TIZEN Native App

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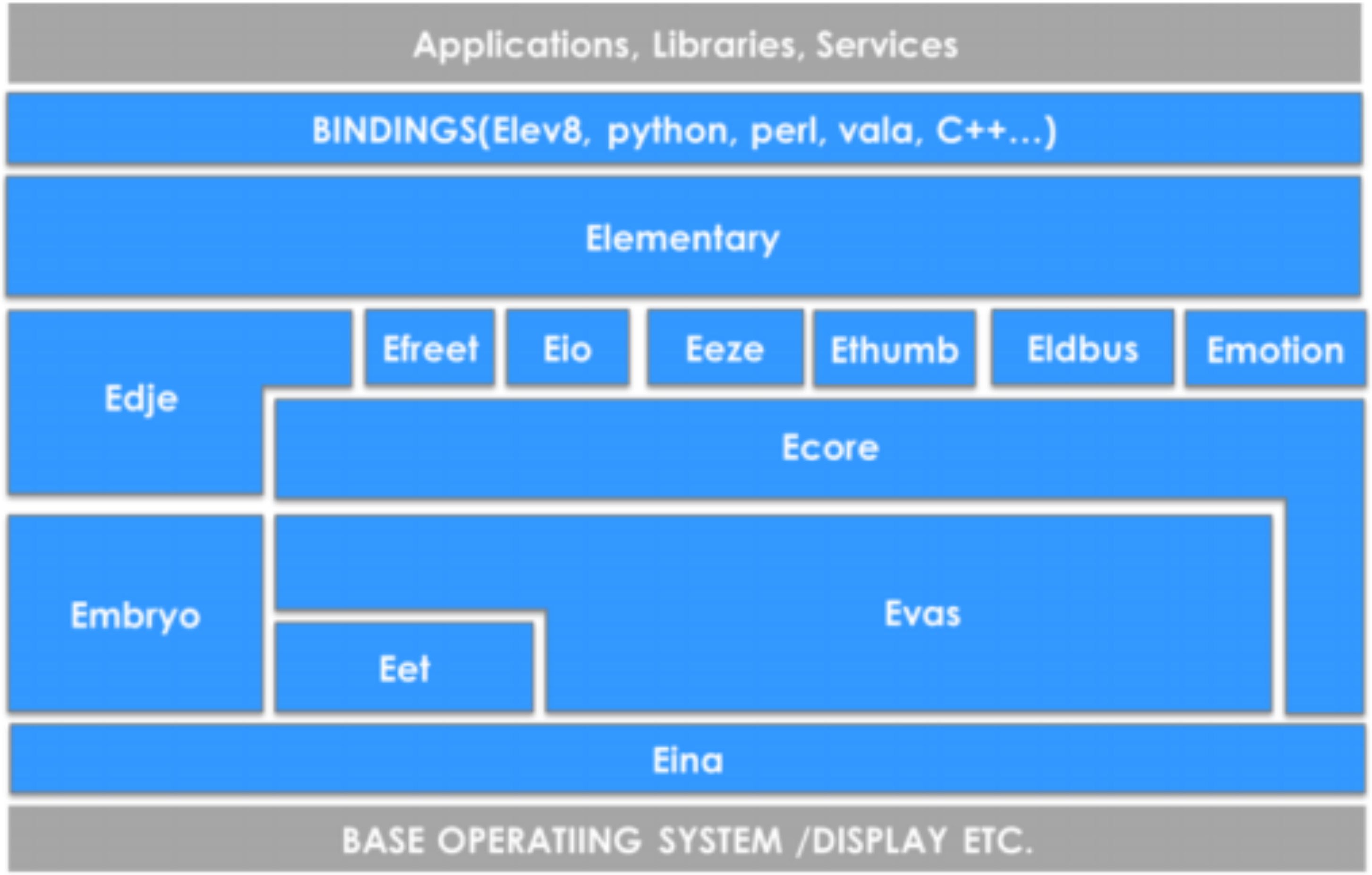
목차

- Tizen EFL
- Native 애플리케이션 개발

Tizen EFL

- Tizen EFL
  - ✓ Enlightment Foundation Libraries
    - 타이젠 핵심 코어 툴킷


Applications, Libraries, Services
BINDINGS(Elev8, python, perl, vala, C++...)
Elementary
Edje
Efreet
Eio
Eeze
Ethumb
Eldbus
Emotion
Ecore
Embryo
Evas
Eet
Eina
BASE OPERATIING SYSTEM /DISPLAY ETC.

Tizen EFL

Tizen EFL

- ✓ Eina
  - 자료구조 라이브러리
  - C++의 STL과 같이 배열, 리스트, 해시, 트리 등 제공
- ✓ Eet
  - 데이터 인코딩 및 디코딩
  - 임의의 자료구조, 데이터 등을 압축하여 파일 저장 또는 네트워크 전송
  - Zip과 유사한 압축기법, 파일로부터 임의의 위치 데이터 빠른 접근 가능
- ✓ Evas
  - EFL의 핵심 라이브러리, Canvas or Rendering Engine
  - 사용자는 Evas를 통해 윈도우 내 이미지, 사각형, 선, 폴리곤, 텍스트 등을 표현하며, 출력물은 모두 객체화
  - Evas_Object타입으로 객체화하여 제공하며, 모든 그래픽 객체들은 Evas_Object인터페이스로 접근

