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Grocery App Report

1. Introduction

Overview

This is an android app that helps you to make a list of grocery items along with its price and quantity.

Purpose

We are humans and we cannot remember everything. We sometimes forget the things that we want to buy. However, with the assistance of this app you can make a list of grocery items you intend to buy so that you don't forget anything and also have a track of your expenditure for budget maintenance.

2. Literature Survey.

Existing Problem

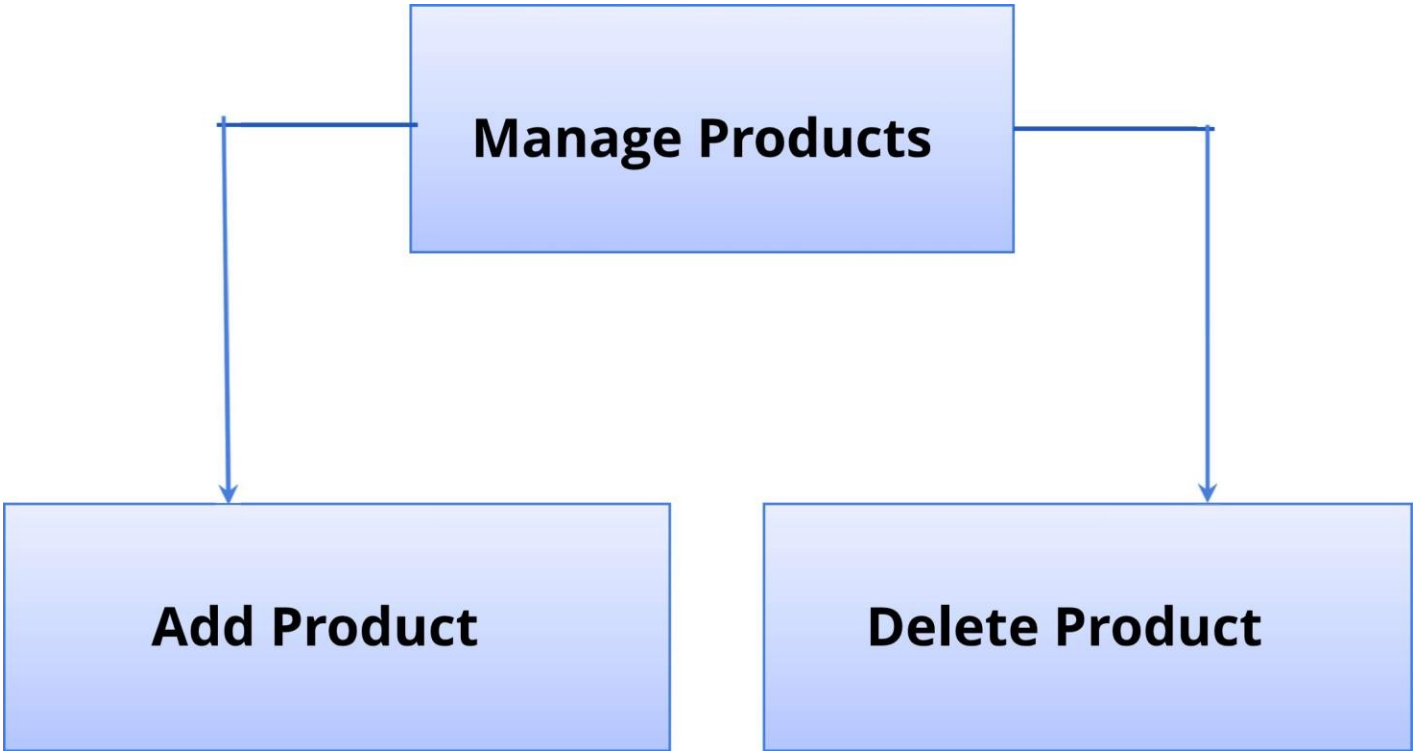
Users frequently forget items to buy because of which they have to run to shops again and again which is quite a frustrating and tiring situation and if our expenses crosses out budget while shopping that could be a matter of concern.

