REPORT_ITEMS' button highlighted. On the right, the Column panel is visible, showing settings for the 'SELECTED' column such as Type (Plain Text), Heading (Selected), Alignment (center), Sequence (83), and Appearance. At the bottom, various report item types are listed: Calendar, Cards, Chart, Classic Report, Faceted Search, Form, Help Text, Interactive Grid, List, List View, PL/SQL Dynamic Content, and Reflow Report.

M03.5-3. 영수증 Reports items – Select All UI 생성 (7/10)

The screenshot shows the Oracle APEX App Builder interface for creating a report item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main workspace displays the 'Expense Report Items' configuration screen. On the left, a sidebar lists various components under 'Region Buttons', 'Dynamic Actions', 'Region Display Selector', 'Expense Report Items' (which is selected and highlighted with a red border), and 'Columns'. Under 'Columns', the 'REPORT_ID' field is also selected and highlighted with a red border.

The central area shows the 'Expense Report Items' configuration panel with tabs for 'ITEMS', 'REGION CONTENT', and 'SUB REGIONS'. It includes buttons for COPY, EDIT, PREVIOUS, NEXT, CLOSE, HELP, DELETE, CHANGE, and CREATE. Below this is a message: '</> No Record Selected'.

The right side of the screen contains several sections: 'Column' (with a 'Filter' search bar), 'Security' (with a checked checkbox and a red border), 'Configuration' (with a 'Escape special characters' toggle switch and a value '2'), 'Comments' (with a text input field), and 'Audit Information' (showing 'Changed By: FLOWER' and 'Changed On: 02-Sep-2021 11:33:58').

At the bottom, there are tabs for 'Regions', 'Items', and 'Buttons', followed by a grid of report item icons: Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

M03.5-3. 영수증 Reports items – Select All UI 생성 (8/10)

새로운 HTML 태그가
UI로 변경, 정렬 필요

Expense Report

Expense Reports

| Employee Id | Report Title | flower | demo |
|-------------|--------------|--------|------|
|-------------|--------------|--------|------|

Expense Report Items

| Selected | Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date |
|--------------------------|------------|-------------|---------|----------------|--------|---------------------------------|-----------|----------|
| <input type="checkbox"/> | 9 | chuchu | 6 | 20000 | 도서구입 | 도서구입 | 8/10/2021 | 9/1/2021 |
| <input type="checkbox"/> | 10 | chuchu | 7 | 70000 | 소모품 구매 | 소모품 구매 | 8/25/2021 | 9/1/2021 |
| <input type="checkbox"/> | 11 | chuchu | 1 | 25000 | 대중교통비 | 야근 후 택시비 | 8/16/2021 | 9/1/2021 |
| <input type="checkbox"/> | 12 | chuchu | 5 | 25000 | 세미나 | 제주도 학회 세미나 비용 | 8/18/2021 | 9/1/2021 |

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Home Application 100 Edit Page 41 Session View Debug Debug Page Info Quick Edit Theme Roller

M03.5-3. 영수증 Reports items – Select All UI 생성 (9/10)

The screenshot shows the Oracle APEX App Builder interface for creating a page. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and a user icon for 'flower'.

The main workspace is titled 'Application 100 \ Page Designer'. On the left, a sidebar lists various components under 'Region Buttons', 'Dynamic Actions', 'Region Display Selector', and 'Expense Report Items'. Under 'Expense Report Items', a list of columns is shown, with the first column, 'REPORT_ID', highlighted with a red box and labeled 'SELECTED'.

The central area displays a modal window titled 'Expense Report Items' with tabs for 'ITEMS', 'REGION CONTENT', and 'SUB REGIONS'. The 'ITEMS' tab shows a message 'No Record Selected'. Below the modal is a toolbar with buttons for Regions, Items, and Buttons, and a grid of report-related components: Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

The right side of the screen contains a 'Column' configuration panel with sections for 'Identification', 'Heading' (set to 'Selected'), 'Layout' (highlighted with a blue box and a large number '3'), 'Appearance' (with 'Column Alignment' set to 'Center'), and 'Column Formatting'.

M03.5-3. 영수증 Reports items – Select All UI 생성 (10/10)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the 'Regions' panel is open, showing various report items like REPORT_ID, EXPENSE_ID, etc., with one item highlighted and labeled '1'. In the center, a modal window titled 'Expense Report Items' displays a 'Heading' section containing the code '<input type="checkbox" id="selectunselectall">'. This code is highlighted with a red box and labeled '2'. A callout box points to this code with the Korean text 'Selected 칼럼의 헤딩에 checkbox를 만들어라!' (Create a checkbox in the heading of the selected column). Another callout box points to the 'ID' value 'selectunselectall' with the text 'ID는 selectunselectall'. The bottom right corner of the image has a red button with a white circle icon.

중간 결과물

The screenshot shows an Oracle APEX application interface. The top navigation bar is blue with the title "슬기로운 익스펜스 생활". On the right, there is a search bar with the placeholder "flower" and a dropdown arrow, followed by a "Reset" button and a "Create" button.

The left sidebar has a dark theme with the following menu items:

- Home
- 직원 정보 관리
- Expense 영수증 관리
- Expense Report 관리

The "Expense Report 관리" item is highlighted with a blue background and white text. Below it, the word "demo" is displayed.

The main content area has a title "Expense Report". On the left, there is a search bar with the placeholder "Search...".

The first section is titled "Expense Reports" and contains two rows of data:

| | |
|--------------|--------|
| Employee Id | flower |
| Report Title | demo |

The second section is titled "Expense Report Items" and contains a table with the following data:

| | Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date |
|--------------------------|------------|-------------|---------|----------------|-------|----------------------------|-----------|----------|
| <input type="checkbox"/> | 4 | flower | 1 | 13000 | 대중교통비 | 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| <input type="checkbox"/> | 5 | flower | 2 | 23000 | 중식 | 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 6 | flower | 3 | 50000 | 석식 | 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 7 | flower | 4 | 15000 | 음료/다과 | 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

A red callout box points to the first row of the table, containing the text "Selected 칼럼의 헤딩에 checkbox 생성됨!" (A checkbox is generated on the header of the selected column!).

At the bottom, there is a footer with the text "Release 1.0" and several navigation links: Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon.

[참고] 일괄선택 및 일괄해지 기능

상태가 변경되면,
아래 checkbox가 모두 선택 또는
해제되도록 설정

Change event 발생 →
added expenses 위치에서 Javascript 실행
(added expenses 생성 필요)

| Report Items | | | | | | | | 영수증 추가 + |
|--------------------------|------------|-------------|---------|----------------|-------|----------------------------|-----------|----------|
| <input type="checkbox"/> | Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date |
| <input type="checkbox"/> | 4 | flower | 1 | 13000 | 대중교통비 | 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| <input type="checkbox"/> | 5 | flower | 2 | 23000 | 중식 | 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 6 | flower | 3 | 50000 | 석식 | 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 7 | flower | 4 | 15000 | 음료/다과 | 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

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M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (1/6)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the page structure is visible with a red box labeled '1' highlighting the 'POP_EXPENSE_REPORT_ITEMS' button. In the center, a modal window titled 'Expense Report Items' displays a green button labeled 'POP_EXPENSE_REPORT_ITEMS'. A red box labeled 'Advanced > Static ID : added_expenses 설정' (Configure Advanced > Static ID: added_expenses) is overlaid on the modal. Below the modal, a red box labeled 'added expenses에서 이벤트/자바스크립트 작동되도록' (Ensure it works in events/javascript) has an arrow pointing to the 'Advanced' section. On the right, the 'Button' configuration panel is open, showing the 'Static ID' field set to 'added_expenses' (also highlighted with a red box). A blue box labeled '2' is positioned to the right of the configuration panel. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, App Gallery, and a search bar.

1

POP_EXPENSE_REPORT_ITEMS

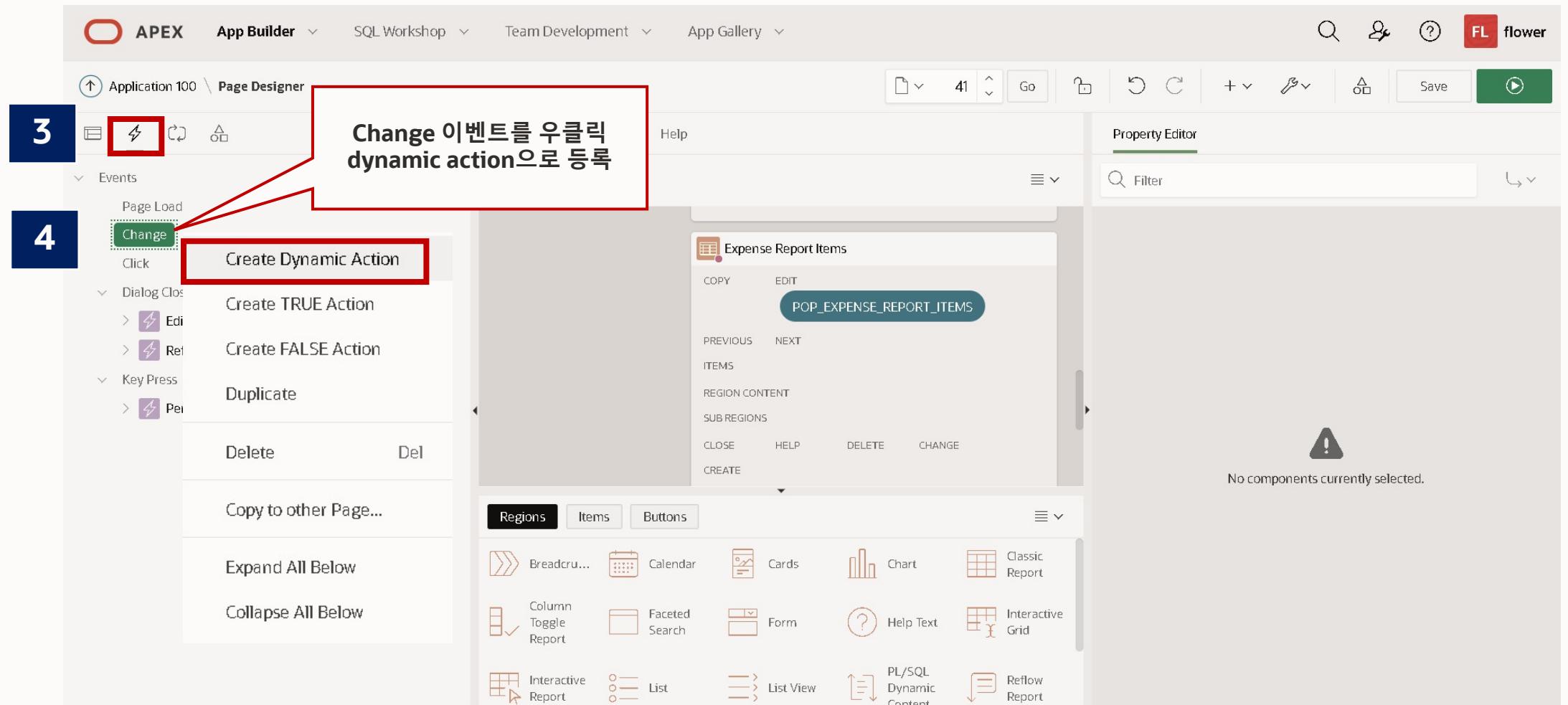
Advanced > Static ID : added_expenses 설정

added expenses에서 이벤트/자바스크립트 작동되도록

2

Static ID: added_expenses

M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (2/6)



M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (3/6)

The screenshot shows the Oracle APEX App Builder interface, specifically the Page Designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and user profile FL flower.

The main area displays a page layout with a central region containing a button labeled "POP_EXPENSE_REPORT_ITEMS". Below the layout are various region and sub-region icons.

The left sidebar lists events for the page:

- Actions Fired on Page Load
- Events
 - Page Load
 - Change
 - True
 - Show
 - False
 - Click
 - Dialog Closed
 - Edit Master Record
 - Refresh on Dialog Close
 - Key Press
 - Perform Search

A red box highlights the "change" event under "Events". Inside this box, another red box highlights the "True" section, which contains a "Show" action. The "Show" action has a red box around its icon and the text "change selectunselectall".

The right panel shows the configuration for a "Dynamic Action" named "change selectunselectall".
Identification:
Name: change selectunselectall
Execution Options:
Sequence: 160
When:
Event: Change
Selection Type: jQuery Selector
jQuery Selector: #selectunselectall
Client-side Condition:
Type: - Select -
Advanced:
Event Scope: Static

Two blue boxes are overlaid on the right panel:
Box 5: Surrounds the "Name" field.
Box 6: Surrounds the "jQuery Selector" field.

M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (4/6)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the 'Events' section is expanded, showing various triggers like 'Page Load', 'Change', 'Click', 'Dialog Closed', and 'Key Press'. Under 'Change', a specific event 'change selectunselectall' is selected and highlighted with a red box. This event is connected to a 'Dynamic' report item named '#added_expenses', which is also highlighted with a red box. The 'Dynamic Action' panel on the right is configured for this event. It has 'Event Scope' set to 'Dynamic' and 'Static Container (jQuery Selector)' set to '#added_expenses'. A large blue box labeled '7' is positioned to the right of the 'Event Scope' field. Below the main area, there are tabs for 'Regions', 'Items', and 'Buttons', and a grid of report item icons.

M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (5/6)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the Events panel is open, showing a list of events and their actions. One event, "change selectunselectall", has its "True" action set to "Execute JavaScript Code". This action is highlighted with a red box and labeled "8". On the right, the Action panel is open, showing the "Identification" section. Under the "Action" dropdown, "Execute JavaScript Code" is selected. This option is also highlighted with a red box and labeled "9". The "Settings" section of the Action panel is expanded, showing options like "Disable", "Enable", and "Code".

M03.5-4. 영수증 Reports items – 일괄선택해지 기능 (6/6)

The screenshot shows the Oracle APEX App Builder interface. On the left, the event tree for 'Application 100' is visible, with a red box highlighting the 'True' branch of the 'change selectunselectall' event under 'Events'. In the center, a modal window titled 'Code Editor - Code' displays the following JavaScript code:

```
1 if ($('#added_expenses #selectunselectall').is(':checked')) {  
2   $('#added_expenses input[type=checkbox][name=f01]').prop('checked',true);  
3 } else {  
4   $('#added_expenses input[type=checkbox][name=f01]').prop('checked',false);  
5 }  
6
```

To the right of the code editor, a yellow callout box contains the same code with the heading **Execute JavaScript**. The bottom navigation bar of the APEX interface includes icons for Interactive Report, List, List View, PL/SQL Dynamic Content, Reflow Report, and Fire on.

M03.5-5. 영수증 Reports items – 삭제 버튼 (1/8)

The screenshot shows the Oracle APEX App Builder interface. On the left, the page structure is displayed with a tree view. A red box highlights the 'Create Button' option under the 'Master Records' section of the 'P41_SEARCH' item. In the center, a modal window titled 'Expense Report Items' is open, showing a grid with one row and the message 'No Record Selected'. On the right, the 'Region' tab of the 'Attributes' panel is selected, showing the report's configuration. A blue box labeled '1' highlights the 'Expense Report Items' report item in the page structure. The bottom navigation bar includes icons for Breadcrumb, Calendar, Cards, Chart, Classic Report, Column Toggle Report, Faceted Search, Form, Help Text, Interactive Grid, Interactive Report, List, List View, PL/SQL Dynamic Content, and Reflow Report.