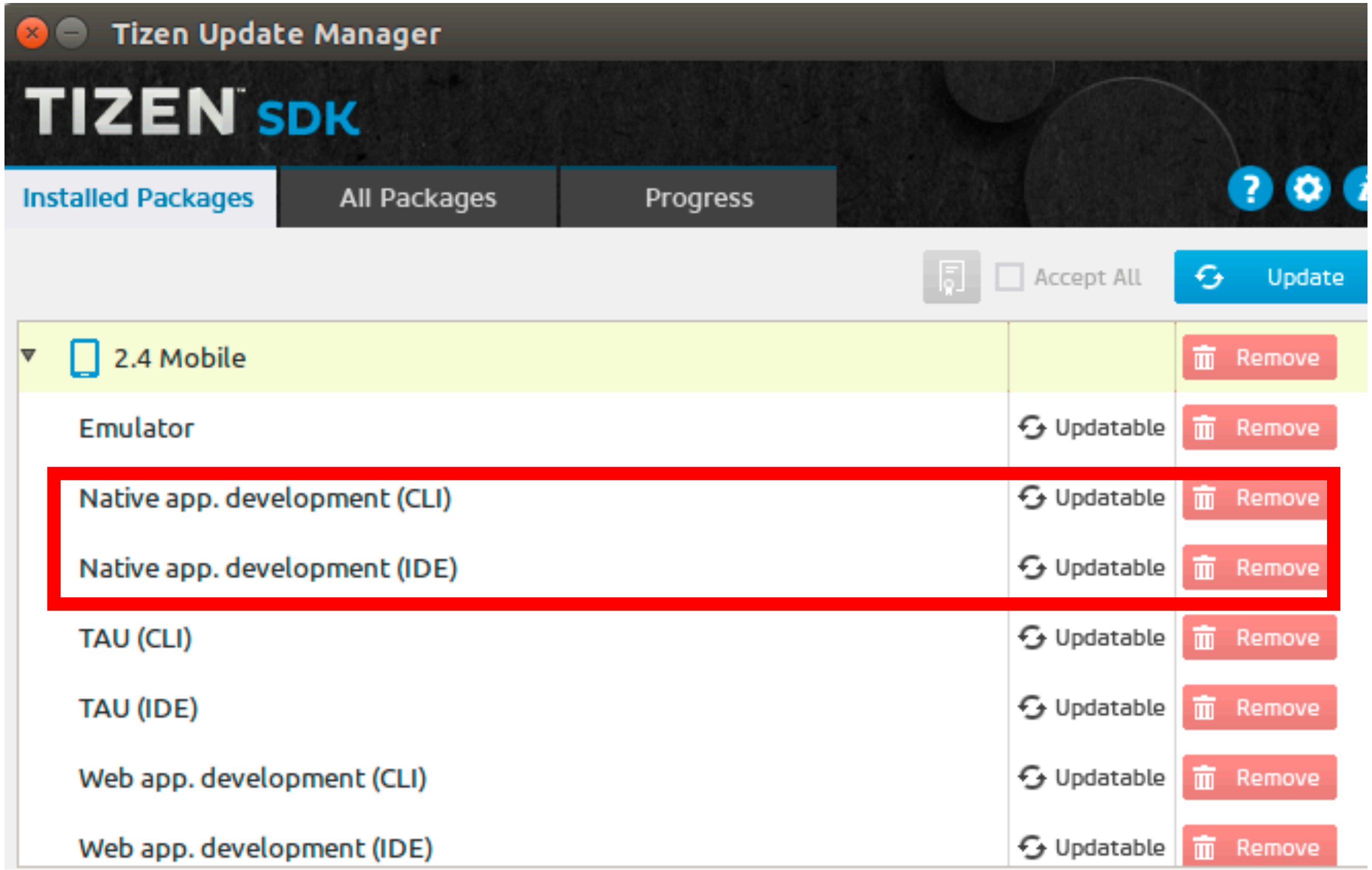
Tizen EFL

Tizen EFL

- ✓ Ecore
  - 사용자 편의를 위해 제공되는 시스템 라이브러리
  - Main loop, Timer, Event, Connection IPC, Thread 등
  - 복잡한 설정 및 사용단계들을 내부적으로 처리하여 보다 쉽게 단순화
- ✓ Edje
  - 복잡한 GUI 구성을 위한 기능들을 제공
  - EDC Script 언어 제공, 사용자는 EDC Script를 통해 GUI부분 분리 작성
- ✓ Emotion
  - 비디오/오디오 플레이백
- ✓ Elementary
  - 위젯 툴킷 라이브러리 (버튼, 리스트, 레이블, 슬라이더)
  - GUI확장성 지원-> 다양한 스크린 해상도 지원, 테마지원

Native 애플리케이션 개발

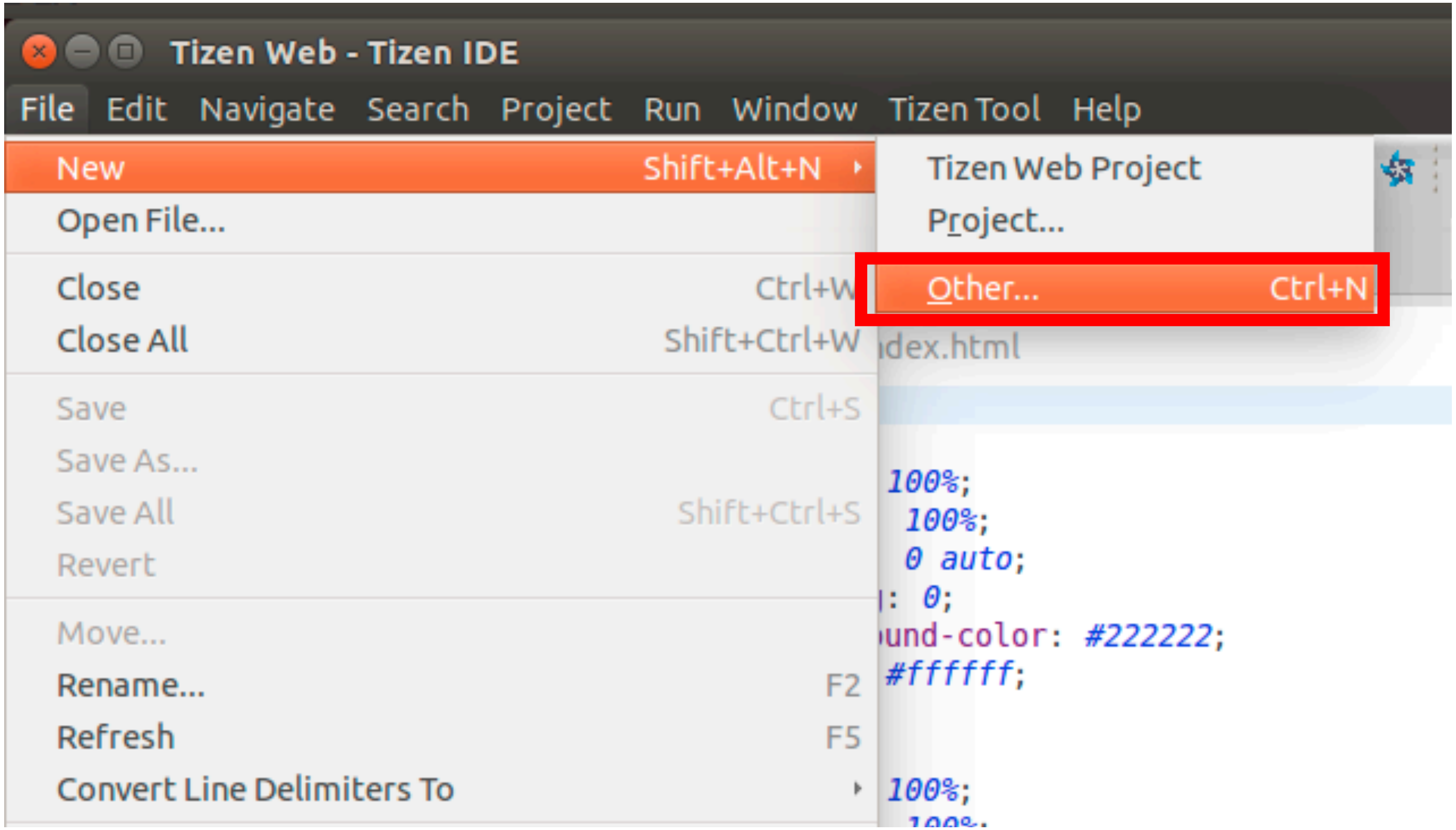
- Native app development 설치
  - ✓ Tizen Update Manager > 2.4 Mobile > Native app.development