Proposed Solution

To overcome this problematic situation I built a grocery app which helps you to list down all the item that you need to buy along with its price.

3. Theoretical Analysis

Block Diagram



Hardware/Software designing

- Windows 10 OS
- Android Studio

4. Experimental Investigations

In this project MVVM (Model View ViewModel) was used for architectural patterns, Room for database, Coroutines and RecyclerView to display the list of items.

LiveData: A data holder class that can be observed. Always holds/caches the latest version of data, and notifies its observers when data has changed. LiveData is lifecycle aware. UI components just observe relevant data and don't stop or resume observation. LiveData automatically manages all of this since it's aware of the relevant lifecycle status changes while observing.

ViewModel: Acts as a communication center between the Repository (data) and the UI. The UI no longer needs to worry about the origin of the data. ViewModel instances survive Activity/Fragment recreation.

Repository: A class that you create that is primarily used to manage multiple data sources.

Entity: Annotated class that describes a database table when working with Room.

Room database: Simplifies database work and serves as an access point to the underlying SQLite database (hides SQLiteOpenHelper). The Room database uses the DAO to issue queries to the SQLite database.

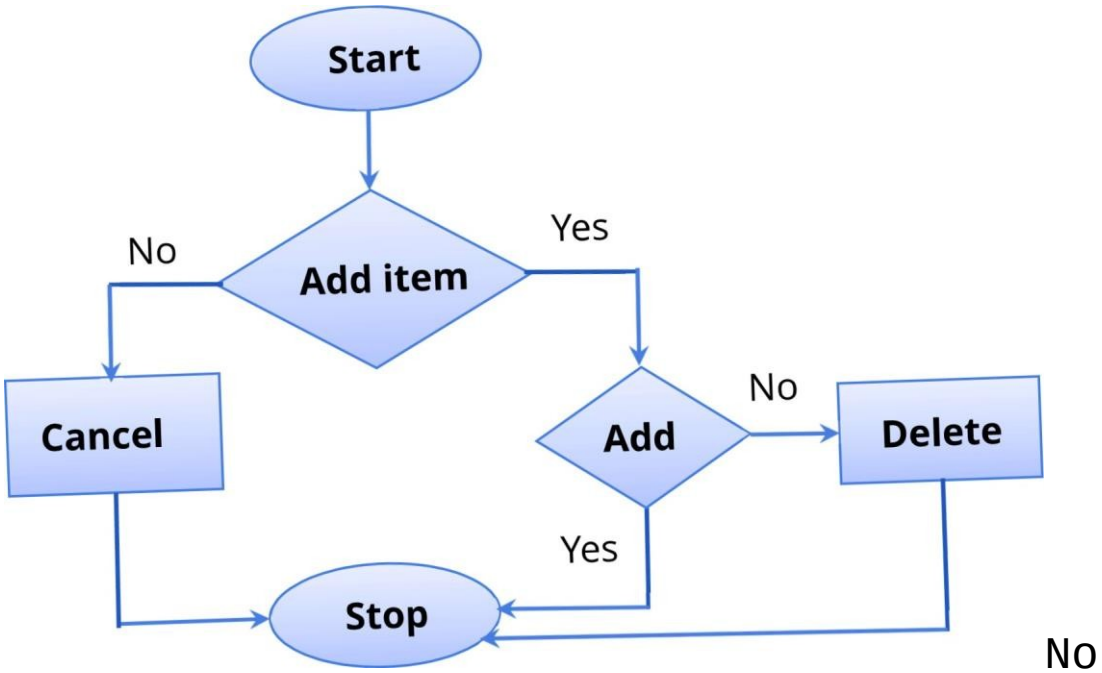
SQLite database: On device storage. The Room persistence library creates and maintains this database for you.

DAO: Data access object. A mapping of SQL queries to functions. When you use a DAO, you call the methods, and Room takes care of the rest.

RecyclerView: It is a container and is used to display the collection of data in a large amount of dataset that can be scrolled very effectively by maintaining a limited number of views.

