CMP309 - SOFTWARE DEVELOPMENT FOR MOBILE DEVICES

FOOD EXPIRY DATE TRACKER

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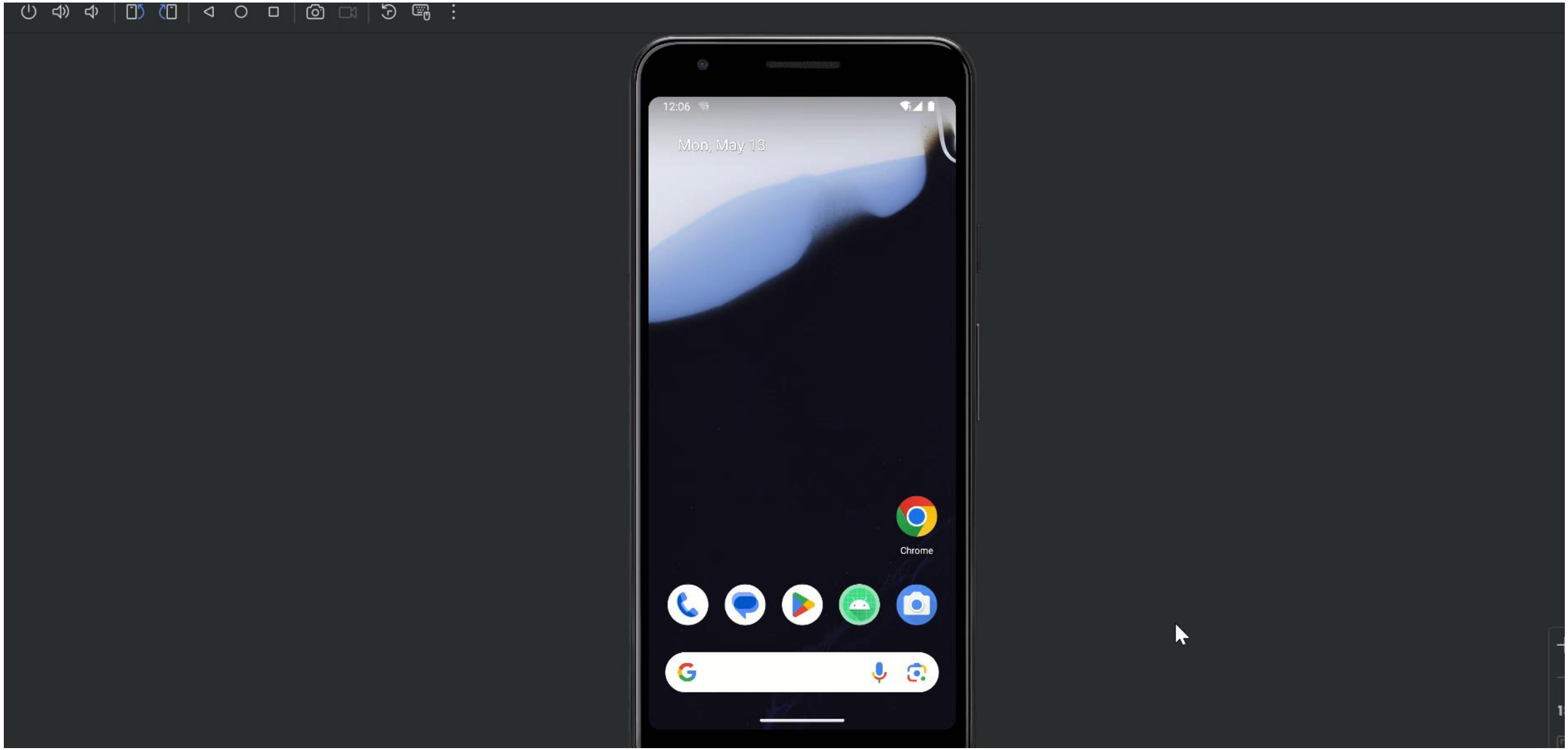
CONTENT