▼ 2.4 Mobile		Remove
Emulator	Updatable	Remove
Native app. development (CLI)	Updatable	Remove
Native app. development (IDE)	Updatable	Remove
TAU (CLI)	Updatable	Remove
TAU (IDE)	Updatable	Remove
Web app. development (CLI)	Updatable	Remove
Web app. development (IDE)	Updatable	Remove

Native 애플리케이션 개발

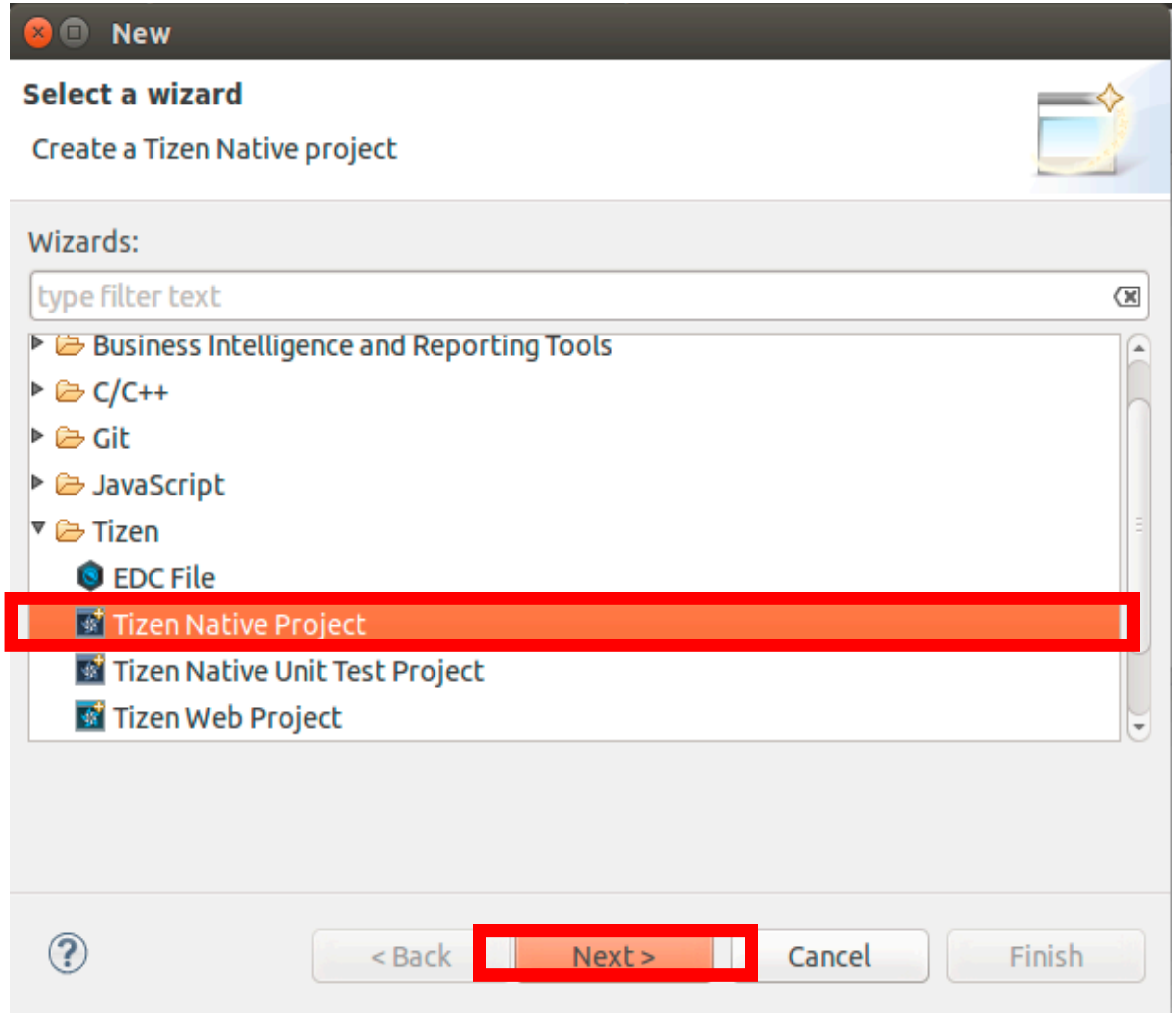
- 프로젝트 생성
  - ✓ Tizen IDE 2.4 > File > New > Other



```
100%;
 100%;
 0 auto;
: 0;
und-color: #222222;
#ffffff;

100%;
```