M03.5-5. 영수증 Reports items – 삭제 버튼 (2/8)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the page structure tree shows a region named 'P41_SEARCH' containing 'Master Records' and 'Content Body'. Under 'Content Body', there are sections for 'Expense Reports' and 'Items'. The 'Items' section contains a 'POP_EXPENSE_REPORT_ITEMS' item, which is highlighted with a red box. A large blue box with the number '2' is overlaid on the tree, pointing to the 'Items' section. In the center, a modal dialog titled 'Expense Report Items' is open. It displays a table with columns for 'ITEMS', 'REGION CONTENT', 'SUB REGIONS', and buttons for 'CLOSE', 'HELP', 'DELETE', 'CHANGE', and 'CREATE'. A green button labeled 'New' is highlighted with a red box. On the right, the 'Identification' panel shows 'Button Name' and 'Label' both set to 'New'. The 'Layout' panel shows 'Sequence' as 20, 'Region' as 'Expense Report Items', and 'Button Position' as 'Below Region'. The 'Appearance' panel shows 'Button Template' as 'Text'. At the bottom right of the interface is a red button with a white circle icon.

M03.5-5. 영수증 Reports items – 삭제 버튼 (3/8)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The current application is 'Application 100 \ Page Designer'. The left sidebar lists page components: 'Master Records' (with 'Columns'), 'Content Body' (with 'Expense Reports' (Columns), 'Items' (including 'P41_EXPENSE_REPORT_ID'), 'Region Buttons' (with 'EDIT'), 'Dynamic Actions', 'Region Display Selector', 'Expense Report Items' (Columns, Region Buttons (with 'New' and 'POP_EXPENSE_REPORT_ITEMS'), Dynamic Actions), and 'No Record Selected'). The main content area displays a 'Expense Report Items' report region with a 'New' button highlighted by a red box. The right panel shows the properties for this 'New' button, divided into sections: Identification (Button Name: New, Label: New), Layout (Sequence: 10, Region: Expense Report Items, Button Position: Edit), and Appearance (Button Template: Text, Hot: Off, Template Options: Use Template Defaults, CSS Classes, Icon).

M03.5-5. 영수증 Reports items – 삭제 버튼 (4/8)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the page structure tree displays various components like P41_SEARCH, Master Records, Content Body, and Expense Reports. In the center, a modal window titled "Expense Report Items" is open, showing a list of items with a "Delete" button highlighted. On the right, the "Identification" section of the item properties is visible, with the "Button Name" set to "Delete". A large red box highlights this field. A blue box labeled "3" is positioned to the right of the "Identification" section. The bottom right corner features a red footer bar with the Oracle logo.

APEX App Builder SQL Workshop Team Development App Gallery

Application 100 \ Page Designer

Layout Page Search Help

NEXT

Expense Report Items

COPY EDIT Delete POP_EXPENSE_REPORT_ITEMS

PREVIOUS NEXT

ITEMS REGION CONTENT SUB REGIONS

CLOSE HELP DELETE CHANGE CREATE

BELLOW REGION

No Record Selected

PREVIOUS ITEMS REGION CONTENT SUB REGIONS NEXT

Identification

Button Name Delete

Label Delete

Layout

Sequence 10

Region Expense Report Items

Button Position Edit

Appearance

Button Template Text

Hot

Template Options Use Template Defaults

CSS Classes

Icon

3

M03.5-5. 영수증 Reports items – 삭제 버튼 (5/8)

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. A green status bar on the right indicates "Changes saved". The main area shows a page titled "Application 100 \ Page Designer". On the left, a sidebar displays various processing options: After Submit, Validating, Processing (highlighted with a red box), Create Branch, After Process (disabled), Ajax Callback, Create Process (highlighted with a red box), Expand All Below, and Collapse All Below. The central content area shows a "Expense Report Items" region with a "Delete" button highlighted with a red box. Below it is a "No Record Selected" message. The right side features a "Property Editor" panel with a search bar and a note: "No components currently selected." A large blue number "5" is overlaid on the sidebar area.

M03.5-5. 영수증 Reports items – 삭제 버튼 (6/8)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The main area displays a page with a header "Expense Report Items" and a message "No Record Selected". On the left, a sidebar lists various processing events: After Submit, Validating, Processing (with a selected item "delete multi receipts"), Processes, After Processing, and Ajax Callback. The right side of the screen is the Process builder, which is currently configured for a "delete multi receipts" process. The process details are as follows:

- Name:** delete multi receipts
- Type:** Execute Code
- Source:** Local Database, PL/SQL
- PL/SQL Code:** (Empty field)
- Execution Options:** Sequence: 10, Point: Processing, Run Process: Once Per Page Visit (default)

A large blue number "6" is overlaid on the right side of the process configuration area.

M03.5-5. 영수증 Reports items – 삭제 버튼 (7/8)

The screenshot shows the Oracle APEX App Builder interface. On the left, there's a sidebar with a numbered step indicator '7' over a blue box. The main area is a 'Code Editor - PL/SQL Code' window. It displays the following PL/SQL code:

```
1 FOR i in 1..APEX_APPLICATION.G_F01.COUNT LOOP
2
3 delete from EXPENSE_REPORT_ITEMS
4 where report_id = :P41_EXPENSE_REPORT_ID and
5     expense_id = APEX_APPLICATION.G_F01(i);
6 END LOOP;
7
```

A green banner at the top of the code editor says 'Validation successful'. To the right of the code editor, there's a yellow box containing the text:

영수증 일괄 삭제

FOR i in 1..APEX_APPLICATION.G_F01.COUNT LOOP
delete from EXPENSE_REPORT_ITEMS
where report_id = :P41_EXPENSE_REPORT_ID and
 expense_id = APEX_APPLICATION.G_F01(i);
END LOOP;

The bottom of the screen shows navigation buttons: 'NEXT', 'Run Process', and 'Once Per Page Visit (default)'. There's also a red footer bar with the Oracle logo.

M03.5-5. 영수증 Reports items – 삭제 버튼 (8/8)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The current page is 'Application 100 \ Page Designer'. The main content area displays two regions: 'Expense Report Items' and 'No Record Selected'. The 'Expense Report Items' region contains buttons for COPY, EDIT, and Delete, with 'Delete' being highlighted. The 'No Record Selected' region is below it. On the right side, the 'Process' configuration panel is open, showing various sections like Identification, Source, Execution Options, Success Message, Error, and Server-side Condition. The 'Server-side Condition' section is expanded and highlighted with a red box, showing the condition 'When Button Pressed Delete'. A large blue number '8' is overlaid on the page.

중간 결과물

The screenshot displays an Oracle APEX application interface for managing expense reports. The top navigation bar includes a logo, the title "슬기로운 익스펜스 생활", a search bar with placeholder "flower", and a user icon. The left sidebar contains navigation links: Home, 직원 정보 관리, Expense 영수증 관리, and Expense Report 관리, with "Expense Report 관리" being the active link. The main content area has a title "Expense Report". It shows two tables: "Expense Reports" and "Expense Report Items".

Expense Reports

| | |
|--------------|--------|
| Employee Id | flower |
| Report Title | demo |

Expense Report Items

| <input type="checkbox"/> | Expense Id | Employee Id | Type Id | Payment Amount | Title | Description | Use Date | Cre Date |
|--------------------------|------------|-------------|---------|----------------|-------|----------------------------|-----------|----------|
| <input type="checkbox"/> | 4 | flower | 1 | 13000 | 대중교통비 | 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| <input type="checkbox"/> | 5 | flower | 2 | 23000 | 중식 | 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 6 | flower | 3 | 50000 | 석식 | 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 7 | flower | 4 | 15000 | 음료/다과 | 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

Page footer: Release 1.0, Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller.

M03.5-6. 영수증 Reports items – LOV 참조키 치환 (1/2)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar shows the structure of the page with sections for Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, and Expense Report Items. Under Expense Report Items, the 'EXPENSE_ID' column is selected and highlighted with a red box. The main workspace displays a preview of the 'Expense Report Items' report, which lists columns like EXPENSE_ID, TITLE, DESCRIPTION, and USE_DATE. To the right, the 'Identification' section is expanded, showing the Column Name as EXPENSE_ID and the Type as Plain Text (based on List of Values). Below it, the 'List of Values' section is also expanded, showing the Type as SQL Query with the following SQL code:

```
select title||'('||payment_amount||')', expense_id from expenses
```

The 'Sorting' section at the bottom indicates that the sequence is not yet defined.

M03.5-6. 영수증 Reports items – LOV 참조 키 치환 (2/2)

The screenshot shows the Oracle APEX App Builder interface. On the left, the page designer sidebar is visible, showing sections for Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, and Expense Report Items. Under Expense Report Items, the EXPENSE_ID column is selected. In the center, a code editor window titled "Code Editor - SQL Query" contains the following SQL code:

```
1 select title||'('||payment_amount||')', expense_id from expenses
```

A modal dialog box is displayed in the foreground, titled "LOV 참조 키 치환". Inside the dialog, the same SQL query is shown:

```
select title||'('||payment_amount||')', expense_id from expenses
```

The dialog has "Cancel" and "OK" buttons at the bottom.

M03.5-6. 영수증 Reports items – LOV Value 대체 (look up)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar lists various components: Columns, Items (with P41_EXPENSE_REPORT_ID selected), Region Buttons (with EDIT selected), Dynamic Actions, Region Display Selector, Expense Report Items (selected), and Columns. Under Expense Report Items, the EMPLOYEE_ID column is highlighted with a red box. The main workspace displays the 'Expense Report Items' report region, which shows a list of expense reports with columns for EXPENSE_ID, REPORT_ID, and EMPLOYEE_ID. Below the report is a message: 'No Record Selected'. On the right, the 'Identification' section is configured for the EMPLOYEE_ID column. It includes a 'Type' dropdown set to 'Plain Text (based on List of Values)', a 'List of Values' section with 'Type' set to 'Shared Component' and 'List of Values' set to 'EMPLOYEES', and sections for Heading, Layout, List of Values, Sorting, and Export / Printing.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

NEXT

Expense Report Items

COPY EDIT Delete POP_EXPENSE_REPORT_ITEMS

PREVIOUS NEXT

ITEMS REGION CONTENT SUB REGIONS

CLOSE HELP DELETE CHANGE

No Record Selected

PREVIOUS ITEMS REGION CONTENT SUB REGIONS

Column

Filter

Identification

Column Name: EMPLOYEE_ID

Type: Plain Text (based on List of Values)

List of Values

Type: Shared Component

List of Values: EMPLOYEES

Sorting

Default Sequence: - Select -

Sortable:

Export / Printing

M03.5-6. 영수증 Reports items – LOV Value 대체 (look up)

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar lists page items, regions, buttons, and columns. A red box highlights the 'TYPE_ID' column item. The main area displays a 'Expense Report Items' report with a 'No Record Selected' message. The right panel shows the item's properties:

- Type:** Plain Text (based on List of Values)
- List of Values:** EXPENSE TYPES
- Sorting:** Default Sequence: - Select -
- Export / Printing:** Includes in Export /

M03.5-6. 영수증 Reports items – 금액 포맷

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are search, filter, and save buttons, along with a user icon labeled "flower".

The main area is titled "Application 100 \ Page Designer". On the left, the page structure is shown with sections for Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, and Expense Report Items. The "ITEMS" section is expanded, and the "PAYMENT_AMOUNT" item is selected, highlighted with a red box.

A modal dialog titled "Pick Format Mask" is open over the page designer. It contains a search bar and a list of format masks. The "5,234" mask is highlighted with a red box and is currently applied to the PAYMENT_AMOUNT item. Other visible format masks include "12-JAN-2004 14:30:00", "12-JAN-2004 02:30PM", "January", "16 hours ago", "in 16h", "\$5,234.10", "5,234.10", "5,234.1000", "5,234.10-", "5,234.10-", "-5,234.10", and "<5,234.10>".

On the right side of the page designer, the properties for the PAYMENT_AMOUNT item are displayed:

- Column**:
 - Column Name: PAYMENT_AMOUNT
 - Type: Plain Text
- Heading**
- Layout**
- Appearance**: The "Format Mask" field contains "999G999G999G999G999G990" and is highlighted with a red box.
- Column Formatting**
- TML Expression**
- CSS Classes**
- CSS Style**

The URL at the bottom of the page is: https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:4500:110929225530419:::FB_FLOW_ID,FB_FLOW_PAGE_ID,F4000_P4150_GOTO_PAGE:100,41,41#

M03.5-6. 영수증 Reports items – HTML 지원 설정

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and save buttons. The current page is Application 100 \ Page Designer.

The left sidebar contains a tree view of page items:

- Columns
- Items (selected)
- Region Buttons
- Dynamic Actions
- Region Display Selector
- Expense Report Items (selected)
- Columns (selected)

The main content area displays the "Expense Report Items" report. The "DESCRIPTION" column is highlighted with a red box. The right panel shows the "Identification" section of the item properties, where the "Type" is set to "Percent Graph". Other sections visible include "Heading", "Layout", "Appearance" (with background and foreground color options), "Link" (target), and "Column Formatting".