BACKGROUND

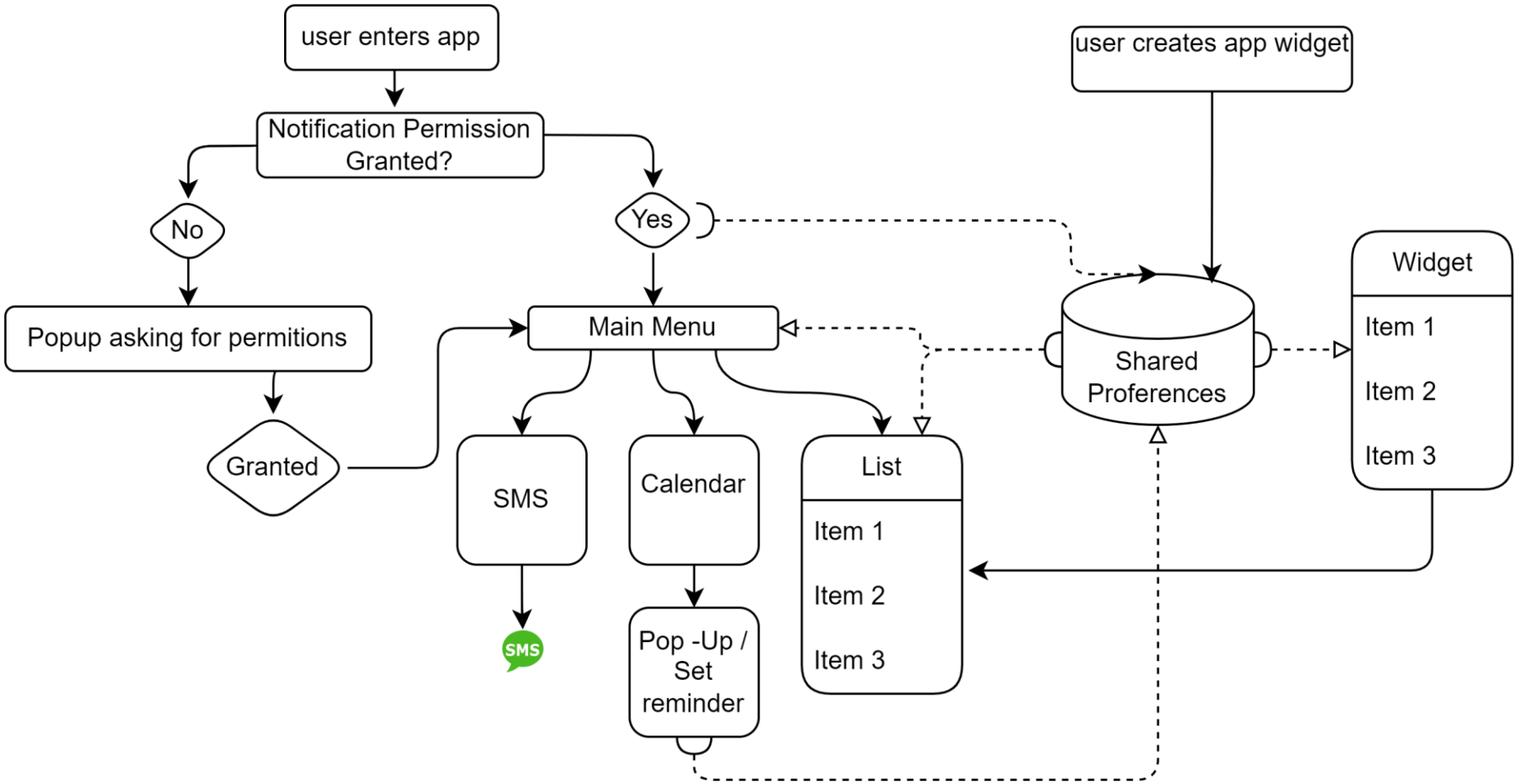
Food tracker

Schedule notification to remind users of food expiry date

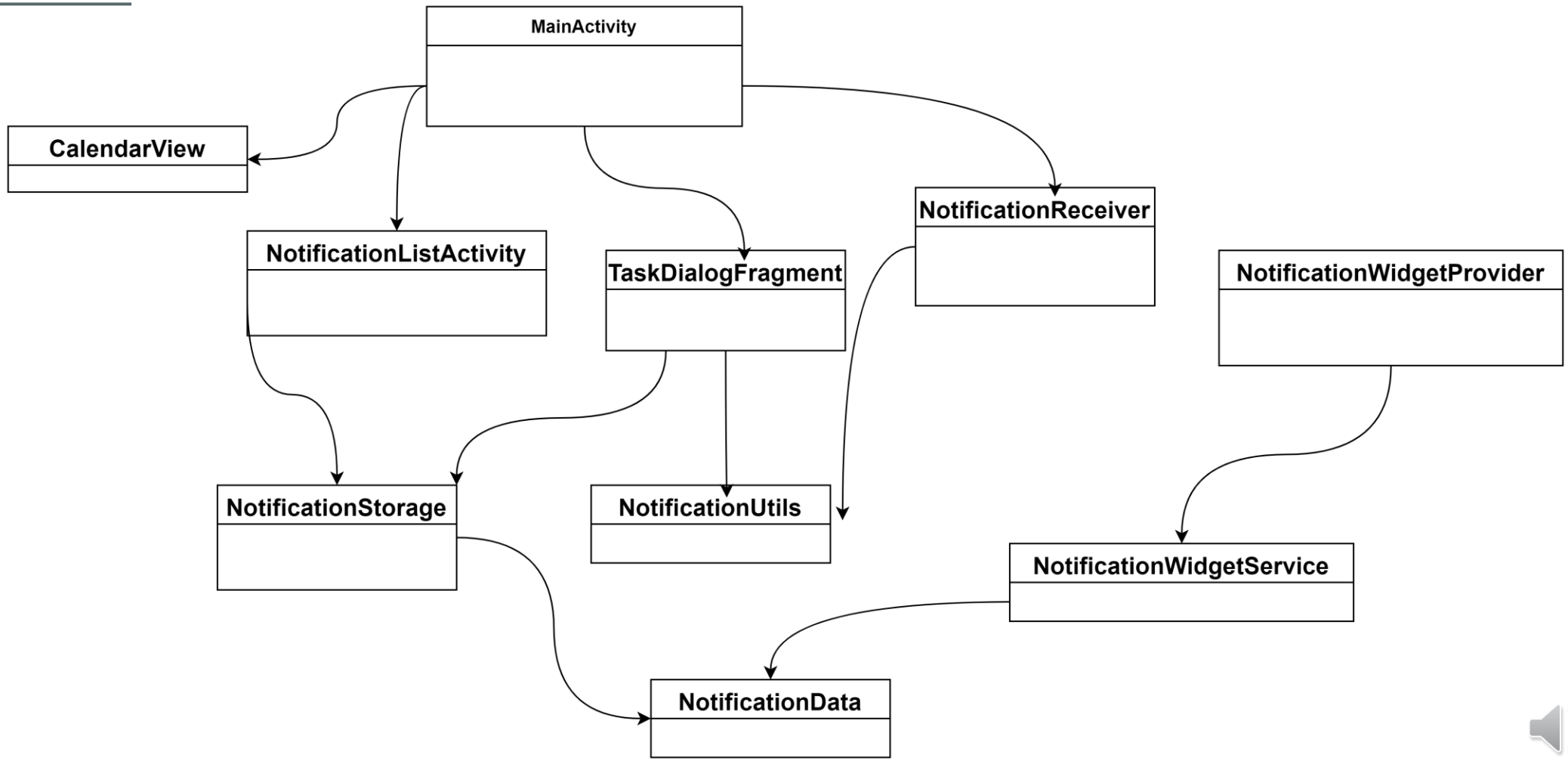
Pop-up dialogs, notifications, SMS, shared preferences, scheduling reminders.


12:06
Mon, May 13
Chrome

FLOW CHART DIAGRAM



STRUCTURE


MainActivity
CalendarView
NotificationListActivity
TaskDialogFragment
NotificationReceiver
NotificationWidgetProvider
NotificationStorage
NotificationUtils
NotificationWidgetService
NotificationData

KEY FEATURES

- Pop-up dialogs
- Notification Permissions
- Scheduling Notification
- Saving notifications (shared preferences)
- SMS
- Widget

NOTIFICATION PERMISSIONS

```
import android.app.NotificationManager;
import android.content.Context;
import android.content.Intent;
import android.os.Build;
 <uses-permission
android:name="android.permission.POST_
NOTIFICATIONS" />
```

```
private val notificationPermissionInitializer =
   registerForActivityResult(ActivityResultContracts.RequestPermission()) { isGranted ->
      hasNotificationPermissionGranted = isGranted
      if (!isGranted) {
         if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
            if (Build.VERSION.SDK_INT >= 33) {
               if
(shouldShowRequestPermissionRationale(android.Manifest.permission.POST_NOTIFICATIO
NS)) {
                  showNotificationPermissionRationale()
               } else {
                  showSettingDialog()
               }
            }
         }
      } else {
         Toast.makeText(
            applicationContext,
            "notification permission granted",
            Toast.LENGTH_SHORT
         )
            .show()
      }
```