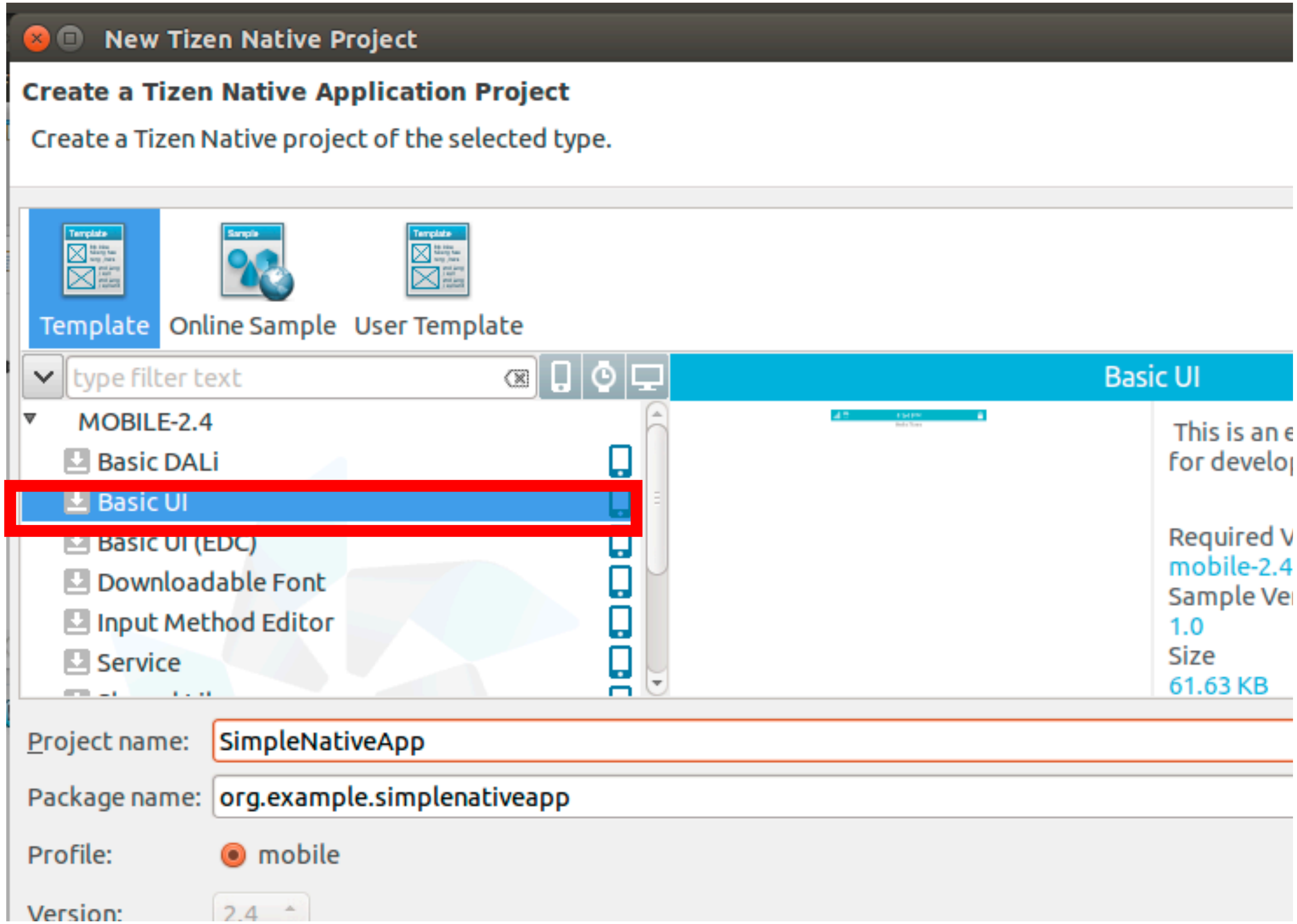
Native 애플리케이션 개발

- 프로젝트 생성
  - ✓ Tizen Native Project



Native 애플리케이션 개발

- 프로젝트 생성
  - ✓ Mobile 2.4 > Basic UI > Finish



New Tizen Native Project

Create a Tizen Native Application Project

Create a Tizen Native project of the selected type.

This is an e
for develo

Required V
mobile-2.4
Sample Ve
1.0
Size
61.63 KB

Project name: SimpleNativeApp

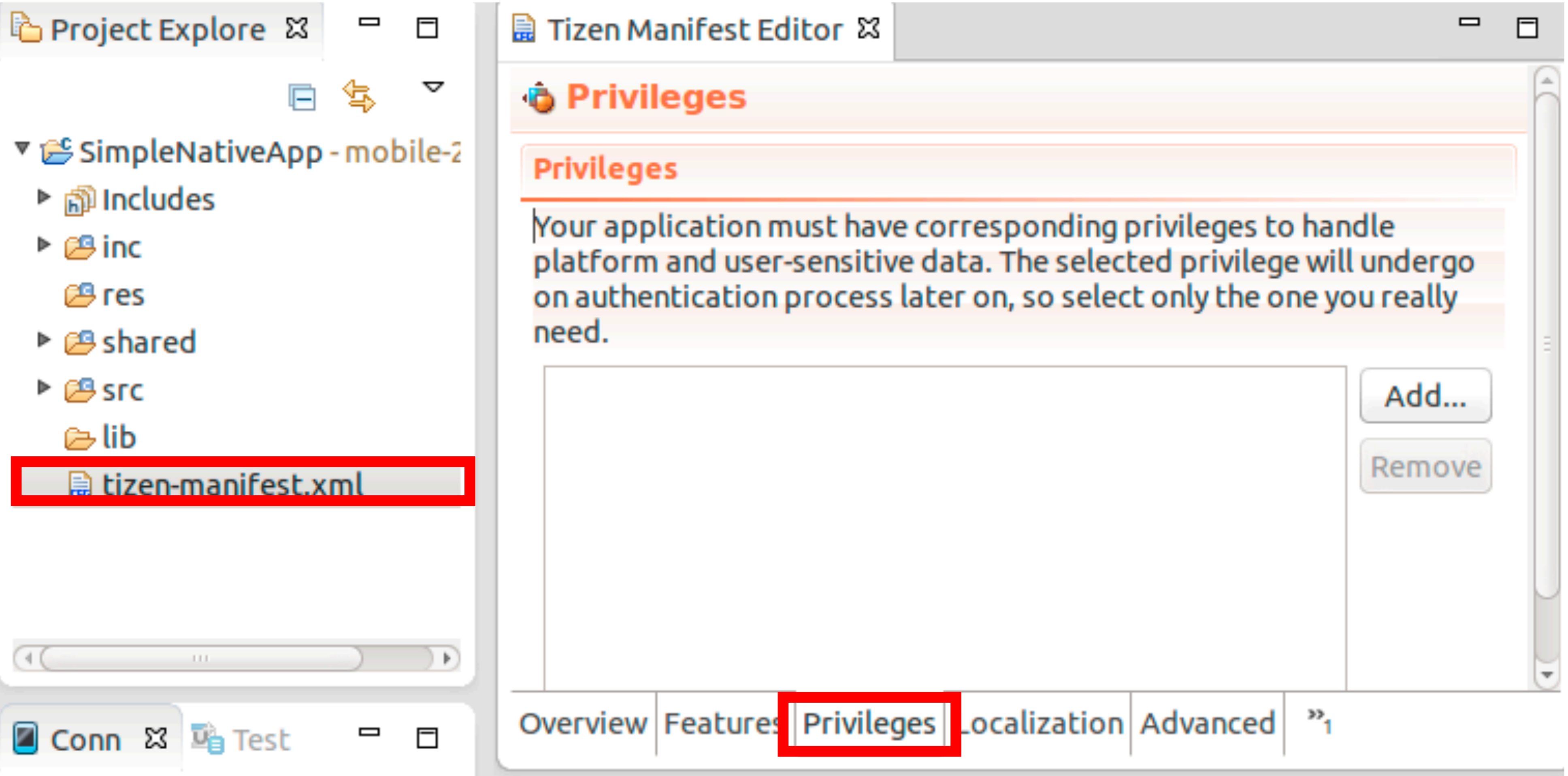
Package name: org.example.simplenativeapp