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX App Builder interface for an application named "Application 100". The current page is "Page Designer". On the left, the "Items" section is expanded, showing various columns and report items. One item, "EXPENSE_ID", is highlighted with a red box. In the center, a preview window displays a report titled "Expense Report Items" with a heading "NEXT". Below it is another preview window titled "No Record Selected". On the right, the "Identification" panel shows the column name as "EXPENSE_ID" and the type as "Plain Text (based on List of Values)". The "Heading" panel is expanded, showing the heading "영수증 번호" (Expense Number) which is also highlighted with a red box. The "List of Values" panel shows an SQL query: "select title||'('||payment_amount||')', expense_id from expenses". The "Sorting" panel is partially visible at the bottom.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar lists components: Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, Expense Report Items, and Columns. The 'EMPLOYEE_ID' column under 'Expense Report Items' is highlighted with a red box. The main area displays a 'Expense Report Items' report with fields like COPY, EDIT, Delete, and POP_EXPENSE_REPORT_ITEMS. The right panel contains configuration sections for the 'EMPLOYEE_ID' column: Identification (Column Name: EMPLOYEE_ID, Type: Plain Text (based on List of Values)), Heading (Heading: 사용자, Alignment: center), Layout, List of Values (Type: Shared Component, List of Values: EMPLOYEES), and Sorting (Default Sequence: - Select -, Sortable: off). A red box highlights the 'Heading' section.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar shows the navigation tree with 'Items' selected under 'Expense Report Items'. In the center, there is a preview of the 'Expense Report Items' report, which displays a list of items with buttons for 'COPY', 'EDIT', 'Delete', and 'POP_EXPENSE_REPORT_ITEMS'. Below the preview, a message says 'No Record Selected'. On the right, the 'Identification' section is configured for the 'TYPE_ID' column, setting the type to 'Plain Text (based on List of Values)'. The 'Heading' section is highlighted with a red box and contains the Korean text '비용 유형' (Expense Type). Other sections visible include 'Layout', 'List of Values' (using a shared component for 'EXPENSE TYPES'), and 'Sorting'.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar lists various page items like 'Columns', 'Items', 'Region Buttons', 'Dynamic Actions', 'Region Display Selector', and 'Expense Report Items'. The 'ITEMS' section is expanded, showing columns such as 'SELECTED', 'REPORT_ID', 'EXPENSE_ID', 'EMPLOYEE_ID', 'TYPE_ID', and 'PAYMENT_AMOUNT'. The 'PAYMENT_AMOUNT' column is highlighted with a red box. The main workspace displays two panels: 'Expense Report Items' and 'No Record Selected'. The right panel contains configuration settings for the 'PAYMENT_AMOUNT' column, including:

- Identification:** Column Name: PAYMENT_AMOUNT, Type: Plain Text.
- Heading:** Heading: 결재 금액 (highlighted with a red box).
- Layout:** Alignment options.
- Appearance:** Format Mask: 999G999G999G999G999G990.
- Column Formatting:** HTML Expression input field.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar lists various page components like Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, and Expense Report Items. Under Expense Report Items, the 'TITLE' column is selected and highlighted with a red box. In the center, a preview window shows a list titled 'Expense Report Items' with buttons for COPY, EDIT, Delete, and POP_EXPENSE_REPORT_ITEMS. Below it is a 'No Record Selected' message. On the right, the Column Properties panel is open for the 'TITLE' column. It shows the 'Column' section with a search bar and filter icon. Under 'Identification', 'Column Name' is set to 'TITLE' and 'Type' is 'Plain Text'. Under 'Heading', the 'Heading' field is set to '제목' (Title), which is also highlighted with a red box. Other sections like Layout, Appearance, and Column Formatting are visible but not active.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The left sidebar lists various page components like Columns, Items, Region Buttons, Dynamic Actions, Region Display Selector, and Expense Report Items. The 'DESCRIPTION' item under 'Expense Report Items' is highlighted with a red box. The main workspace displays the 'Expense Report Items' report region, which is currently empty ('No Record Selected'). The right panel contains configuration tabs for the selected item, with the 'Heading' tab open. The 'Heading' field is set to '설명' (Description), also highlighted with a red box. Other tabs include Identification, Layout, Appearance, and Link.

M03.5-6. 영수증 Reports items – 한글화

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar lists various page items, including 'Expense Report Items' which is currently selected. In the center, a preview window shows a report titled 'Expense Report Items' with buttons for 'COPY', 'EDIT', 'Delete', and 'POP_EXPENSE_REPORT_ITEMS'. Below it is a message 'No Record Selected'. On the right, the 'Column' configuration panel is open, showing the 'Identification' section with 'Column Name' set to 'USE_DATE' and 'Type' set to 'Plain Text'. The 'Heading' section is highlighted with a red box, showing the heading '등록일' (Registration Date) in Korean. Other sections like 'Layout', 'Appearance', and 'Column Formatting' are also visible.

중간 결과물

The screenshot shows a web application interface for managing expense reports. The top navigation bar includes links for Home, Employee Information Management, Expense Item Management, and Expense Report Management. A search bar and a 'Create' button are also present.

The main content area displays an 'Expense Report' for an employee named 'flower'. The report title is 'demo'. Below this, a table lists 'Expense Report Items' with the following data:

| Delete | Expense Item Details | Description | Date Entered | Create Date |
|--------------------------|---------------------------------|---------------------|--------------|-------------|
| <input type="checkbox"/> | 대중교통비(13000) 채송화 (EM, 응급의학과) | 대중교통비 • 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| <input type="checkbox"/> | 중식(23000) 채송화 (EM, 응급의학과) | 중식 • 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 석식(50000) 채송화 (EM, 응급의학과) | 석식 • 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 음료/다과(15000) 채송화 (EM, 응급의학과) | 음료/다과 • 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

At the bottom, there is a footer with links for Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon. The page is identified as 'Release 1.0'.

OCI Always Free – ATP (19C)

APEX Version: 20.2

2021.08.14



Low-code Dev

Politics

United Kingdom

France (395)

Germany (300)

Italy (230)

Nero

37 - 68

Politics

APEX

Oracle

실습 참조 페이지

<https://bit.ly/2WoVkKW>



APEX

ADB

OCI

Oracle APEX - Beginner Workshop

Politics - 37% (1,549)

M03. 영수증 관리: 3. Expense Report – Master Update

Karl Marx

1818 - 1883

Science and Technology

OCI

Marco Polo

1254 - 1324

Low-Code
Arts

M03.6-1. Master 업데이트

The screenshot shows a web-based application interface for managing expense reports. The top navigation bar includes links for Home, Employee Information Management, Expense Item Management, and Expense Report Management. The current page is titled "Expense Report".

The main content area displays two tables:

- Expense Reports:** This table contains summary information for the expense report. It includes fields for Employee Id (demo), Report Title (demo), and a status field labeled "flower". A red box highlights this entire row.
- Expense Report Items:** This table lists the detailed items of the expense report. It includes columns for the checkbox, item name, user, usage type, amount, category, description, date, and creation date. The data is as follows:

| | 영수증 이름 | 사용자 | 비용 유형 | 결제 금액 | 제목 | 설명 | 등록일 | Cre Date |
|--------------------------|--------------|-----------------|-------|--------|-------|------------|-----------|----------|
| <input type="checkbox"/> | 대중교통비(13000) | 채송희 (EM, 응급의학과) | 대중교통비 | 13,000 | 대중교통비 | • 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| <input type="checkbox"/> | 중식(23000) | 채송희 (EM, 응급의학과) | 중식 | 23,000 | 중식 | • 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 석식(50000) | 채송희 (EM, 응급의학과) | 석식 | 50,000 | 석식 | • 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 음료/다과(15000) | 채송희 (EM, 응급의학과) | 음료/다과 | 15,000 | 음료/다과 | • 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

A red box also highlights the top section of the "Expense Reports" table, specifically the row containing "Employee Id" and "Report Title". An annotation with a red arrow points from the text "이 부분이 Master table 보이는 곳" (This is where the Master table is visible) to this highlighted area.

APEX App Builder

Application 100 \ Page Designer

Layout Page Search Help

Page 41: Expense Report

Regions

- Breadcrumb Bar
- Expense Report
- Region Buttons
- RESET
- CREATE

Left Column

- Search
- Items
- P41_SEARCH

- Master Records
- Columns

Content Body

- Expense Reports
 - Columns
 - Items
 - P41_EXPENSE_REPORT_ID
 - Region Buttons
 - EDIT
 - Dynamic Actions
 - Region Display Selector
 - Expense Report Items
 - Columns
 - Region Buttons
 - Delete
 - POP_EXPENSE_REPORT_ITEMS
 - Dynamic Actions
 - POP_EXPENSE_REPORT_ITEMS
 - No Record Selected

Page

Identification

- Name: Expense Report
- Page Alias: expense-report
- Title: Expense Report
- Page Group: - Select -

Appearance

- User Interface: Desktop
- Page Mode: Normal
- Page Template: Left Side Column
- Template Options: Use Template Defaults
- CSS Classes:
- Media Type:

Navigation Menu

- Override User Interface Level:

Navigation

- Cursor Focus: Do not focus cursor
- Warn on Unsaved Changes:

JavaScript

- File URLs:
- Function and Global Variable Declaration:
- Execute when Page Loads:

이 부분이 Master table보이는 곳

M03.6-1. Master 업데이트

The screenshot shows the Oracle APEX Page Designer interface. On the left, the page structure is defined with regions: Breadcrumb Bar, Left Column, and Content Body. The Content Body contains an 'Expense Reports' region. In the Left Column, there is a 'Search' region with an item 'P41_SEARCH'. In the Content Body, there is a 'Master Records' region with items 'ITEMS', 'REGION CONTENT', and 'NEXT'. The right side of the screen shows the 'Column' settings panel. A red box highlights the 'Server-side Condition' section, which contains the following SQL query:

```
select 1 from "EXPENSE_REPORTS"
where "COMPANY_CARD_RECEIPT_NUM" is not null
and "EXPENSE_REPORT_ID" = :P41_EXPENSE_REPORT_ID
```

A callout box with Korean text points to the highlighted section:

좌 4개 컬럼은
서버 side 조건이 걸려있으므로
data=null일 경우에는 데이터를
볼 수 없었음

M03.6-1. Master 업데이트 - 한글화

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar displays the page structure with regions: Regions, Breadcrumb Bar, Left Column, and Content Body. The Content Body region contains an 'Expense Reports' master report. The master report's configuration pane is open, showing the 'Identification' section where the column name is set to 'COMPANY_CARD_RECEIPT_NUM' and the type is 'Plain Text'. The 'Heading' section is highlighted with a red box and contains the text '법인카드 영수증 수'. Other sections visible include Layout, Appearance, Column Formatting, Sorting, Export / Printing, and Advanced.

APEX App Builder SQL Workshop Team Development App Gallery

Application 100 \ Page Designer

Regions

- Breadcrumb Bar
- > Expense Report

Left Column

- > Search
- > Master Records

Content Body

- Expense Reports
 - Columns
 - EXPENSE_REPORT_ID
 - EMPLOYEE_ID
 - REPORT_TITLE
 - COMPANY_CARD_RECEIPT_NUM**
 - PRIVATE_CARD_RECEIPT_NUM
 - COMPANY_CARD_AMOUNT
 - PRIVATE_CARD_AMOUNT
 - CRE_DATE
 - Items
 - P41_EXPENSE_REPORT_ID

Layout Page Search Help

RESET CREATE

LEFT COLUMN BEFORE CONTENT BODY CONTENT BODY

SEARCH PREVIOUS ITEMS P41_SEARCH REGION CONTENT SUB REGIONS NEXT

Master Records PREVIOUS ITEMS REGION CONTENT SUB REGIONS NEXT

Region Display Selector PREVIOUS ITEMS REGION CONTENT SUB REGIONS NEXT

Column Filter Identification

Column Name: COMPANY_CARD_RECEIPT_NUM
Type: Plain Text

Heading: 법인카드 영수증 수

Heading Alignment Layout Appearance Column Formatting Sorting Export / Printing Advanced

M03.6-1. Master 업데이트 - 한글화

The screenshot shows the Oracle APEX Page Designer interface for Application 100. The left sidebar displays the page structure with regions like Breadcrumb Bar, Left Column, and Content Body. The Content Body region contains an 'Expense Reports' item. The right panel shows the column configuration for the 'PRIVATE_CARD_RECEIPT_NUM' column. A red box highlights the 'Heading' field, which is set to '개인 카드 영수증 수'. Other tabs in the column configuration include Alignment, Layout, Appearance, Column Formatting, Sorting, Export / Printing, and Advanced.

Regions:

- Breadcrumb Bar
- Search
- Master Records
- Expense Reports

Content Body:

- Columns:
 - EXPENSE_REPORT_ID
 - EMPLOYEE_ID
 - REPORT_TITLE
 - COMPANY_CARD_RECEIPT_NUM
 - PRIVATE_CARD_RECEIPT_NUM
 - COMPANY_CARD_AMOUNT
 - PRIVATE_CARD_AMOUNT
 - CRE_DATE
- Items:
 - P41_EXPENSE_REPORT_ID

Column Configuration (Heading highlighted):

| | |
|-------------|--------------------------|
| Column Name | PRIVATE_CARD_RECEIPT_NUM |
| Type | Plain Text |
| Heading | 개인 카드 영수증 수 |

M03.6-1. Master 업데이트 - 한글화

The screenshot shows the Oracle APEX App Builder interface, specifically the Page Designer view for Application 100. The page title is "Page Designer". The left sidebar lists regions: Regions (Breadcrumb Bar, Search, Master Records), Content Body (Expense Reports, Columns: EXPENSE_REPORT_ID, EMPLOYEE_ID, REPORT_TITLE, COMPANY_CARD_RECEIPT_NUM, PRIVATE_CARD_RECEIPT_NUM, COMPANY_CARD_AMOUNT, PRIVATE_CARD_AMOUNT, CRE_DATE), and Items (P41_EXPENSE_REPORT_ID). The main content area displays a "Expense Reports" region with tabs for COPY, EDIT, PREVIOUS, and NEXT. The right sidebar contains a "Column" configuration panel for the "COMPANY_CARD_AMOUNT" column, which has its "Heading" set to "법인 카드 사용 총액". Other tabs in the sidebar include Identification, Heading, Alignment, Layout, Appearance, Column Formatting, Sorting, Export / Printing, and Advanced.

M03.6-1. Master 업데이트 - 한글화

The screenshot shows the Oracle APEX App Builder interface for Application 100. The left sidebar lists regions such as Breadcrumb Bar, Left Column, and Content Body. The Content Body region contains 'Expense Reports' and 'Master Records' items. The right panel is the Page Designer, showing the configuration for a column named 'PRIVATE_CARD_AMOUNT'. The 'Heading' field is set to '개인카드 사용 총액' (highlighted with a red box). Other tabs in the designer include Identification, Alignment, Layout, Appearance, Column Formatting, Sorting, Export / Printing, and Advanced.

Regions:

- Breadcrumb Bar
- Expense Report
- Left Column
 - Search
 - Master Records
- Content Body
 - Expense Reports
 - Columns
 - EXPENSE_REPORT_ID
 - EMPLOYEE_ID
 - REPORT_TITLE
 - COMPANY_CARD_RECEIPT_NUM
 - PRIVATE_CARD_RECEIPT_NUM
 - COMPANY_CARD_AMOUNT
 - PRIVATE_CARD_AMOUNT
 - CRE_DATE
 - Items
 - P41_EXPENSE_REPORT_ID
 - Master Records

Column Configuration:

- Column Name: PRIVATE_CARD_AMOUNT
- Type: Plain Text
- Heading: 개인카드 사용 총액 (highlighted)
- Alignment
- Layout
- Appearance
- Column Formatting
- Sorting
- Export / Printing
- Advanced

M03.6-2. Master 업데이트 – Stored Procedure 생성 (1/4)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes 'APEX' and 'App Builder' tabs, along with 'SQL Workshop', 'Team Development', and 'App Gallery'. The user is currently in 'Application 100 \ Page Designer'. The left sidebar displays the page structure with regions like 'Regions', 'Breadcrumb Bar', 'Left Column', and 'Content Body'. In the 'Content Body' region, there is a 'Expense Reports' item which is expanded to show columns such as EXPENSE_REPORT_ID, EMPLOYEE_ID, REPORT_TITLE, COMPANY_CARD_RECEIPT_NUM, PRIVATE_CARD_RECEIPT_NUM, COMPANY_CARD_AMOUNT, PRIVATE_CARD_AMOUNT, and CRE_DATE. The 'PRIVATE_CARD_AMOUNT' column is highlighted with a green border. The main workspace shows the 'Object Browser' with 'SQL Commands' selected. A modal window titled 'Expense Reports' is open, showing an 'EDIT' button. To the right, the 'Identification' panel is displayed, containing fields for 'Column Name' (PRIVATE_CARD_AMOUNT), 'Type' (Plain Text), 'Heading' (개인카드 사용 총액), and 'Alignment' options. Other panels like 'Layout', 'Appearance', 'Column Formatting', 'Sorting', 'Export / Printing', and 'Advanced' are also visible.