SCHEDULING NOTIFICATIONS

```
import android.app.AlarmManager;
import android.content.Context;
import android.content.Intent;
import android.app.PendingIntent;
import android.os.Build;
```

```
fun scheduleNotification(context: Context, notificationData: NotificationData) {
    // Create an intent for the NotificationReceiver
    val intent = Intent(context, NotificationReceiver::class.java)

    // Add title and message as extras to the intent
    intent.putExtra("notificationTitle", notificationData.title)
    intent.putExtra("notificationContent", notificationData.content)

    val pendingIntent = if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
        PendingIntent.getBroadcast(
            context,
            notificationData.id.toInt(),
            intent,
            PendingIntent.FLAG_UPDATE_CURRENT or PendingIntent.FLAG_IMMUTABLE
        )
    } else {
        PendingIntent.getBroadcast(
            context,
            notificationData.id.toInt(),
            intent,
            PendingIntent.FLAG_UPDATE_CURRENT
        )
    }

    // Get the AlarmManager service
    val alarmManager = context.getSystemService(Context.ALARM_SERVICE) as AlarmManager

    // schedule the notification
    alarmManager.setExactAndAllowWhileIdle(
        AlarmManager.RTC_WAKEUP,
        notificationData.dateTime,
        pendingIntent
    )
}
```

SMS

```
<uses-permission
android:name="android.permission.SEND_SMS" />
import android.telephony.SmsManager
```

```
val smsButton = findViewById<Button>(R.id.smsbutton)
smsButton.setOnClickListener {
    val builder = AlertDialog.Builder(this)
    val inflater = layoutInflater
    val dialogLayout = inflater.inflate(R.layout.sms, null)
    val message = dialogLayout.findViewById<EditText>(R.id.smsedit)
    var number = " "
    val smsMessage = "Hi, I am using food tracker by Michael Awoyemi. Join me!!! "
    val smsManager: SmsManager
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
        smsManager = this.getSystemService(SmsManager::class.java)
    } else {
        smsManager = SmsManager.getDefault()
    }
    with(builder) {
        setTitle("Phone number")
        setPositiveButton("<Send>") { dialog, which ->
            number = message.text.toString()
            try {
                smsManager.sendTextMessage(number, null, smsMessage, null, null)
                Toast.makeText(applicationContext, "SMS Message Sent!", Toast.LENGTH_LONG).show()
            } catch (e: Exception) {
                Toast.makeText(applicationContext, "SMS failed to send!!", Toast.LENGTH_LONG).show()
            }
        }
        setNegativeButton("cancel") { dialog, which ->
            Log.d("Main", "SMS Cacncelled")
        }
        setView(dialogLayout)
        show()
    }
```

WIDGET

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

```
class NotificationWidgetProvider : AppWidgetProvider() {

   override fun onUpdate(context: Context, appWidgetManager:
AppWidgetManager, appWidgetIds: IntArray) {
      for (appWidgetId in appWidgetIds) {
         val views = RemoteViews(context.packageName,
R.layout.notification_widget_provider)

         val intent = Intent(context, NotificationWidgetService::class.java)
         views.setRemoteAdapter(R.id.appwidget_list,              intent)

         appWidgetManager.updateAppWidget(appWidgetId, views)
      }
   }
}
```

SHARED PREFERENCES

```
import android.content.Context
import com.google.gson.Gson
import com.google.gson.reflect.TypeToken
```

```
object NotificationStorage {
    // Constants for shared preferences
    private const val PREFERENCES_NAME = "notification_preferences"
    private const val KEY_NOTIFICATIONS = "notifications"
    fun saveNotification(context: Context, notificationData: NotificationData) {
        // Get SharedPreferences instance
        val sharedPreferences = context.getSharedPreferences(PREFERENCES_NAME, Context.MODE_PRIVATE)
        val editor = sharedPreferences.edit()
        val gson = Gson()
        // Retrieve existing notifications from SharedPreferences
        val notifications = getNotifications(context).toMutableList()
        // Add new notification to the list
        notifications.add(notificationData)
        // Convert notifications list to JSON
        val json = gson.toJson(notifications)
        // Save JSON string to SharedPreferences
        editor.putString(KEY_NOTIFICATIONS, json)
        editor.apply()
    }
    fun getNotifications(context: Context): List<NotificationData> {
        // Get SharedPreferences instance
        val sharedPreferences = context.getSharedPreferences(PREFERENCES_NAME, Context.MODE_PRIVATE)
        val gson = Gson()
        // Retrieve JSON string of notifications from SharedPreferences
        val json = sharedPreferences.getString(KEY_NOTIFICATIONS, null)
        val type = object : TypeToken<List<NotificationData>>() {}.type
        return gson.fromJson(json, type) ?: emptyList()
    }
}
```

OVERVIEW

Simple food expiry date reminder

Runs smoothly without interruptions

Compatibility with API 29 and above (75%)

Appropriate permissions request for specific API

User Interface is simple and understandable

FUTURE WORK

Back up reminder list

Edit reminder or delete in case of user mistake

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