Profile: ● mobile

Version: 2.4

Native 애플리케이션 개발

- Privileges 설정
  - ✓ /tizen-manifest.xml > Privileges 설정

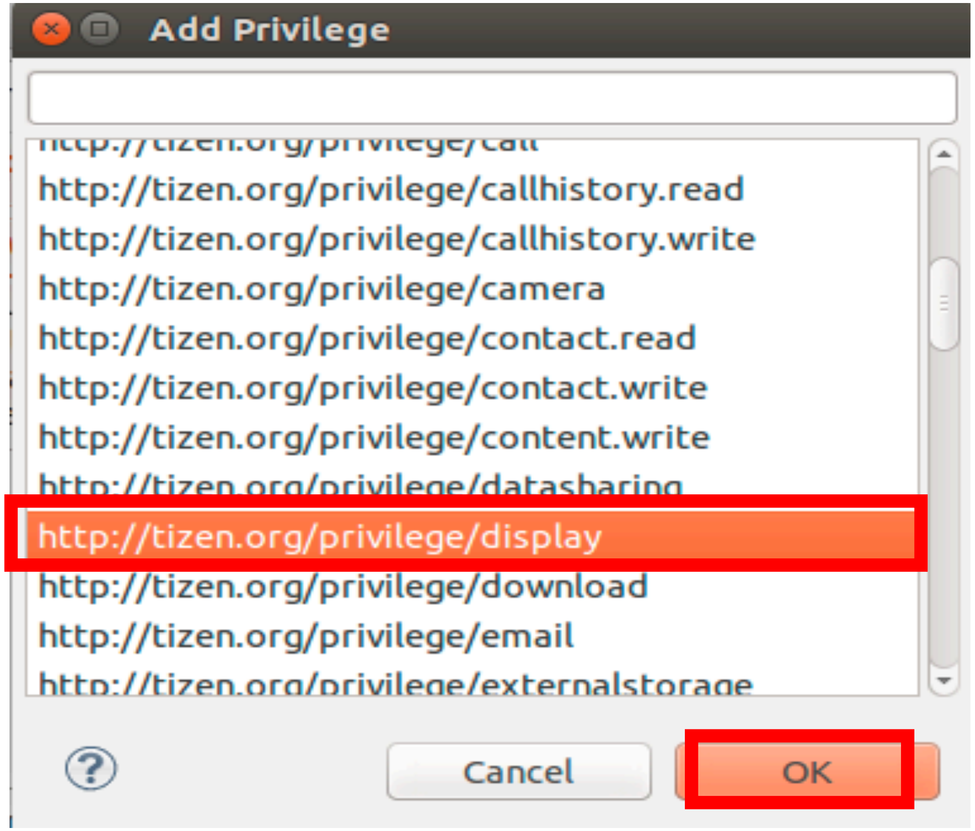


Your application must have corresponding privileges to handle platform and user-sensitive data. The selected privilege will undergo on authentication process later on, so select only the one you really need.

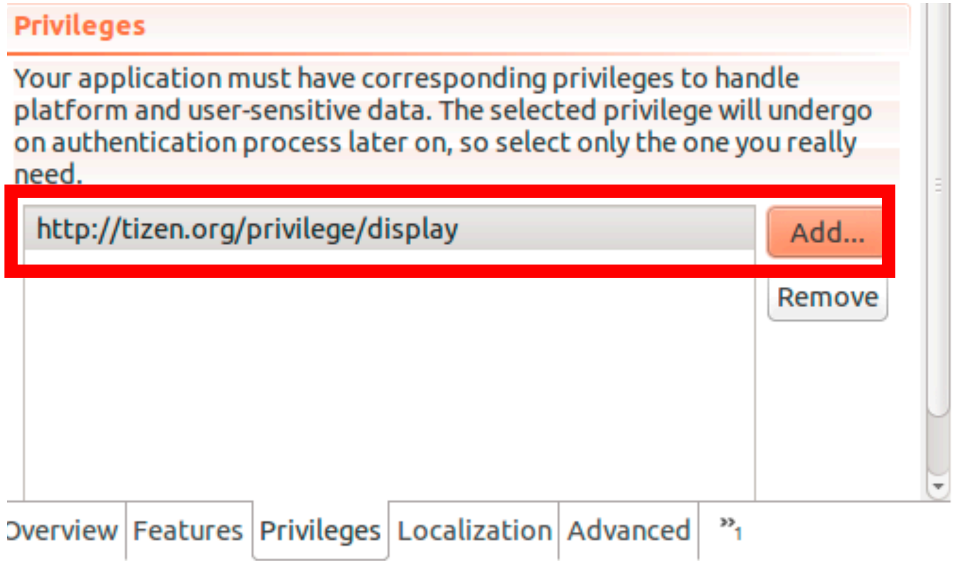
Native 애플리케이션 개발

Privileges 설정

- ✓ Add > http://tizen.org/privilege/display > OK
  - Display 접근 권한 획득



http://tizen.org/privilege/call
http://tizen.org/privilege/callhistory.read
http://tizen.org/privilege/callhistory.write
http://tizen.org/privilege/camera
http://tizen.org/privilege/contact.read
http://tizen.org/privilege/contact.write
http://tizen.org/privilege/content.write
http://tizen.org/privilege/datasharing
http://tizen.org/privilege/display
http://tizen.org/privilege/download
http://tizen.org/privilege/email
http://tizen.org/privilege/externalstorage



Your application must have corresponding privileges to handle platform and user-sensitive data. The selected privilege will undergo on authentication process later on, so select only the one you really need.

http://tizen.org/privilege/display

Native 애플리케이션 개발

- /inc/simplenativeapp.h 수정
  - ✓ 헤더파일 추가

```
#ifndef __simplenativeapp_H__
#define __simplenativeapp_H__

#include <app.h>
#include <Elementary.h>
#include <system_settings.h>
#include <efl_extension.h>
#include <dlog.h>
#include <device/battery.h>
#include <stdlib.h>
#include <string.h>
#include <system_info.h>
#include <device/display.h>
…
```

Native 애플리케이션 개발

- /src/simplenativeapp.c 파일 수정
  - ✓ appdata_s 구성
    - 기본 객체 정보

```
typedef struct appdata {
        Evas_Object *win;         // 기본 윈도우 창
        Evas_Object *conform; // gui 구현시 사용
        Evas_Object *label;       // text 출력시 사용
        Evas_Object *btn1;        // 버튼 1 - 5
        Evas_Object *btn2;
        Evas_Object *btn3;
        Evas_Object *btn4;
        Evas_Object *btn5;
        Evas_Object *grid;        // 화면 구성
        int brightness;
} appdata_s;
```