M03.6-2. Master 업데이트 – Stored Procedure 생성 (2/4)

```
create or replace PROCEDURE update_expense_report( p_report_id IN VARCHAR2 )
IS
v_cc_num NUMBER(3);
v_cc_amount NUMBER(9);
v_pc_num NUMBER(3);
v_pc_amount NUMBER(9);
BEGIN

select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
into v_cc_num, v_cc_amount
from expenses e, expense_report_items i
where e.EXPENSE_ID = i.expense_id
and i.report_id = p_report_id
and card_type = 'cc';

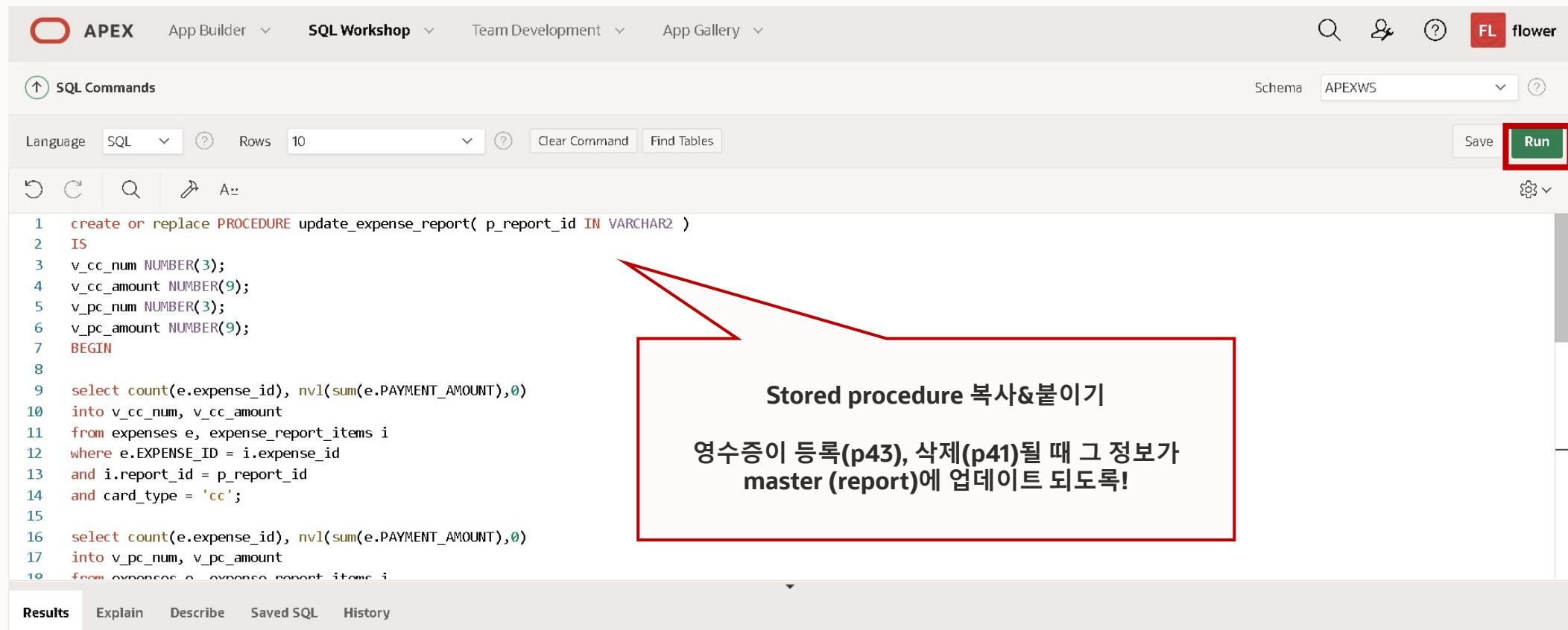
select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
into v_pc_num, v_pc_amount
from expenses e, expense_report_items i
where e.EXPENSE_ID = i.expense_id
and i.report_id = p_report_id
and card_type = 'pc';

UPDATE EXPENSE_REPORTS
SET
COMPANY_CARD_RECEIPT_NUM = v_cc_num,
PRIVATE_CARD_RECEIPT_NUM = v_pc_num,
COMPANY_CARD_AMOUNT = v_cc_amount,
PRIVATE_CARD_AMOUNT = v_pc_amount
WHERE EXPENSE_REPORT_ID = p_report_id;

END;
```



M03.6-2. Master 업데이트 – Stored Procedure 생성 (3/4)



The screenshot shows the Oracle Application Express (APEX) interface in the SQL Workshop tab. A red box highlights the 'Run' button in the top right corner of the toolbar. Below the toolbar, the schema is set to 'APEXWS'. The SQL Commands section contains a PL/SQL script to create a stored procedure named 'update_expense_report'. The script uses two temporary variables, v_cc_num and v_cc_amount, to sum up payment amounts for credit card items in the expense_report_items table where the report_id matches the input parameter p_report_id. It then performs a similar operation for payment card items (v_pc_num, v_pc_amount). A red callout box points from the text 'Stored procedure 복사&붙이기' to the beginning of the script.

```
1 create or replace PROCEDURE update_expense_report( p_report_id IN VARCHAR2 )
2 IS
3   v_cc_num NUMBER(3);
4   v_cc_amount NUMBER(9);
5   v_pc_num NUMBER(3);
6   v_pc_amount NUMBER(9);
7   BEGIN
8
9   select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
10  into v_cc_num, v_cc_amount
11  from expenses e, expense_report_items i
12  where e.EXPENSE_ID = i.expense_id
13  and i.report_id = p_report_id
14  and card_type = 'cc';
15
16  select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
17  into v_pc_num, v_pc_amount
18  from expenses e, expense_report_items i
```

Stored procedure 복사&붙이기
영수증이 등록(p43), 삭제(p41)될 때 그 정보가
master (report)에 업데이트 되도록!

M03.6-2. Master 업데이트 – Stored Procedure 생성 (4/4)

The screenshot shows the Oracle Application Express (APEX) interface in the SQL Workshop tab. The top navigation bar includes APEX, App Builder, SQL Workshop (selected), Team Development, App Gallery, and various user icons. The schema is set to APEXWS. The left sidebar has a red box around the Object Browser and another around the Procedures dropdown. The main area shows the creation of a stored procedure named UPDATE_EXPENSE_REPORT. The code editor displays the following PL/SQL code:

```
1 create or replace PROCEDURE update_expense_report( p_report_id IN VARCHAR2 )
2 IS
3     v_cc_num NUMBER(3);
4     v_cc_amount NUMBER(9);
5     v_pc_num NUMBER(3);
6     v_pc_amount NUMBER(9);
7     BEGIN
8
9         select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
10        into v_cc_num, v_cc_amount
11        from expenses e, expense_report_items i
12       where e.EXPENSE_ID = i.expense_id
13      and i.report_id = p_report_id
14      and card_type = 'cc';
15
16         select count(e.expense_id), nvl(sum(e.PAYMENT_AMOUNT),0)
17        into v_pc_num, v_pc_amount
18        from expenses e, expense_report_items i
19       where e.EXPENSE_ID = i.expense_id
```

M03.6-3. Master 업데이트 – Process 추가 (1/8)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer view. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search icon, user profile, and a 'flower' theme switch.

The main workspace displays the 'Expense Report' page. On the left, a sidebar titled 'Processes' (highlighted with a red box) contains a 'Create Process' button (also highlighted with a red box). Other options in the sidebar include 'After Submit', 'Validating', 'Processing' (with a sub-item 'Processes' highlighted with a red box), 'After Processing', 'Ajax Callback', 'Expand All Below', and 'Collapse All Below'.

The central area shows the 'Expense Report' page structure with regions like PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, and CONTENT BODY. The 'CONTENT BODY' region contains a 'Search' item labeled 'P41_SEARCH'. The bottom right corner of the page has a warning icon and the message 'No components currently selected.'

The top right of the interface features a toolbar with various icons for file operations (e.g., Open, Save, Print) and navigation (e.g., Back, Forward, Home).

M03.6-3. Master 업데이트 – Process 추가 (2/8)

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search bar and a user icon for 'flower'.

The main area is titled 'Application 100 \ Page Designer'. On the left, a sidebar shows sections like After Submit, Validating, Processing (with a red box around 'Processes'), and After Processing. A red box also surrounds the 'New' button in this section. The number '3' is displayed in a blue box next to the 'New' button.

The central workspace displays three page fragments:

- Expense Report**: PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR.
- Expense Report**: ITEMS, REGION CONTENT, SUB REGIONS, NEXT buttons for RESET and CREATE.
- Expense Reports**: BEFORE CONTENT BODY, CONTENT BODY, COPY, EDIT, PREVIOUS, NEXT buttons.

The right panel is titled 'Process' and contains configuration for a new process:

- Identification**: Name: delete multi receipts, Type: Execute Code, Editable Region: - Select -.
- Source**: Sequence: 10, Point: Processing, Run Process: Once Per Page Visit (default).
- Execution Options**: Sequence: 10, Point: Processing, Run Process: Once Per Page Visit (default).
- Success Message**: Success Message field is empty.

A red box highlights the 'Execution Options' section, and a red arrow points from the text '10번 확인' (Check 10 times) to this section. The number '2' is displayed in a blue box next to the 'Execution Options' title.

M03.6-3. Master 업데이트 – Process 추가 (3/8)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The main workspace displays an application page titled "Expense Report". The left sidebar shows sections for After Submit, Validating, Processing (with a red box around the "update report" button), and After Processing. The right sidebar is titled "Process" and contains a configuration panel for a new process:

- Identification**:
 - Name: update report
 - Type: Execute Code
 - Editable Region: - Select -
- Source**:
 - Location: Local Database
 - Language: PL/SQL
 - PL/SQL Code:

```
begin
    -- Your PL/SQL code here
end;
```
- Execution Options**:
 - Sequence: 20
 - Point: Processing
 - Run Process: Once Per Page Visit (default)

A large blue number "4" is overlaid on the central page area.

M03.6-3. Master 업데이트 – Process 추가 (4/8)

The screenshot shows the Oracle APEX App Builder interface. In the top navigation bar, 'APEX' and 'App Builder' are selected. Below the navigation, the application path is 'Application 100 \ Page Designer'. On the left, a sidebar lists events: 'After Submit', 'Validating', 'Processing' (selected), 'Processes' (expanded), 'delete multi receipts' (button), 'update report' (button), 'After Processing', and 'Ajax Callback'. A large blue box labeled '5' highlights the 'Processing' section. The main area is a 'Code Editor - PL/SQL Code' window with the title 'Is required!'. The code is:

```
1 begin
2 update_expense_report( p_report_id => :P41_EXPENSE_REPORT_ID);
3 end;
4
```

To the right of the code editor, a yellow box contains the heading **P41 – Process 추가** and a bulleted list:

- Name : update report
- When : delete

Below the list is a code snippet:

```
begin
update_expense_report( p_report_id => :P41_EXPENSE_REPORT_ID);
end;
```

M03.6-3. Master 업데이트 – Process 추가 (5/8)

The screenshot shows the Oracle APEX App Builder interface for Application 100, specifically the Page Designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and filter icons.

The main workspace displays a page layout with a central region containing a modal dialog titled "Expense Report Items". The dialog has sections for DIALOG HEADER, CONTENT BODY, and DIALOG FOOTER. In the DIALOG FOOTER section, there are buttons labeled "PREVIOUS", "CLOSE", "DELETE", "CANCEL", and "ITEMS".

A sidebar on the left contains a menu with the number "6" above it, listing options: After Submit, Validating, Processing (with "Processes" highlighted), Create Process (which is also highlighted with a red box), Close, Expand All Below, Collapse All Below, After Processing, and Ajax Callback.

The top right corner of the interface has a "flower" icon. A status message at the bottom right says "No components currently selected.".

M03.6-3. Master 업데이트 – Process 추가 (6/8)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the 'Processes' section is open, displaying two processes: 'Process form Expense Report Items' and 'Close Dialog'. A red box highlights the 'New' button, and a red callout box points to it with the Korean text '2개 프로세스 사이로 위치 변경' (Move between 2 processes). In the center, a dialog box titled 'Expense Report Items' is visible, containing fields for 'DIALOG HEADER', 'CONTENT BODY', and 'DIALOG FOOTER'. On the right, the 'Process' configuration panel is shown, with the 'Identification' tab selected. The process is named 'New', has 'Execute Code' type, and is set to run in the 'Processing' point with sequence 20. The 'Source' tab shows 'Local Database' and 'PL/SQL' language.

7

2개 프로세스 사이로 위치 변경

APEX App Builder SQL Workshop Team Development App Gallery

Application 100 Page Designer

Layout Page Search Help

Expense Report Items

DIALOG HEADER

CONTENT BODY

Expense Report Items

P43_EXPENSE_ID

REGION CONTENT

SUB REGIONS

NEXT

DIALOG FOOTER

Buttons

PREVIOUS CLOSE DELETE

CANCEL

DELETE

ITEMS

REGION CONTENT

Process

Filter

Identification

Name: New

Type: Execute Code

Editable Region: - Select -

Source

Location: Local Database

Language: PL/SQL

PL/SQL Code

Execution Options

Sequence: 20

Point: Processing

Run Process: Once Per Page Visit (default)

M03.6-3. Master 업데이트 – Process 추가 (7/8)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search icon, user profile, and a red 'flower' icon.

The main workspace is titled 'Application 100 \ Page Designer'. On the left, a sidebar lists various processing events: After Submit, Validating, Processing (Processes), After Processing, and Ajax Callback. Under 'Processing', a process named 'Process form Expense Report Items' is selected, and its button 'update master' is highlighted with a red box.

The central area displays a dialog box titled 'Expense Report Items' with sections for DIALOG HEADER, CONTENT BODY, and DIALOG FOOTER. The DIALOG BODY section shows an item labeled 'P43_EXPENSE_ID'.

The right panel is titled 'Process' and contains configuration for the selected process:

- Identification**: Name is set to 'update master' (highlighted with a red box).
- Source**: Location is 'Local Database' and Language is 'PL/SQL'. The PL/SQL code block is also highlighted with a red box:

```
PL/SQL Code
```
- Execution Options**: Sequence is 20, Point is 'Processing', and Run Process is 'Once Per Page Visit (default)'.

A large blue number '8' is overlaid in the upper right corner of the dialog box.

