UNIVERSITY INSTITUTE OF ENGINEERING

Department of Computer Science & Engineering

Subject Name: Mobile Application Development Lab

Subject Code: 20CSP356

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Group: B

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COMPUTER SCIENCE & ENGINEERING

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Subject Name: MAD Lab   **Subject Code: 20CSP356**

Aim

Create Application by Using Widgets

Objective

Widgets are the micro-version of the application that consists of some functionality of the application that is displayed only on the Home Screens or the Lock Screen.

For example, we see Weather, Time, Google Search Bars on the Home Screen, and Face Lock, Fingerprint Lock on the Lock Screen, which are some of the Widgets available on the device. Widgets come along with the Application when you install it or download it from the Web.

Generally, phones come with a manufacturing configuration but such elements can be adjusted by a user later in time. In this article, we demonstrate how one can implement a basic widget for an Android App.

Step 1: Create a New Project

To create a new project in Android Studio please refer to How to Create/Start a New Project in Android Studio. We are implementing it for both Java and Kotlin languages.
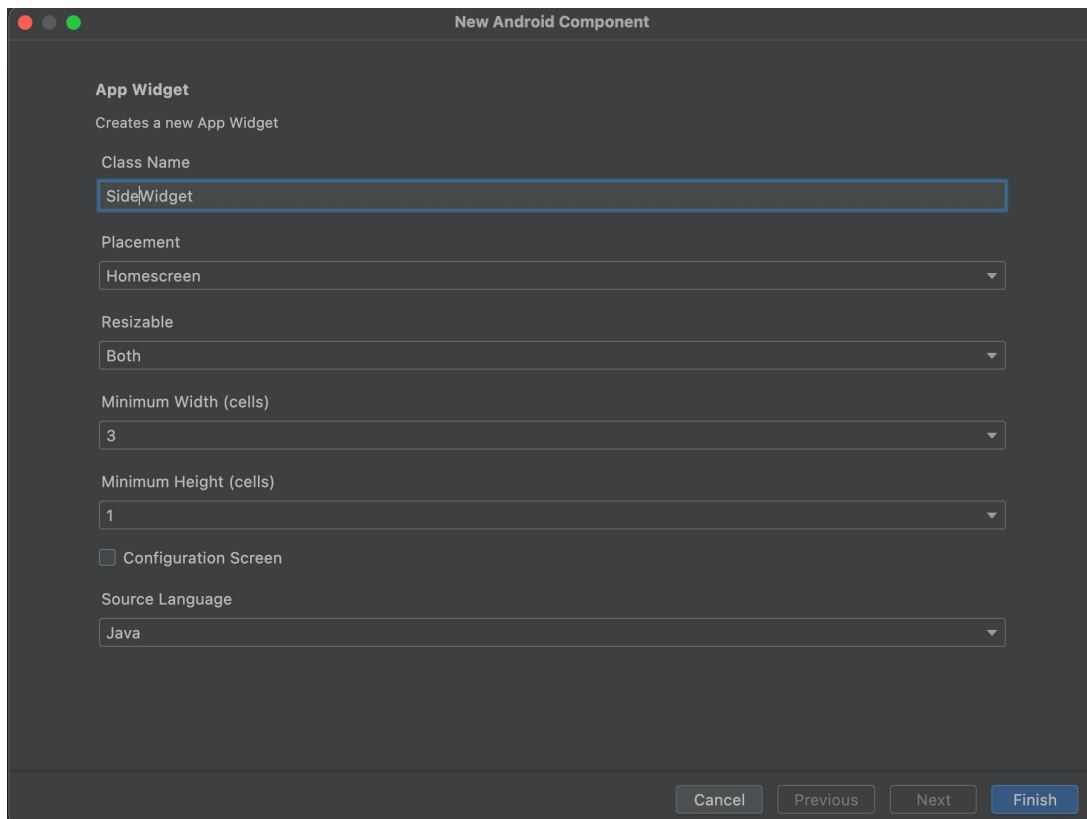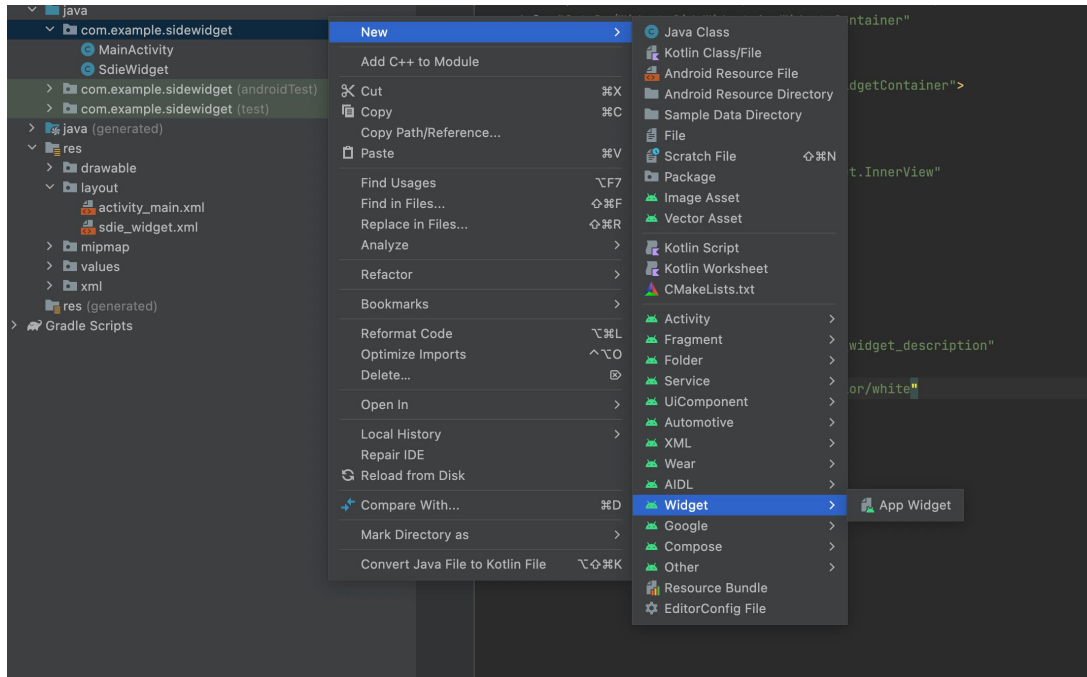
Step 2: Add the App Widget to the Project