Native 애플리케이션 개발

- Main 함수 수정
  - ✓ 객체 자료구조 및 변수 초기화
  - ✓ LifeCycle callback 함수 등록

```
Int main(int argc, char *argv[])
{
        appdata_s ad = {0,};                    //기본 자료구조 초기화
        ad.brightness = 100;                    // 객체 밝기 정보 초기화
        int ret = 0;
                                                // lifecycle callback함수 등록
        ui_app_lifecycle_callback_s event_callback = {0,};
        app_event_handler_h handlers[5] = {NULL, };
        event_callback.create = app_create;          event_callbac
k.terminate = app_terminate;
        event_callback.pause = app_pause;
        event_callback.resume = app_resume;
        event_callback.app_control = app_control;
```

Native 애플리케이션 개발

Main 함수 수정

- ✓ System callback 함수 등록

```
        ui_app_add_event_handler(&handlers[APP_EVENT_LOW_BATTERY],
                APP_EVENT_LOW_BATTERY, ui_app_low_battery, &ad);
        ui_app_add_event_handler(&handlers[APP_EVENT_LOW_MEMORY],
                APP_EVENT_LOW_MEMORY, ui_app_low_memory, &ad);
        ui_app_add_event_handler(&handlers[APP_EVENT_DEVICE_ORIENTATION_CHANG
        ED], APP_EVENT_DEVICE_ORIENTATION_CHANGED, ui_app_orient_changed, &ad);
        ui_app_add_event_handler(&handlers[APP_EVENT_LANGUAGE_CHANGED],
                APP_EVENT_LANGUAGE_CHANGED, ui_app_lang_changed, &ad);
        ui_app_add_event_handler(&handlers[APP_EVENT_REGION_FORMAT_CHANGED],
        APP_EVENT_REGION_FORMAT_CHANGED, ui_app_region_changed, &ad);

        ret = ui_app_main(argc, argv, &event_callback, &ad);
        if (ret != APP_ERROR_NONE) {
                dlog_print(DLOG_ERROR, LOG_TAG, "app_main() is failed. err = %d", ret);
        }
        //Event registration
        return ret;
}
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ app_create : App에 필요 데이터와 **UI** 설정

```
static bool
app_create(void *data)
{          appdata_s *ad = data;

           create_base_gui(ad);

           return true;
}
```

Native 애플리케이션 개발

GUI 설정

- ✓ create_base_gui : 메인화면 초기화
  - elm_win_util_standard_add() : 윈도우 생성 및 타이틀 전달

```
static void
create_base_gui(appdata_s *ad)
{
        ad->win = elm_win_util_standard_add(PACKAGE, PACKAGE);
        elm_win_autodel_set(ad->win, EINA_TRUE);

        if (elm_win_wm_rotation_supported_get(ad->win)) {
                int rots[4] = { 0, 90, 180, 270 };
                elm_win_wm_rotation_available_rotations_set(ad->win,
                        (const int *)(&rots),  4);
        }
        evas_object_smart_callback_add(ad->win, "delete,request",
                        win_delete_request_cb, NULL);
        eext_object_event_callback_add(ad->win,
                        EEXT_CALLBACK_BACK, win_back_cb, ad);
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ Conformant 생성 및 부모객체 전달

```
…
        ad->conform = elm_conformant_add(ad->win);
        elm_win_indicator_mode_set(ad->win,
                                   ELM_WIN_INDICATOR_SHOW);
        elm_win_indicator_opacity_set(ad->win,
                                   ELM_WIN_INDICATOR_OPAQUE);
        evas_object_size_hint_weight_set(ad->conform,
                EVAS_HINT_EXPAND,  EVAS_HINT_EXPAND);
        elm_win_resize_object_add(ad->win, ad->conform);
…
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ Container 객체 grid 생성

```
...
            ad->grid = elm_grid_add(ad->conform);
            evas_object_show(ad->grid);
...
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ 버튼 1 ~ 5 생성 및content 설정

```
…
ad->btn1 = elm_button_add(ad->grid);
            elm_object_text_set(ad->btn1,"<font font_size=70>Model N
ame</font>");
            elm_object_content_set(ad->grid, ad->btn1);
            evas_object_show(ad->btn1);


            ad->btn2 = elm_button_add(ad->grid);
            elm_object_text_set(ad->btn2,"<font font_size=70>Battery
State</font>");
            elm_object_content_set(ad->grid, ad->btn2);
            evas_object_show(ad->btn2);
…
```

Native 애플리케이션 개발

GUI 설정

- ✓ 버튼 1 ~ 5 생성 및content 설정

```
…
          ad->btn3 = elm_button_add(ad->grid);
          elm_object_text_set(ad->btn3,"<font font_size=70>Brightness ++</font>");
          elm_object_content_set(ad->grid, ad->btn3);
          evas_object_show(ad->btn3);

          ad->btn4 = elm_button_add(ad->grid);
          elm_object_text_set(ad->btn4,"<font font_size=70>Brightness --</font>");
          elm_object_content_set(ad->grid, ad->btn4);
          evas_object_show(ad->btn4);

          ad->btn5 = elm_button_add(ad->grid);
          elm_object_text_set(ad->btn5,"<font font_size=70>Finish</font>");
          elm_object_content_set(ad->grid, ad->btn5);
          evas_object_show(ad->btn5);
…
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ Label 생성 및 grid 등록

```
…
        ad->label = elm_label_add(ad->grid);
        elm_object_content_set(ad->grid, ad->label);
        evas_object_show(ad->label);

        elm_grid_pack(ad->grid,ad->btn1, 10,5,80,12);
        elm_grid_pack(ad->grid,ad->btn2, 10,22,80,12);
        elm_grid_pack(ad->grid,ad->btn3, 10,39,80,12);
        elm_grid_pack(ad->grid,ad->btn4, 10,56,80,12);
        elm_grid_pack(ad->grid,ad->btn5, 10,73,80,12);

        elm_grid_pack(ad->grid,ad->label, 10,88,80,20);

        elm_object_content_set(ad->conform, ad->grid);
…
```

Native 애플리케이션 개발

- GUI 설정
  - ✓ 버튼 Event 등록