M03.6-3. Master 업데이트 – Process 추가 (8/8)

The screenshot shows the Oracle APEX App Builder interface. On the left, the navigation pane is open, showing sections like Application 100, Page Designer, After Submit, Validating, Processing, Processes, and so on. A blue box highlights the number '9' next to the 'Processing' section. In the center, a code editor titled 'Code Editor - PL/SQL Code' displays the following PL/SQL block:

```
1 begin
2 update_expense_report( p_report_id => :P43_REPORT_ID);
3 end;
4
```

A green status bar at the top of the code editor says 'Validation successful'. On the right side of the interface, there's a preview area showing a yellow background with the heading 'P43 – Process 추가' and a bulleted list: 'Name : update report'. Below this, a code snippet is shown in a grey box:

```
begin
update_expense_report( p_report_id => :P43_REPORT_ID);
end;
```

중간 결과물

2

4개 record 생성되어 보임

1

1개 Delete → 아래 1개 record 삭제

| Expense Report Items | | | | | | | | |
|--------------------------|--------------|-----------------|-------|--------|-------|------------|-----------|----------|
| | 영수증 이름 | 사용자 | 비용 유형 | 결재 금액 | 제목 | 설명 | 등록일 | Cre Date |
| <input type="checkbox"/> | 증식(23000) | 채송화 (EM, 등급의학과) | 증식 | 23,000 | 증식 | • 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| <input type="checkbox"/> | 석식(50000) | 채송화 (EM, 등급의학과) | 석식 | 50,000 | 석식 | • 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| <input type="checkbox"/> | 음료/다과(15000) | 채송화 (EM, 등급의학과) | 음료/다과 | 15,000 | 음료/다과 | • 회의 음료 다과 | 8/17/2021 | 9/1/2021 |

1 - 3

Home Application 100 Edit Page 41 Session View Debug Debug Page Info Quick Edit Theme Roller

중간 결과물

The screenshot shows the Oracle APEX 'Expense Report' application interface. At the top, a banner indicates 'Expenses Reports' and 'Expense Report Items updated'. Below this, the main report table displays expense details for an employee with ID 'demo'. The table includes columns for Employee Id, Report Title, 사용자 (User), 비용 유형 (Expense Type), 결재 금액 (Approval Amount), 제목 (Title), 설명 (Description), 등록일 (Registration Date), and Cre Date.

A red starburst points to a row in the table where the 'Report Title' is 'flower' and the 'Approval Amount' is '3'. A blue box labeled '4' is placed over this row, with a red callout containing the text: '그러나, 위는 변화하지 않음 (dynamic action 수정 필요!)' (However, it does not change; modify the dynamic action!).

A red arrow points from the bottom right towards the 'Expense Report Items' section. A blue box labeled '3' is placed over this section, with a red callout containing the text: '1개 추가 → 아래 1개 record 추가됨' (1 item added → 1 record added below).

The 'Expense Report Items' section contains a table with columns: 체크박스 (Check Box), 영수증 이름 (Receipt Name), 사용자 (User), 비용 유형 (Expense Type), 결재 금액 (Approval Amount), 제목 (Title), 설명 (Description), 등록일 (Registration Date), and Cre Date. It lists five items, each with a check box and a detailed description.

At the bottom of the page, there are navigation links: Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a help icon.

M03.6-4. Master 업데이트 – Dynamic Action (1/5)

순서 변경

41

```
apex.message.showPageSuccess('Expense Report Items updated');
```

M03.6-4. Master 업데이트 – Dynamic Action (2/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right, there are search, user profile, help, and a 'flower' icon. The main workspace is titled 'Application 100 \ Page Designer'. The left sidebar lists various events: Page Load, Change, Click, Dialog Closed, Key Press, and Key Press. Under 'Change', a 'True' condition is selected, highlighted with a red box. A tooltip 'Create TRUE Action' is shown above it. Other options like 'False', 'Expand All Below', and 'Collapse All Below' are also visible. The central area displays two page fragments: 'Expense Report' and 'Expense Reports'. The 'Expense Report' fragment contains components for PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, and a form with items like ITEMS, REGION CONTENT, and SUB REGIONS. It has buttons for RESET and CREATE. The 'Expense Reports' fragment contains components for LEFT COLUMN, BEFORE CONTENT BODY, and CONTENT BODY. It includes a search bar labeled 'P41_SEARCH', buttons for COPY, EDIT, PREVIOUS, and NEXT, and a table with columns for ITEMS, REGION CONTENT, and SUB REGIONS. A warning message 'No components currently selected.' is displayed on the right. The bottom right corner features the Oracle logo.

M03.6-4. Master 업데이트 – Dynamic Action (3/5)

The screenshot shows the Oracle APEX App Builder interface for a page designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons.

The main area displays a page titled "Expense Report" with various sections like PAGE HEADER, PAGE NAVIGATION, and BREADCRUMB BAR. Below this is a modal dialog titled "Expense Reports" containing sections for ITEMS, REGION CONTENT, and SUB REGIONS, with buttons for RESET and CREATE.

The left sidebar lists events and their actions:

- Events:
 - Page Load
 - Change
 - change selectunselectall
 - Click
 - Dialog Closed
 - Edit Master Record
 - Refresh on Dialog Close
 - True
 - Execute JavaScript Code
 - Refresh
 - Refresh (highlighted with a red box)
 - False
 - Key Press
 - Perform Search

The right panel contains the "Action" configuration for a dynamic action:

- Action**: Refresh (highlighted with a red box).
- Affected Elements**: Selection Type: Region; Region: Expense Reports (highlighted with a red box).
- Execution Options**: Sequence: 30; Event: Refresh on Dialog Close; Fire When Event Result Is: True; Fire on Initialization: On (switch is turned on).

A large red box highlights the "Refresh" button in the modal dialog and the "Refresh" action in the affected elements section of the configuration panel.

M03.6-4. Master 업데이트 – Dynamic Action (4/5)

The screenshot shows the Oracle APEX Page Designer interface. On the left, the 'Actions Fired on Page Load' section is expanded, showing various events like 'Page Load', 'Change', 'Click', and 'Dialog Closed'. Under 'Dialog Closed', there is a 'True' branch with three actions: 'Execute JavaScript Code', 'Refresh', and 'Show'. The 'Show' action is highlighted with a red box and labeled '4'. A large red callout box points from this 'Show' action to the text 'True 액션 생성' (True Action Generation) in the center of the screen. The main workspace displays two page prototypes: 'Expense Report' and 'Expense Reports'. The right side of the screen contains the 'Action' configuration panel, which is set to 'Show' with 'Item(s)' selected under 'Affected Elements'. Other settings include 'Sequence: 40', 'Event: Refresh on Dialog Close', and 'Fire When Event Result Is: True'. The bottom right corner features a red footer bar with the Oracle logo.

M03.6-4. Master 업데이트 – Dynamic Action (5/5)

The screenshot shows the Oracle APEX App Builder interface for Application 100. The main area displays a page with two regions: 'Expense Reports' and 'Region Display Selector'. The 'Expense Reports' region contains a table with columns for COPY, EDIT, PREVIOUS, and NEXT. The 'Region Display Selector' region also contains a similar table. On the left, the Events panel shows a 'Change' event with a 'Refresh' action selected. In the Action panel, a 'Refresh' dynamic action is configured with 'Affected Elements' set to 'Region' and 'Region Report Items'. The 'Affected Elements' section is highlighted with a red box.

Events

- Page Load
- Change
 - change selectunselectall
 - Click
 - Dialog Closed
 - Edit Master Record
 - Refresh on Dialog Close
 - True
 - Execute JavaScript Code
 - Refresh
 - Refresh
 - Refresh
 - False
 - Key Press
 - Perform Search

Action

5

6

Affected Elements

- Selection Type: Region
- Region: Expense Report Items

Execution Options

- Sequence: 40
- Event: Refresh on Dialog Close
- Fire When Event Result Is: True
- Fire on Initialization:

Comments

Audit Information

Expense Report Items

결과물

The screenshot shows a user interface for managing expense reports. At the top, a banner indicates "Expense Report Items updated". Below it, the "Expense Report" page displays a summary table with fields like Employee Id, Report Title, and various expense amounts. A red box labeled "2" highlights a tooltip "5개로 변경됨! (dynamic action 실행)" pointing to the "Report Title" field.

A large red box labeled "1" highlights a tooltip "1개 추가 → 아래 1개 추가됨" pointing to a "Create" button in the "Expense Report Items" table header. The table lists six items with details such as amount and purpose.

| Employee Id | Report Title | 비용 유형 | 결제 금액 | 제목 | 설명 | 등록일 | Cre Date |
|-------------|--------------|-------|--------|-------|------------|-----------|----------|
| flower | demo | 대중교통비 | 13,000 | 대중교통비 | • 야근 후 택시비 | 8/3/2021 | 9/1/2021 |
| 5 | 0 | 종식 | 23,000 | 종식 | • 점심 회의 식사 | 8/8/2021 | 9/1/2021 |
| 171000 | 0 | 석식 | 50,000 | 석식 | • 회의 후 석식 | 8/15/2021 | 9/1/2021 |
| 0 | 15000 | 음료/다과 | 15,000 | 음료/다과 | • 회의 음료 다과 | 8/17/2021 | 9/1/2021 |
| 70000 | 세미나 | 세미나 | 70,000 | 세미나 | • 세미나 지원 | 9/13/2021 | 9/1/2021 |

At the bottom, a footer bar includes links for Home, Application 100, Edit Page 41, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and Help.

OCI Always Free – ATP (19C)

APEX Version: 20.2

2021.08.14

실습 참조 페이지

<https://bit.ly/2Uv44ib>



Low-code Dev

APEX ADB OCI

Oracle APEX - Beginner Workshop

M04. APEX 인증: 1. Login 페이지 변경

Oracle

APEX

United

United Kingdom (375)

France (395)

Germany (300)

Italy (230)

Nero
37 - 68

Politics

Politics - 37%
(1,549)



Karl Marx
1818 - 1883

Science and Technology

OCI

Marco Polo
1254 - 1324

Low-Code
Arts

M04.1-1. Login 페이지 변경

The screenshot shows the Oracle APEX App Builder interface for Application 100. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The user is identified as 'flower'.

The main content area displays various application components:

- Run Application**: A button with a play icon.
- Supporting Objects**: A button with a clipboard icon.
- Shared Components**: A button with a triangle icon.
- Utilities**: A button with a wrench icon.
- Export / Import**: A button with an upward and downward arrow icon.

Below these are several icons representing pages and reports:

- 0 - Global Page - Desktop
- 1 - Home
- 21 - Employees Report
- 22 - Employee Form
- 31 - Expense
- 32 - Expense Form
- 41 - Expense Report
- 42 - Expense Reports
- 43 - Expense Report Items
- 9999 - Login Page** (This page is highlighted with a red box.)

On the right side, there are sections for **About**, **Tasks**, and **Recently Edited Pages**:

- About**: Describes the application home page for running, editing, importing, exporting, copying, or deleting an application.
- Tasks**: Options to Delete this Application, Copy this Application, Manage Backups, and Browse by Facets.
- Recently Edited Pages**: A list including 41. Expense Report, 43. Expense Report Items, 42. Expense Reports, 31. Expense, 32. Expense Form, and 21. Employees Report.

M04.1-1. Login 페이지 변경

The screenshot shows a login page for an application titled "슬기로운 익스펜스 생활". The page features a red rocket icon at the top, a search bar with the placeholder "flower", a password field with a key icon and masked text, a "Remember username" checkbox, and a blue "Sign In" button. A red callout box points to the right from the "Sign In" button area, containing the Korean text "기본 로그인 페이지". At the bottom of the screen, a navigation bar is visible with several items: "Home", "Application 100", "Edit Page 9999" (which is highlighted with a red box), "Session", "View Debug", "Debug", "Page Info", "Quick Edit", "Theme Roller", and a gear icon.

M04.1-1. Login 페이지 변경 – 이미지 다운 로드



M04.1-2. Login 페이지 변경 – Static Application Files (1/5)

The screenshot shows the Oracle APEX App Builder interface, specifically the Page Designer view for an application named "Application 100".

Header: The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The current page is "Page Designer". On the right side of the header, there is a user icon with the number "1" and a red box highlighting the "Save" button.

Left Sidebar: The sidebar displays a tree view of events: "Events" (Page Load, Change, Click, Dialog Closed) and a "Layout" section.

Central Content Area: The main area shows the "Login Page" layout. It features a green header bar with the title "Login Page". Below it is a "BODY HEADER" section containing the text "</> 슬기로운 익스펜스 생활". The "CONTENT BODY" section contains three items: "P9999_USERNAME" (text input), "P9999_PASSWORD" (password input), and "P9999_REMEMBER" (checkbox). At the bottom of this section are buttons for "NEXT", "EDIT", and "CREATE", followed by a large blue "LOGIN" button. Below the content body is a "REGION CONTENT" section containing a "Language Selector".

Right Panel: This panel is titled "Shared Components" and contains several sections:

- Identification:** Fields include Name (Login Page), Page Alias (login), Title (슬기로운 익스펜스 생활 - Sign In), and Page Group (- Select -).
- Appearance:** Fields include User Interface (Desktop), Page Mode (Normal), Page Template (Login), and Template Options (Use Template Defaults).
- Navigation Menu:** This section is currently collapsed.

M04.1-2. Login 페이지 변경 – Static Application Files (2/5)

The screenshot shows the Oracle APEX App Builder interface with the following details:

- Top Navigation:** APEX, App Builder, SQL Workshop, Team Development, App Gallery.
- User Profile:** flower
- Breadcrumbs:** Application 100 \ Shared Components
- Toolbar:** Create, Edit, Delete, List, Edit Page 9999, Refresh.
- Left Sidebar:**
 - Application Logic:** Application Definition Attributes, Application Items, Application Processes, Application Computations, Application Settings, Automations, Build Options.
 - Navigation:** Lists, Navigation Menu, Breadcrumbs, Navigation Bar List.
 - Data Sources:** (empty)
- Central Content:**
 - Security:** Security Attributes, Authentication Schemes, Authorization Schemes, Application Access Control, Session State Protection, Web Credentials.
 - User Interface:** User Interface Attributes, Themes, Templates.
 - Files:** 2 Static Application Files (highlighted with a red box).
 - Other Components:** List of Values, Plug-ins, Component Settings, Shortcuts, Email Templates.
 - Globalization:** (empty)
- Right Sidebar:**
 - About:** Shared components can display or be applied on any page within the application. This page provides a list of available shared components. Learn More ...
 - Tasks:** Export Application Components, Manage Supporting Objects, Edit Application Comment, Developer Comments.
 - Workspace Objects:** Workspace Objects are stored at the workspace-level and are therefore visible in all applications. Static Workspace Files, Credentials.

M04.1-2. Login 페이지 변경 – Static Application Files (3/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side of the header are search, user profile, help, and a red 'flower' icon. The main content area shows the 'Static Application Files' page for 'Application 100 \ Shared Components \ Static Application Files'. The page has a toolbar with search, refresh, and other icons, followed by a table of static files. The table columns are File Name, Mime Type, File Size, Reference, and File. Two files are listed: 'app-icon.css' (text/css, 177 bytes, reference #APP_IMAGES#app-icon.css) and 'app-icon.svg' (image/svg+xml, 2KB, reference #APP_IMAGES#app-icon.svg). Below the table is a note about using #APP_IMAGES# in applications. A large blue button labeled '3' is visible above the table. The 'Upload File' button is highlighted with a red box. The bottom of the page shows copyright information and a footer with links for flower, apexws, and en.

| File Name | Mime Type | File Size | Reference | File |
|--------------|---------------|-----------|--------------------------|--------------------------|
| app-icon.css | text/css | 177 | #APP_IMAGES#app-icon.css | Download |
| app-icon.svg | image/svg+xml | 2KB | #APP_IMAGES#app-icon.svg | Download |

Static application files are only available to the current application. Use #APP_IMAGES# in your application to reference a file.
Use this page to upload, edit, and delete static files. To upload a new file, click **Upload File**.

[Learn More ...](#)

M04.1-2. Login 페이지 변경 – Static Application Files (4/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The user is currently in the App Builder section, specifically in the Shared Components / Static Application Files category for Application 100.