Right-Click on the app, move the cursor to new, find the "Widget" option at the end, select it.

Step 3: Install and Run the Code

· Install and Run the code on Android Virtual Device (AVD) or a personal device.

· Open the widget section of the phone, lookup for a widget with the Application name, select it, bring it to the home screen.

· Try changing the dimensions and we are done!

strings.xml

```xml
<resources>
    <string name="app_name">Side Widget</string>
    <string name="appwidget_text">KONICHIVO</string>
    <string name="add_widget">Add widget</string>
    <string name="app_widget_description">This widget is created by Kanishk.</string>
</resources>
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```xml
</androidx.constraintlayout.widget.ConstraintLayout>
```

side_widget.xml

```xml
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    style="@style/Widget.SideWidget.AppWidget.Container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:theme="@style/Theme.SideWidget.AppWidgetContainer">

    <TextView
        android:id="@+id/appwidget_text"
        style="@style/Widget.SideWidget.AppWidget.InnerView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:contentDescription="@string/app_widget_description"
        android:text="@string/appwidget_text"
        android:textColorHighlight="@android:color/white"
        android:textSize="24sp"
        android:textStyle="bold|italic" />
</RelativeLayout>
```

MainActivity.java

```java
package com.example.sidewidget;

import androidx.appcompat.app.AppCompatActivity;
```

```java
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

SideWidget.java

```java
package com.example.sidewidget;

import android.appwidget.AppWidgetManager;
import android.appwidget.AppWidgetProvider;
import android.content.Context;
import android.widget.RemoteViews;

public class SdieWidget extends AppWidgetProvider {

    static void updateAppWidget(Context context, AppWidgetManager appWidgetManager,
                        int appWidgetId) {

        CharSequence widgetText = context.getString(R.string.appwidget_text);
        // Construct the RemoteViews object
        RemoteViews views = new RemoteViews(context.getPackageName(), R.layout.sdie_widget);
        views.setTextViewText(R.id.appwidget_text, widgetText);

        // Instruct the widget manager to update the widget
        appWidgetManager.updateAppWidget(appWidgetId, views);
    }

    @Override
    public void onUpdate(Context context, AppWidgetManager appWidgetManager, int[] appWidgetIds) {
```

```java
    // There may be multiple widgets active, so update all of them
    for (int appWidgetId : appWidgetIds) {
        updateAppWidget(context, appWidgetManager, appWidgetId);
    }
}
}
```