```
…
        evas_object_smart_callback_add(ad- >btn1,"clicked",
                                            clicked_btn1,ad);
        evas_object_smart_callback_add(ad->btn2,"clicked",
                                            clicked_btn2,ad);
        evas_object_smart_callback_add(ad->btn3,"clicked",
                                            clicked_btn3,ad);
        evas_object_smart_callback_add(ad->btn4,"clicked",
                                            clicked_btn4,ad);
        evas_object_smart_callback_add(ad->btn5,"clicked",
                                            clicked_btn5,ad);

        evas_object_show(ad->conform);
        evas_object_show(ad->win);
}
```

Native 애플리케이션 개발

- Clicked_btn1 함수 등록
  - ✓ 디바이스 이름 출력 함수

```
static void
clicked_btn1(void *user_data, Evas_Object *obj, void* event_info)
{
            int ret;
            appdata_s *ad = user_data;
            char *buf1;
            char buf2[1024];
            ret = system_info_get_platform_string(
                                    "http://tizen.org/system/model_name",&buf1);
            sprintf(buf2, "<align=center><font font_size=50>
                                                Model : %s</font></align>",buf1);
            elm_object_text_set(ad->label,buf2);

            free(buf1);
}
```

Native 애플리케이션 개발

- Clicked_btn2 함수 등록
  - ✓ 디아비스 베터리 잔량 출력 함수

```
static void
clicked_btn2(void *user_data, Evas_Object *obj, void* event_info)
{
        int error, pct;
        char buf[1024];
        appdata_s *ad = user_data;
        error = device_battery_get_percent(&pct);
        sprintf(buf, "<align=center><font font_size=50>
                        CurrentBattery  : %d</font></align>",pct);
        elm_object_text_set(ad->label,buf);

}
```

Native 애플리케이션 개발

- Clicked_btn3 함수 등록
  - ✓ 디아비스 Display 밝기 증가 함수

```
static void
clicked_btn3(void *user_data, Evas_Object *obj, void* event_info)
{
        int error;
        appdata_s *ad = user_data;

        ad->brightness += 10;
        if(ad->brightness >= 100)
                ad->brightness = 100;
        error = device_display_set_brightness(0, ad->brightness);

}
```

Native 애플리케이션 개발

- Clicked_btn4 함수 등록
  - ✓ 디아비스 Display 밝기 감소 함수

```
static void
clicked_btn4(void *user_data, Evas_Object *obj, void* event_info)
{
		int error;
		appdata_s *ad = user_data;

		ad->brightness -= 10;
		if(ad->brightness <= 0)
				ad->brightness = 0;
		error = device_display_set_brightness(0, ad->brightness);

}
```

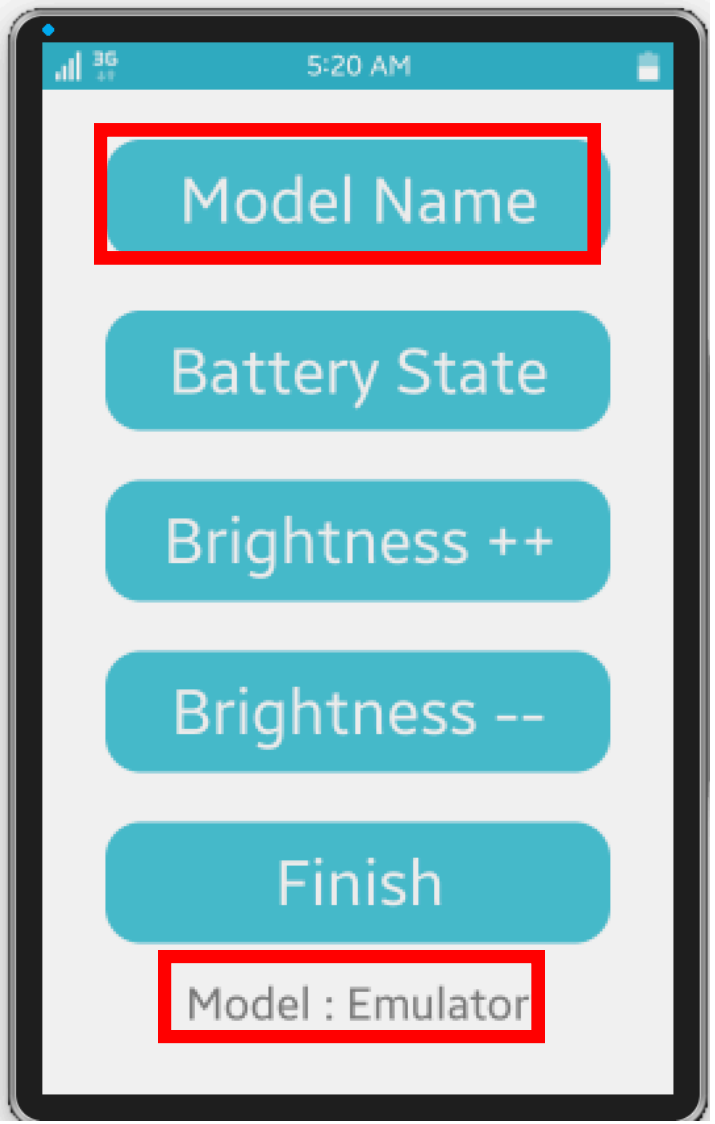
Native 애플리케이션 개발

- Clicked_btn5 함수 등록
  - ✓ 애플리케이션 종료 함수

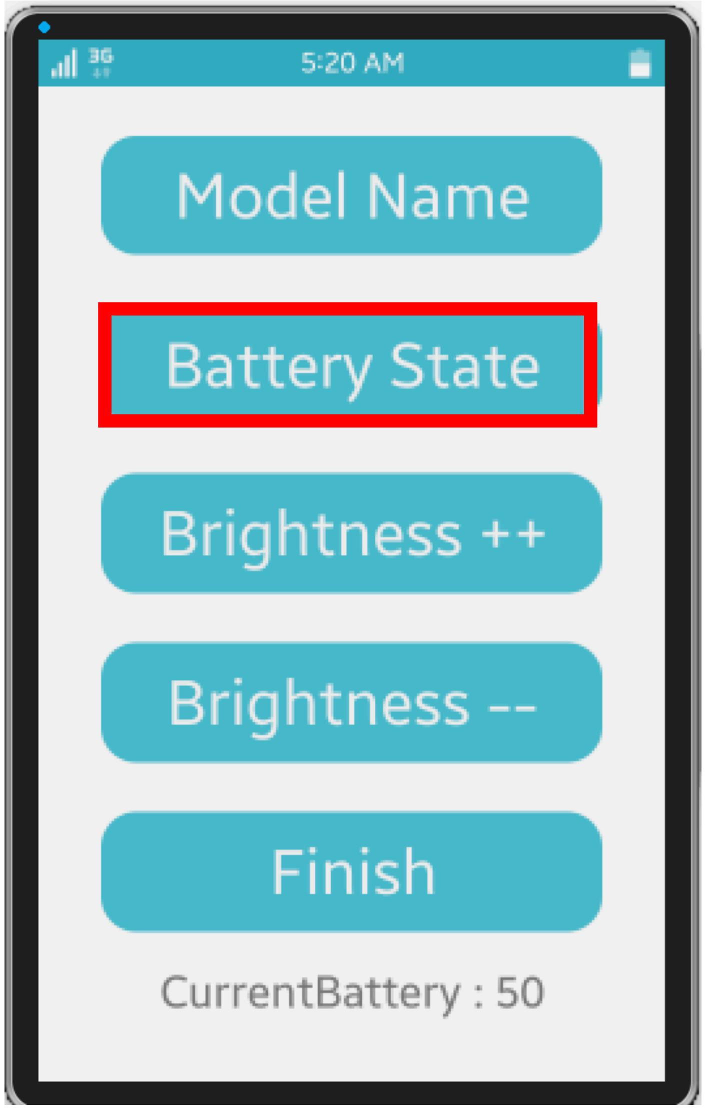
```
static void
clicked_btn5(void *user_data, Evas_Object *obj, void* event_info)
{
        ui_app_exit();