The main content area displays a modal dialog titled "Upload Static Application File(s)". The dialog instructions state: "Use this page to associate files like images, CSS or Javascript files with your application. To associate a file with your application, select the file(s), and click Upload." It features a "Directory" input field, a file selection area containing "2 files" (with a plus sign to add more), a "File Character Set" dropdown set to "Unicode UTF-8", and an "Unzip File" toggle switch. At the bottom, there are "Cancel", "Upload and Upload Another", and a prominent green "Upload" button, which is highlighted with a red box.

On the right side of the screen, there is a sidebar titled "Static Application Files" with sections for "File", "Download", and "Learn More ...".

At the bottom of the page, there are footer links for flower, apexws, en, Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved., Application Express 20.2.0.0.0.20, and a small Oracle logo.

M04.1-2. Login 페이지 변경 – Static Application Files (5/5)

The screenshot shows the Oracle APEX App Builder interface, specifically the 'Static Application Files' page for Application 100. The page displays a list of uploaded files with columns for File Name, Mime Type, File Size, Reference, and a Download link. The file 'bg.png' is highlighted with a red box. A blue box labeled '5' is positioned on the left side of the table.

| File Name | Mime Type | File Size | Reference | File |
|-----------------|---------------|-----------|-----------------------------|--------------------------|
| app-icon.css | text/css | 177 | #APP_IMAGES#app-icon.css | Download |
| app-icon.svg | image/svg+xml | 2KB | #APP_IMAGES#app-icon.svg | Download |
| bg.png | image/png | 3MB | #APP_IMAGES#bg.png | Download |
| oracle-apex.png | image/png | 8KB | #APP_IMAGES#oracle-apex.png | Download |



M04.1-3. Login 페이지 변경 – 페이지 레이아웃 (1/4)

The screenshot shows the Oracle APEX App Builder interface for Application 100. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search icon, user profile, and a 'flower' icon.

The main content area displays the application's home page with several sections:

- Run Application**: Contains a play button icon.
- Supporting Objects**: Contains a clipboard icon.
- Shared Components**: Contains a triangle icon.
- Utilities**: Contains a wrench icon.
- Export / Import**: Contains an upward arrow icon.

Below these sections is a toolbar with a search field, a 'Go' button, and an 'Actions' dropdown, followed by a 'Create Page' button.

The page list below shows various application pages:

- 0 - Global Page - Desktop
- 1 - Home
- 21 - Employees Report
- 22 - Employee Form
- 31 - Expense
- 32 - Expense Form
- 41 - Expense Report
- 42 - Expense Reports
- 43 - Expense Report Items
- 9999 - Login Page** (highlighted with a red box and a blue number 1)

The right sidebar contains sections for **About**, **Tasks**, and **Recently Edited Pages**.

About: Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click **Create Page** to add a page to the application. [Learn More ...](#)

Tasks: Delete this Application, Copy this Application, Manage Backups, Browse by Facets.

Recently Edited Pages: 41. Expense Report, 43. Expense Report Items, 42. Expense Reports, 31. Expense, 32. Expense Form, 21. Employees Report.

M04.1-3. Login 페이지 변경 – 페이지 레이아웃 (2/4)

2

Page 9999: Login Page

Pre-Rendering

Regions

- Content Body
 - </> 슬기로운 익스펜스 생활
 - Items
 - P9999_USERNAME
 - P9999_PASSWORD
 - P9999_REMEMBER
- Region Buttons
 - LOGIN
- Sub Regions
 - Language Selector

Post-Rendering

Layout Page Search Help

Login Page

BODY HEADER

CONTENT BODY

</> 슬기로운 익스펜스 생활

ITEMS

P9999_USERNAME

P9999_PASSWORD

P9999_REMEMBER

REGION CONTENT

NEXT EDIT CREATE

LOGIN

SUB REGIONS

Language Selector

PREVIOUS ITEMS REGION CONTENT

Identification

Name: Login Page

Page Alias: login

Title: 슬기로운 익스펜스 생활 - Sign In

Page Group: - Select -

Appearance

User Interface: Desktop

Page Mode: Normal

Page Template: Login

Template Options: Use Template Defaults

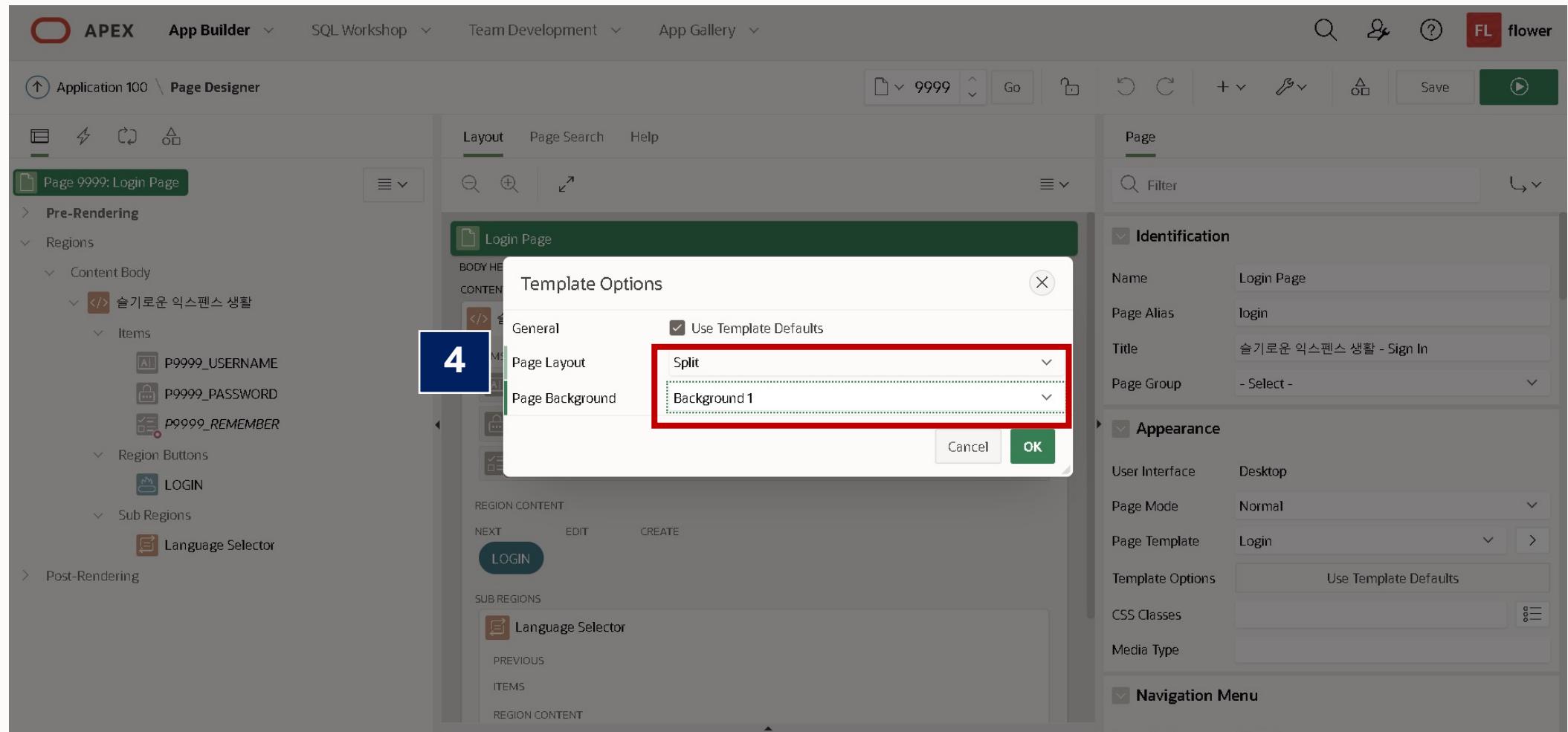
CSS Classes

Media Type

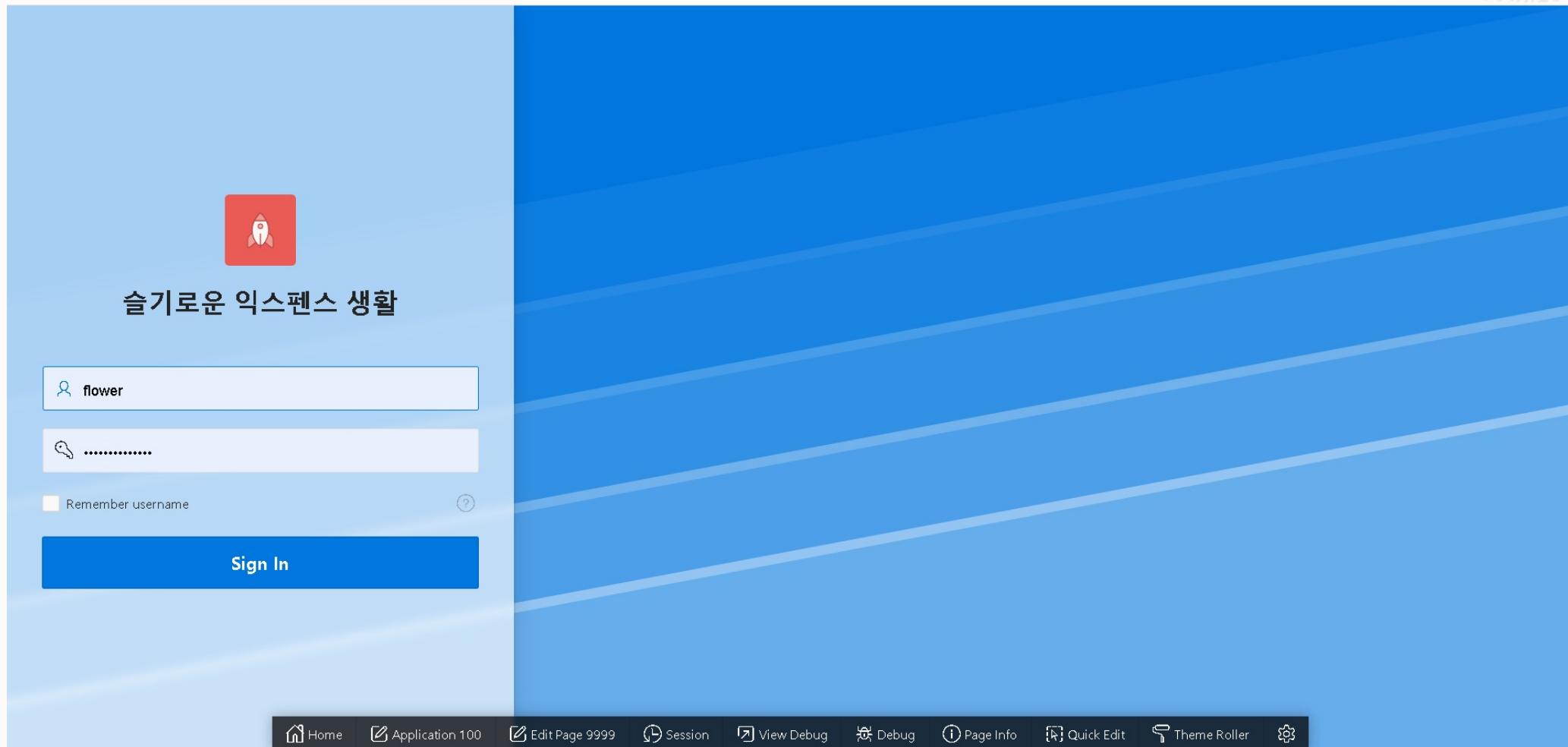
Navigation Menu

3

M04.1-3. Login 페이지 변경 – 페이지 레이아웃 (3/4)



M04.1-3. Login 페이지 변경 – 페이지 레이아웃 (4/4)



M04.1-4. Login 페이지 변경 - CSS 변경 (1/2)

5

Page 9999: Login Page

Pre-Rendering

Regions

Content Body

Items

- P9999_USERNAME
- P9999_PASSWORD
- P9999_REMEMBER

Region Buttons

- LOGIN

Sub Regions

- Language Selector

Post-Rendering

Layout Page Search Help

Login Page

BODY HEADER

CONTENT BODY

ITEMS

- P9999_USERNAME
- P9999_PASSWORD
- P9999_REMEMBER

REGION CONTENT

NEXT EDIT CREATE

LOGIN

SUB REGIONS

PREVIOUS

ITEMS

REGION CONTENT

Changes saved

Page

Filter

Function and Global Variable Declaration

Execute when Page Loads

CSS

File URLs

Inline

HTML Header

HTML Header

6

M04.1-4. Login 페이지 변경 - CSS 변경 (2/2)

The screenshot shows the Oracle APEX App Builder interface. In the top navigation bar, 'APEX' and 'App Builder' are selected. Below the navigation, the application structure is shown: Application 100 \ Page Designer \ Page 9999: Login Page. The left sidebar lists regions like Pre-Rendering, Content Body (with items P9999_USERNAME, P9999_PASSWORD, P9999_REMEMBER), Region Buttons (LOGIN), and Sub Regions (Language Selector). The right side is the 'Code Editor - Inline' where CSS code is being edited.

```
body{  
background-image: url('#APP_IMAGES#bg.png');  
background-position: center;  
background-repeat: no-repeat;  
background-size: cover;  
}  
  
Span.t-Login-logo{  
background-image : url('#APP_IMAGES#oracle-apex.png');  
background-Size :cover;  
width :150px;  
height :120px;  
}  
}
```

A red callout box highlights the line 'background-image: url('#APP_IMAGES#bg.png');' with the text 'bg.png로 변경' (Change to bg.png).

CSS Inline

```
body{  
background-image: url('#APP_IMAGES#base.jpg');  
background-position: center;  
background-repeat: no-repeat;  
background-size: cover;  
}  
  
Span.t-Login-logo{  
background-image : url('#APP_IMAGES#oracle-apex.png');  
background-Size :cover;  
width :150px;  
height :120px;  
}
```

결과물



OCI Always Free – ATP (19C)

APEX Version: 20.2

2021.08.14



APEX

ADB

OCI

Oracle APEX - Beginner Workshop

M04. APEX 인증: 2. APEX 커스텀 인증



Low-code Dev

United

United Kingdom (475)

France (395)

Germany (308)

Italy (230)

Oracle

APEX

Nero

37 - 68

Politics

Karl Marx

1818 - 1883

Science and Technology

OCI

Marco Polo

1254 - 1324

Low-Code
Arts

실습 참조 페이지

<https://bit.ly/3zl8hUB>



M04.2-1. APEX 커스텀 인증 – 테이블 패스워드 설정 (1/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side, there are search, filter, and save buttons, along with a user icon labeled "flower".

The main workspace is titled "Application 100 \ Page De..." and shows "Page 9999: Login Page". The left sidebar lists page regions: Pre-Rendering, Regions (Content Body, Items, Buttons, Sub Regions), and Post-Rendering. The "Content Body" region is expanded, showing items P9999_USERNAME, P9999_PASSWORD, and P9999_REMEMBER, and a "LOGIN" button.