}
```

Native 애플리케이션 개발

- 실행화면



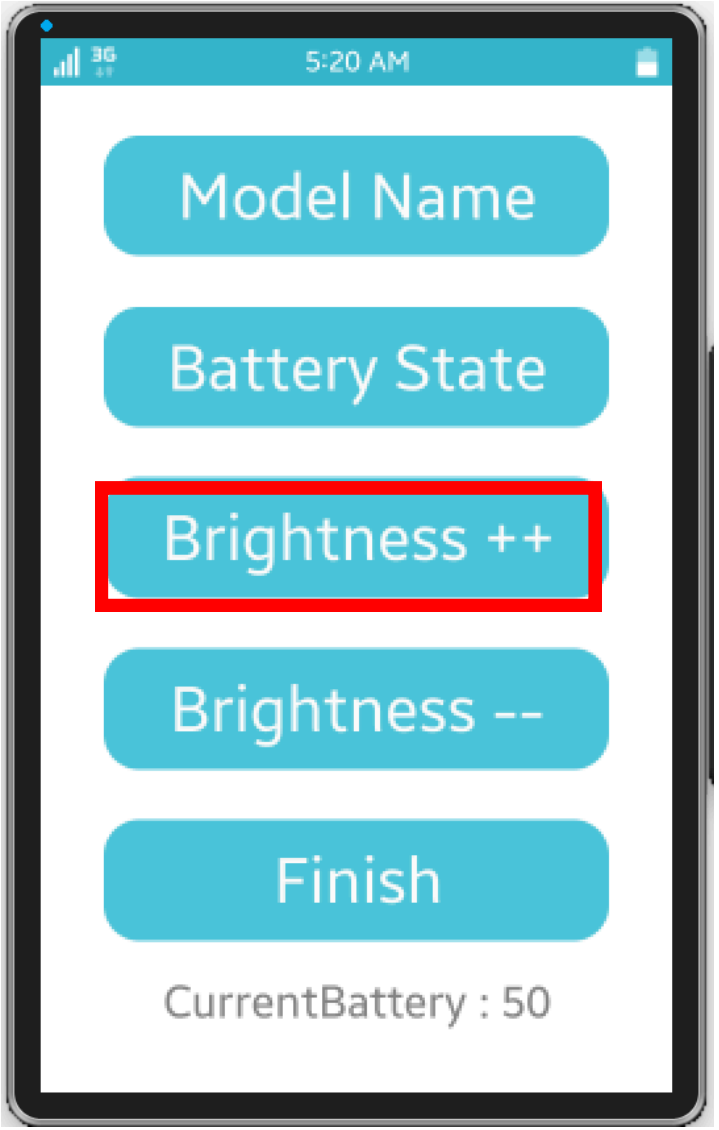
Model : Emulator

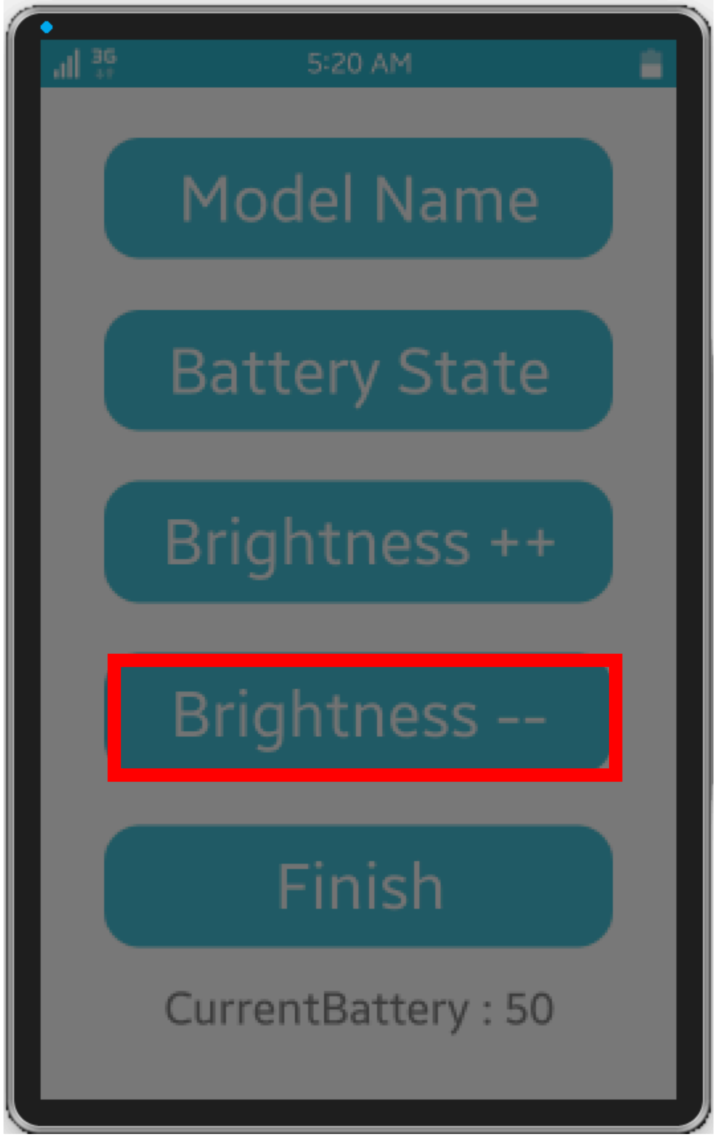


CurrentBattery : 50

Native 애플리케이션 개발

- 실행화면





Q/A