The central area displays the "Page" editor. It includes sections for BODY HEADER, CONTENT BODY, REGION CONTENT, and SUB REGIONS. The CONTENT BODY section contains the following code:

```
</> 슬기로운 익스펜스 생활
ITEMS
    P9999_USERNAME
    P9999_PASSWORD
    P9999_REMEMBER
REGION CONTENT
NEXT EDIT CREATE
LOGIN
SUB REGIONS
    Language Selector
PREVIOUS ITEMS REGION CONTENT
```

The right panel contains sections for Page, Inline CSS (with code: background-size: cover;), HTML Header (with code: Span.t-Login-logo{ background-image : url('APP_IMAGES#oracle-apex.png'); background-Size :cover; width :150px; height :120px; }), Page HTML Body Attribute, and Header and Footer.

M04.2-1. APEX 커스텀 인증 – 테이블 패스워드 설정 (2/5)

2

APEX App Builder SQL Workshop Team Development App Gallery

Object Browser Schema APEXWS

Tables EMPLOYEES EXPENSES EXPENSE_REPORTS EXPENSE_REPORT_ITEMS EXPENSE_TYPES JOB_TYPES TEAMS USER_TYPES

EMPLOYEES

EMPLOYEE_ID EMAIL EMP_NAME EMP_PW

CELL_PHONE VARCHAR2(13) No

JOB_ID NUMBER(2,0) No

TYPE_ID NUMBER(3,0) No

TEAM_ID NUMBER(3,0) No

GENDER VARCHAR2(2) No

BIRTH_DAY DATE Yes

EMP_PIC BLOB Yes

EMPLOYEES

Table Data Indexes Model Constraints Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table Create App

Column Name Data Type Nullable Default Primary Key

Employee_ID, EMP_PW로 인증하는
방식으로 만듬

flower apexws en Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved. Application Express 20.2.0.00.20

M04.2-1. APEX 커스텀 인증 – 테이블 패스워드 설정 (3/5)

The screenshot shows the Oracle Application Express (APEX) interface. The top navigation bar includes tabs for APEX, App Builder, SQL Workshop (which is selected and highlighted with a red box), Team Development, and App Gallery. The right side of the header has a search icon, user profile, help, and a red 'flower' icon. The left sidebar has an Object Browser with a 'Tables' dropdown, a search bar, and a list of tables: EMPLOYEES (selected and highlighted with a green bar), EXPENSES, EXPENSE_REPORTS, EXPENSE_REPORT_ITEMS, EXPENSE_TYPES, JOB_TYPES, TEAMS, and USER_TYPES. The main content area is titled 'EMPLOYEES' and shows the table structure with the following columns:

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|---------------|----------|---------|-------------|
| EMPLOYEE_ID | VARCHAR2(50) | No | - | 1 |
| EMAIL | VARCHAR2(50) | No | - | - |
| EMP_NAME | VARCHAR2(20) | No | - | - |
| EMP_PW | VARCHAR2(200) | Yes | - | - |
| CELL_PHONE | VARCHAR2(13) | No | - | - |
| JOB_ID | NUMBER(2,0) | No | - | - |
| TYPE_ID | NUMBER(3,0) | No | - | - |
| TEAM_ID | NUMBER(3,0) | No | - | - |
| GENDER | VARCHAR2(2) | No | - | - |
| BIRTH_DAY | DATE | Yes | - | - |
| EMP_PIC | BLOB | Yes | - | - |

M04.2-1. APEX 커스텀 인증 – 테이블 패스워드 설정 (4/5)

The screenshot shows the Oracle SQL Workshop interface. In the top navigation bar, the 'APEX' icon is selected, followed by 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. On the right side, there are search, filter, and user profile icons. The main area is titled 'SQL Commands' with a sub-section 'Schema: APEXWS'. The language is set to 'SQL' and rows are set to 10. The command input field contains the following SQL code:

```
1 update employees set EMP_PW = 'WELCOME123456!';  
2
```

A red callout box highlights the text 'EMP_PW에 WELCOME123456!로 설정' (Set EMP_PW to WELCOME123456!). Below the input field, a larger red-bordered box contains the same SQL command: `update employees set EMP_PW = 'WELCOME123456!';`. The status bar at the bottom left indicates '6 row(s) updated.'

M04.2-1. APEX 커스텀 인증 – 테이블 패스워드 설정 (5/5)

The screenshot shows the Oracle Application Express (APEX) interface. In the top navigation bar, the 'APEX' logo is selected. Below it, the 'SQL Workshop' tab is active. The main area is titled 'SQL Commands'. A red box highlights the output of the SQL command 'select * from employees'. Inside this box, a message reads 'EMP_PW에 WELCOME123456! 로 설정 확인!' (Verify that the EMP_PW was set to WELCOME123456!). A red arrow points from this message to the 'EMP_PW' column of the result table. The result table displays six rows of employee data, including their names, email addresses, and newly set passwords.

5

1 select * from employees

EMP_PW에 WELCOME123456! 로
설정 확인!

| EMPLOYEE_ID | EMAIL | EMP_NAME | EMP_PW | CELL_PHONE | JOB_ID | TYPE_ID | TEAM_ID | GENDER | BIRTH_DAY | EMP_PIC | CRE_DATE | TEMP_PW |
|-------------|----------------|----------|----------------|---------------|--------|---------|---------|--------|------------|-------------------------|----------|---------|
| flower | demo@gmail.com | 채송화 | WELCOME123456! | 100-0000-0000 | 1 | 1 | 5 | F | 08/01/2021 | [unsupported data type] | - | - |
| IJ | demo@gmail.com | 이익준 | WELCOME123456! | 100-1000-1000 | 1 | 1 | 2 | M | 08/01/2021 | [unsupported data type] | - | - |
| AWN | demo@gmail.com | 안정원 | WELCOME123456! | 100-1111-1111 | 1 | 1 | 2 | M | 08/01/2021 | [unsupported data type] | - | - |
| JUN | demo@gmail.com | 김준완 | WELCOME123456! | 100-1000-1000 | 1 | 1 | 1 | M | 08/01/2021 | [unsupported data type] | - | - |
| jang | demo@gmail.com | 장겨울 | WELCOME123456! | 100-0000-0000 | 1 | 2 | 4 | F | 08/01/2021 | [unsupported data type] | - | - |
| chuchu | demo@gmail.com | 추민하 | WELCOME123456! | 100-1111-1111 | 1 | 2 | 4 | F | 07/01/2021 | [unsupported data type] | - | - |

Results Explain Describe Saved SQL History

6 rows returned in 0.01 seconds Download

flower apexws en

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Application Express 20.2.0.0.0.20

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M04.2-2. APEX 커스텀 인증 - 오라클 Function 생성 (1/3)

The screenshot shows the Oracle SQL Workshop interface. At the top, there are tabs for APEX, App Builder, SQL Workshop (which is selected), Team Development, and App Gallery. On the right side, there are search, user, help, and schema selection buttons (APEXWS). The main area has a toolbar with Language (SQL), Rows (10), Clear Command, Find Tables, Save, and Run buttons (the Run button is highlighted with a red box).

1 SQL Commands

2

```
1  create or replace function authenticate_user (
2    p_username in varchar2,
3    p_password in varchar2
4  ) return boolean
5  as
6    v_pw_check varchar2(1);
7  begin
8    APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', '시작');
9
10   select 'x'
11     into v_pw_check
12    from employees
13   where upper(employee_id) = upper(p_username) and upper(emp_pw) = upper(p_password);
14
15   apex_util.set_authentication_result(0);
16   APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', 'Success');
17
18   return true;
19
20 exception when NO_DATA_FOUND then
21   apex_util.set_authentication_result(4);
22   APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', '오류!! 아이디와 비밀번호가 불일치합니다.');
23
24   return false;
25
26 end authenticate_user;
27 |
```

Table로 인증하는 방식을 만들기 위해
오라클 Function 생성

Table에 employee_Id, EMP_PW 있는지
확인 후 있으면 success (인증성공)

M04.2-2. APEX 커스텀 인증 - 오라클 Function 생성 (2/3)

오라클 Function – APEX 인증 : SQL Workshop > SQL Commands

```
create or replace function authenticate_user (
    p_username in varchar2,
    p_password in varchar2
) return boolean
as
    v_pw_check varchar2(1);
begin
    APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', '시작');

    select 'x'
    into v_pw_check
    from employees
    where upper(employee_id) = upper(p_username) and upper(emp_pw) = upper(p_password);

    apex_util.set_authentication_result(0);
    APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', 'Success');

    return true;

exception when NO_DATA_FOUND then
    apex_util.set_authentication_result(4);
    APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', '오류!! 아이디와 비밀번호가 불일치합니다.');

    return false;

end authenticate_user;
```

M04.2-2. APEX 커스텀 인증 - 오라클 Function 생성 (3/3)

The screenshot shows the Oracle SQL Workshop interface. The top navigation bar includes APEX, App Builder, SQL Workshop (selected), Team Development, and App Gallery. The right side shows a schema dropdown set to APEXWS. The left sidebar has a '3' icon and categories for Object Browser (highlighted with a red box) and Functions (also highlighted with a red box). The main area displays a function named AUTHENTICATE_USER. The code tab is selected, showing the following PL/SQL code:

```
1  create or replace function authenticate_user (
2    p_username in varchar2,
3    p_password in varchar2
4  ) return boolean
5  as
6    v_pw_check varchar2(1);
7  begin
8    APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', '시작');
9
10   select 'x'
11   into v_pw_check
12   from employees
13   where upper(employee_id) = upper(p_username) and upper(emp_pw) = upper(p_password);
14
15   apex_util.set_authentication_result(0);
16   APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', 'Success');
17
18   return true;
19
```

A red callout box points to the line 'APEX_UTIL.SET_SESSION_STATE('LOGIN_MESSAGE', 'Success');' with the text 'Login message라는 변수 생성 필요!'. The bottom status bar indicates Copyright © 1999, 2020 and Application Express 20.2.0.0.20.

M04.2-3. APEX 커스텀 인증 - Application item 등록 (1/5)

The screenshot shows the Oracle APEX Application 100 home page. At the top, there is a navigation bar with links to APEX, App Builder, SQL Workshop, Team Development, App Gallery, and a user profile for 'flower'. Below the navigation bar, the application title 'Application 100' is displayed, followed by a subtitle 'Application 100 - 슬기로운 익스펜스 생활'. On the right side, there are buttons for 'Edit Application Properties' and 'About'. The 'About' section contains instructions on how to use the application home page to run, edit, import, export, copy, or delete an application, and a link to 'Create Page' to add a page to the application. Below the title, there are several sections: 'Run Application', 'Supporting Objects' (which is highlighted with a red box and has a blue number 1 over it), 'Shared Components', 'Utilities', and 'Export / Import'. A search bar and a 'Create Page >' button are located at the bottom of this section. At the very bottom of the page, there is a footer with links to various pages like Global Page - Desktop, Home, Employees Report, Employee Form, Expense, and Expense Form, along with their respective URLs.

1

Application 100

Application 100 - 슬기로운 익스펜스 생활

Edit Application Properties

About

Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click **Create Page** to add a page to the application.

Learn More ...

Tasks

Delete this Application

Copy this Application

Manage Backups

Browse by Facets

Recently Edited Pages

9999. Login Page

41. Expense Report

43. Expense Report Items

42. Expense Reports

31. Expense

32. Expense Form

Run Application

Supporting Objects

Shared Components

Utilities

Export / Import

Q Go Actions > Create Page >

0 - Global Page - Desktop

1 - Home

21 - Employees Report

22 - Employee Form

31 - Expense

32 - Expense Form

41 - Expense Report

42 - Expense Reports

43 - Expense Report Items

44 - Expense Reports

9999 - Login Page

https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:9:100453321553178::FB_FLOW_ID,FB_FLOW_PAGE_ID:100,9999

M04.2-3. APEX 커스텀 인증 - Application item 등록 (2/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The current page is 'Application 100 \ Shared Components'. The main content area is divided into several sections:

- Application Logic**: Contains 'Application Definition Attributes' (highlighted with a red box and labeled '2'), 'Application Items' (highlighted with a red box), 'Application Processes', 'Application Computations', 'Application Settings', 'Automations', and 'Build Options'.
- Security**: Contains 'Security Attributes', 'Authentication Schemes', and 'Authorization Schemes'.
- Other Components**: Contains 'List of Values', 'Plug-ins', 'Component Settings', 'Shortcuts', and 'Email Templates'.
- About**: Describes shared components and provides links to 'Learn More ...' and 'Tasks'.
- Navigation**: Contains 'Lists', 'Navigation Menu', 'Breadcrumbs', and 'Navigation Bar List'.
- User Interface**: Contains 'User Interface Attributes', 'Themes', and 'Templates'.
- Files**: Contains 'Static Application Files' and 'Static Workspace Files'.
- Globalization**: Contains 'Static Workspace Files' and 'Credentials'.

A large red box highlights the 'Application Items' link under 'Application Logic'. Another red box highlights the text '세션 객체에 변수를 등록하는 과정' (Registering variables to session objects) overlaid on the interface.

M04.2-3. APEX 커스텀 인증 - Application item 등록 (3/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The search bar contains the text "flower". The current page is "Application 100 \ Shared Components \ Application Items". The main content area has tabs for Application Items (selected), Utilization, and History. On the left, there are search and filter tools. In the center, a message states "No application level items exist in this application." On the right, a sidebar titled "Application Items" provides information about session state and a "Create >" button, which is highlighted with a red box. Below this, a section titled "Recent" indicates "No Items found." At the bottom, footer links include flower, apexws, en, Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved., Application Express 20.2.0.0.20, and a small Oracle logo.

M04.2-3. APEX 커스텀 인증 - Application item 등록 (4/5)

The screenshot shows the Oracle APEX App Builder interface for creating a new Application Item. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The page title is "Application 100 \ Shared Components \ Application Items \ Create / Edit".

The main form is titled "Application Item" and contains the following fields:

- Name:** LOGIN_MESSAGE (highlighted with a red box)
- Scope:** Application (highlighted with a red box)
- Security:** Session State Protection is set to "Restricted - May not be set from browser".
- Configuration:** Build Option is set to "- No Build Option -".
- Comments:** A text area for comments.

On the right side of the screen, there is a sidebar with the following information:

- Action Items:** Application level items are used to maintain session state. Application items can be set using computations, processes, or by passing values on a URL. Use "On New Instance" computations to set the value of items once for a session. Use application items to maintain session state that is not displayed and is not specific to any one page.
- Create Application Item** button (highlighted with a red box).

Two numbered callouts point to specific fields:

- 4** points to the Name field.
- 5** points to the "Create Application Item" button.

M04.2-3. APEX 커스텀 인증 – Application item 등록 (5/5)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. A search bar and a user icon are also present. The current page is 'Application 100 \ Shared Components \ Application Items'. A success message 'Item processed.' is displayed. The main content area shows a table of application items. The table has columns: Name, Computed On, Updated, Updated By, Protection Level, and Scope. One row is visible: LOGIN_MESSAGE, - (computed on), 1 seconds ago (updated), FLOWER (updated by), Restricted - May not be set from browser (protection level), and Application (scope). A 'Create >' button is available to add new items. To the right of the table, there is a sidebar with a 'Recent' section containing 'LOGIN_MESSAGE'.

| Name | Computed On | Updated | Updated By | Protection Level | Scope |
|---------------|-------------|---------------|------------|--|-------------|
| LOGIN_MESSAGE | - | 1 seconds ago | FLOWER | Restricted - May not be set from browser | Application |

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (1/6)

The screenshot shows the Oracle APEX Application Builder interface for an application named "Application 100". The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The main content area displays the application's home page with various sections like Run Application, Supporting Objects, Shared Components (which is highlighted with a red box and has a large blue number "1" above it), Utilities, and Export / Import. Below this, a grid of pages is shown with icons and labels: 0 - Global Page - Desktop, 1 - Home, 21 - Employees Report, 22 - Employee Form, 31 - Expense, and 32 - Expense Form. A "Create Page >" button is located in the top right of this grid. To the right of the grid, there are sections for "Edit Application Properties", "About", "Tasks", "Recently Edited Pages", and a URL bar at the bottom containing the page's URL.

Application 100

Application 100 - 슬기로운 익스펜스 생활

Run Application

Supporting Objects

Shared Components

Utilities

Export / Import

Create Page >

0 - Global Page - Desktop

1 - Home

21 - Employees Report

22 - Employee Form

31 - Expense

32 - Expense Form

Recently Edited Pages

- 9999. Login Page
- 41. Expense Report
- 43. Expense Report Items
- 42. Expense Reports
- 31. Expense
- 32. Expense Form

https://yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/ords/f?p=4000:9:100453321553178::FB_FLOW_ID,FB_FLOW_PAGE_ID:100,9999

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (2/6)

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, App Gallery, and user profile information (flower icon). The main content area is titled "Application 100 \ Shared Components".

The left sidebar contains sections for Application Logic (Application Definition Attributes, Application Items, Application Processes, Application Computations, Application Settings, Automations, Build Options) and Navigation (Lists, Navigation Menu, Breadcrumbs, Navigation Bar List).

The central panel is divided into four columns:

- Security:** Contains links for Security Attributes, **Authentication Schemes** (which is highlighted with a red box and a large blue number "2"), Authorization Schemes, Application Access Control, Session State Protection, and Web Credentials.
- Other Components:** Contains links for List of Values, Plug-ins, Component Settings, Shortcuts, and Email Templates.
- User Interface:** Contains links for User Interface Attributes, Themes, and Templates.
- Files:** Contains links for Static Application Files and Static Workspace Files.

The bottom of the page shows a URL bar with the URL "yh0olybn5pqce4n-db202108301245.adb.ap-seoul-1.oraclecloudapps.com/....." and a Globalization section.

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (3/6)

The screenshot shows the Oracle APEX application builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The user is logged in as 'flower'. The current page is 'Application 100 \ Shared Components \ Authentication Schemes'. The main content area displays a table of authentication schemes. The first row, 'Application Express Accounts - Current', is selected and shows details: Scheme Type is 'Application Express Accounts', Subscribed From is blank, Subscribers is 0, and Updated was 5 days ago. A red box highlights the 'Create >' button in the top right corner of the table header. To the right of the table, a sidebar provides information about creating authentication schemes, mentioning that it's optional and can be turned off later. The bottom of the page includes links for user profile, apexws, and language selection (en), along with copyright and version information.

| Name | Scheme Type | Subscribed From | Subscribers | Updated |
|--|------------------------------|-----------------|-------------|------------|
| Application Express Accounts - Current | Application Express Accounts | | 0 | 5 days ago |

Create >

Authentication Schemes

A Authentication Scheme is configuration you can your application.

3 To turn off authentication you must create and make current a **No Authentication** scheme.

Learn More ...

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (4/6)

The screenshot shows the Oracle Application Express (APEX) interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with a search icon, user profile, and workspace name 'flower'. The current page path is Application 100 \ Shared Components \ Authentication Schemes \ Create. The main content area is titled 'Create Authentication Scheme' and displays a progress bar with one step completed ('Method'). A note below states: 'When you create a new authentication scheme, you have several options. Most let you reuse implementations that already exist in your application or in other applications within your workspace. There are even some pretested schemes you can copy to get you up and running immediately.' Step 4 is selected, indicated by a blue button with the number '4'. The 'Create Scheme' dropdown is set to 'Based on a pre-configured scheme from the gallery', which is highlighted with a red box. Other options include 'As a Copy of an existing authentication scheme'. At the bottom, there are 'Cancel' and 'Next >' buttons, and footer links for flower, apexws, en, Copyright © 1999, 2020, Oracle and/or its affiliates. All rights reserved., Application Express 20.2.0.0.0.20, and a small Oracle logo.

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (5/6)

The screenshot shows the Oracle APEX application interface for creating a new authentication scheme. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery, along with search and user icons. The current page path is Application 100 \ Shared Components \ Authentication Schemes \ Create / Edit. On the right, there is a sidebar with a detailed description of what an authentication scheme is and how it's used.

Authentication Scheme

Name: custom authentication (highlighted by a red box, labeled 5)

Scheme Type: Custom (highlighted by a red box, labeled 5)

Settings:

- Sentry Function Name: (empty)
- Invalid Session Procedure Name: (empty)
- Authentication Function Name: authenticate_user (highlighted by a red box, labeled 6)
- Post Logout Procedure Name: (empty)
- Enable Legacy Authentication Attributes: No

Create Authentication Scheme (button highlighted by a red box, labeled 6)

Authentication Scheme Description:

Authentication is the process of establishing each user's identity before they can access your application. It may require a user to enter a user name and password or could involve the use of digital certificates or a secure key.

Use this page to create or edit Authentication Schemes and set the one which your application is using. The current Authentication Scheme determines how your application identifies and verifies the end user. Depending on the selected Authentication Scheme Type, you can use various settings and program hooks to fine-tune your application's authentication.

Return to page

M04.2-4. APEX 커스텀 인증 – Authentication Scheme 생성 (6/6)

APEX App Builder SQL Workshop Team Development App Gallery

Application 100 \ Shared Components \ Authentication Schemes

Action processed. Authentication scheme activated as current authentication scheme.

Authentication Schemes Subscription History

Search input field, Go button, Actions dropdown, Reset button, Create > button

| Name | Scheme Type | Subscribed From | Subscribers | Updated |
|---------------------------------|------------------------------|-----------------|-------------|------------|
| Application Express Accounts | Application Express Accounts | | 0 | 5 days ago |
| custom authentication - Current | Custom | | 0 | Now |

1 - 2

Authentication Schemes
An Authentication Scheme is saved configuration you can apply to your application.
To turn off authentication you must create and make current a **No Authentication** scheme.
Learn More ...

M04.2-5. APEX 커스텀 인증 - Login 확인 (1/3)

The screenshot shows the Oracle Application Express (APEX) App Builder interface. At the top, there is a navigation bar with links for APEX, App Builder, SQL Workshop, Team Development, and App Gallery. On the right side of the navigation bar are icons for search, refresh, help, and a user profile labeled "flower".

The main area displays "Application 100 - 슬기로운 익스펜스 생활". Below the title, there are five main categories with corresponding icons: Run Application, Supporting Objects, Shared Components, Utilities, and Export / Import. To the right of these categories is a "Create Page >" button.

Below these categories is a search bar with a dropdown arrow, a "Go" button, and two action buttons: "Actions" and "Create Page >".

The main content area shows a grid of application pages. The pages are numbered and have icons representing their type:

- 0 - Global Page - Desktop
- 1 - Home
- 21 - Employees Report
- 22 - Employee Form (highlighted with a blue box and the number 1)
- 31 - Expense
- 32 - Expense Form
- 41 - Expense Report
- 42 - Expense Reports
- 43 - Expense Report Items
- 9999 - Login Page (highlighted with a red box)

To the right of the page grid, there is a sidebar with sections for "About", "Tasks", and "Recently Edited Pages". The "About" section contains a brief description of the application home page. The "Tasks" section lists options like "Delete this Application", "Copy this Application", "Manage Backups", and "Browse by Facets". The "Recently Edited Pages" section lists pages such as "9999. Login Page", "41. Expense Report", "43. Expense Report Items", "42. Expense Reports", "31. Expense", and "32. Expense Form".

M04.2-5. APEX 커스텀 인증 - Login 확인 (2/3)

The screenshot shows the Oracle APEX Page Designer interface. On the left, a sidebar lists various processing steps: After Submit, Validating, Processing (with 'Set Username Cookie' selected), Processes (with 'Login' selected, highlighted by a red box and labeled '2'), After Processing, Ajax Callback, and Region Content.

The main area displays a 'Login Page' with the following components:

- BODY HEADER:** 슬기로운 익스펜스 생활
- ITEMS:** P9999_USERNAME, P9999_PASSWORD, P9999_REMEMBER
- REGION CONTENT:** LOGIN button
- SUB REGIONS:** Language Selector

The right side of the screen shows the 'Process' configuration for the selected 'Login' process:

- Source:** Location: Local Database, Language: PL/SQL
- PL/SQL Code:** apex_authentication.login(
 p_username => :P9999_USERNAME,
 p_password => :P9999_PASSWORD);
- Execution Options:** Sequence: 20, Point: Processing, Run Process: Once Per Page Visit (default)
- Success Message:** Success Message (empty)

M04.2-5. APEX 커스텀 인증 - Login 확인 (3/3)

The screenshot shows the Oracle APEX App Builder interface. In the center, a 'Code Editor - PL/SQL Code' window is open, displaying the following PL/SQL code:

```
1 apex_authentication.login(
2   p_username => :P9999_USERNAME,
3   p_password => :P9999_PASSWORD );
```

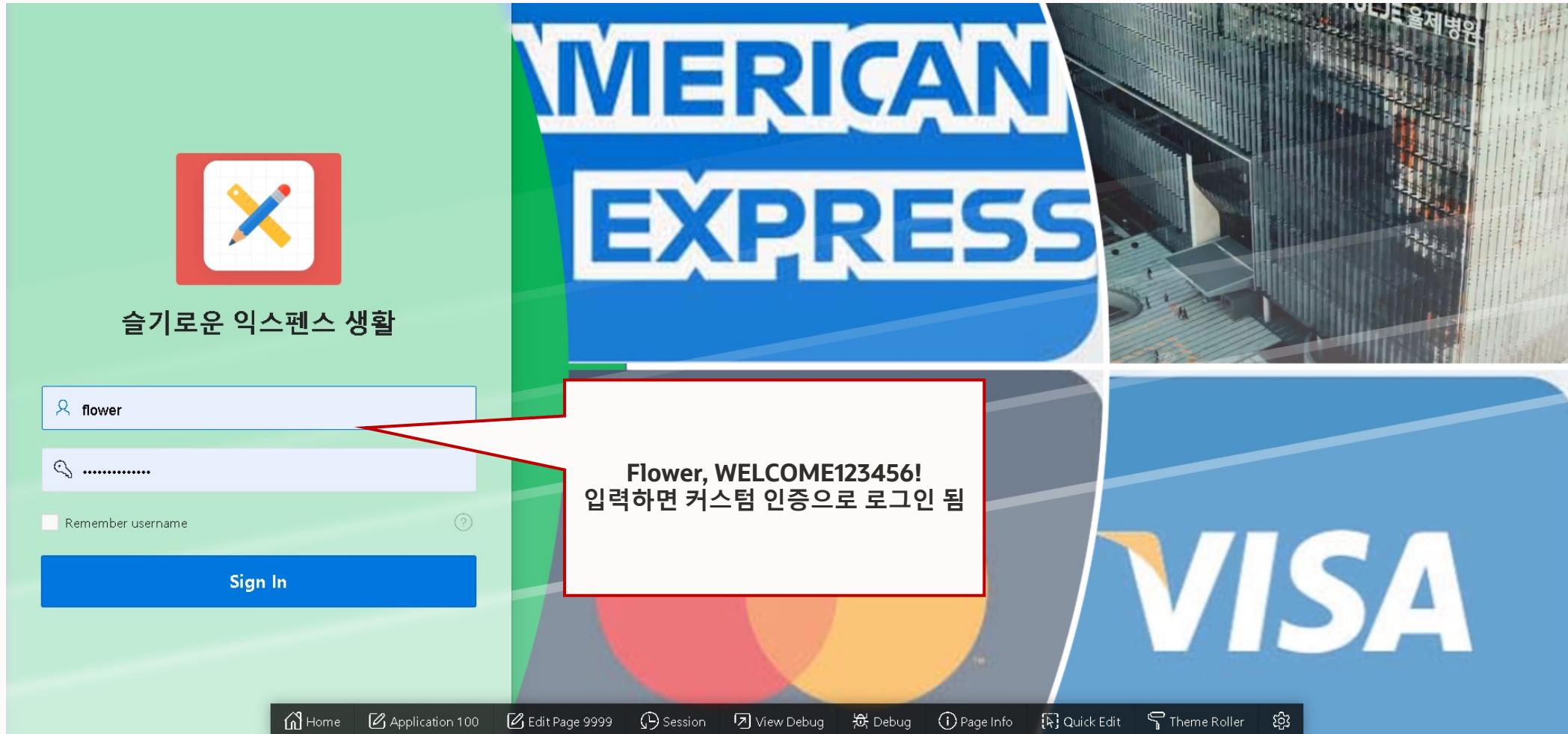
A red box highlights the first line of code, 'apex_authentication.login(', with a callout text in Korean explaining its purpose. Another red box highlights the entire code block, with a larger callout text explaining the function generation and its use in the authentication process.

Apex_authentication.login이라는 stored procedure 호출하는데

Function을 생성했으므로 authenticate_user라는 function에서 인증정보를 가져와서 인증

The rest of the interface shows the APEX workspace with various tabs like 'APEX', 'App Builder', 'SQL Workshop', etc. On the right, there's a sidebar with 'Database' and other settings.

결과물



오타 수정

http://taewan.kim/apex-workshop/01.beginner_ws/20.m01/10-app-tabels/

- EMP TYPES
 - (1, '교수')
 - (2, '펠로우')
 - (3, '레시던트')
 - (4, '인턴')
 - (5, '본과실습생')
 - (6, '간호사')
 - (7, '주임간호사')
 - (8, '수간호사')
 - (9, '간호부장')

레지던트

http://taewan.kim/apex-workshop/01.beginner_ws/30.expense/20-expense_mngt_list/

검색 리전 Page Item Default 설정

- P31_SEARCH_FROM

```
select min(use_date) from expenses  
where employee_id = lower(:APP_USER)
```

- P32_SEARCH_TO

```
select max(use_date) from expenses  
where employee_id = lower(:APP_USER)
```

P31

오타 수정

http://taewan.kim/apex-workshop/01.beginner_ws/30.expense/20-expense_mngt_list/

| 컬럼 이름 |
|--------------------|
| p31_employee_id |
| p31_type_id |
| p31_payment_amount |
| p31_title |
| p31_description |
| p31_receipt_status |
| p31_card_type |
| p31_receipt_pic |
| p31_use_date |
| p31_cre_date |

오타 수정

http://taewan.kim/apex-workshop/01.beginner_ws/30.expense/50-expense_report_receipts_list/

- Region static ID 설정
 - Expense Report Item 리전 » Advanced » Static ID
 - 설정값: added_expenses

추가

http://taewan.kim/apex-workshop/01.beginner_ws/40.authentication/20-authentication/

Employees 테이블 패스워드 설정

패스워드