Coroutines: Coroutines are lightweight thread, we use a coroutine to perform an operation on other threads, by this our main thread doesn't block and our app doesn't crash.

5. Flowchart



6. Result

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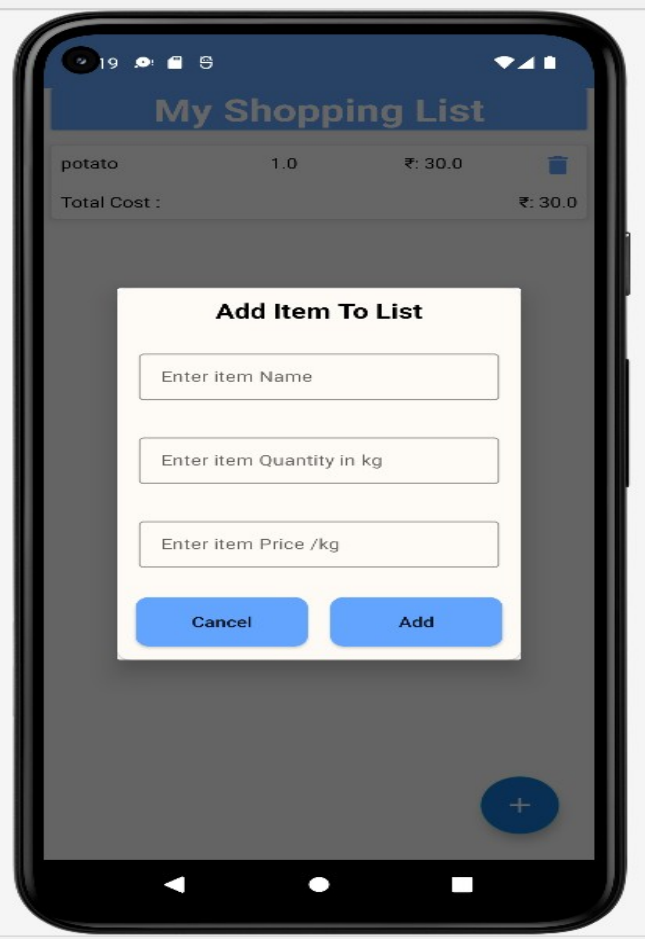
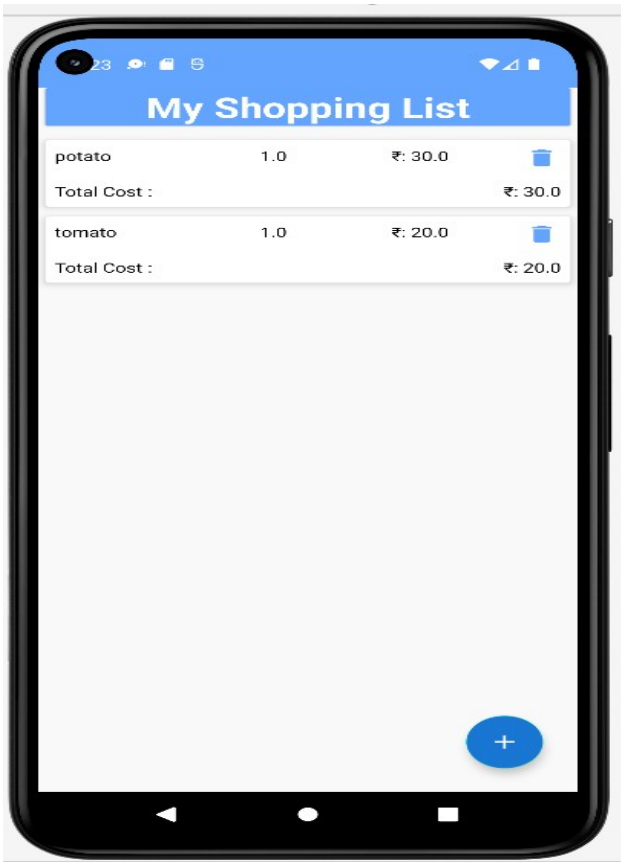
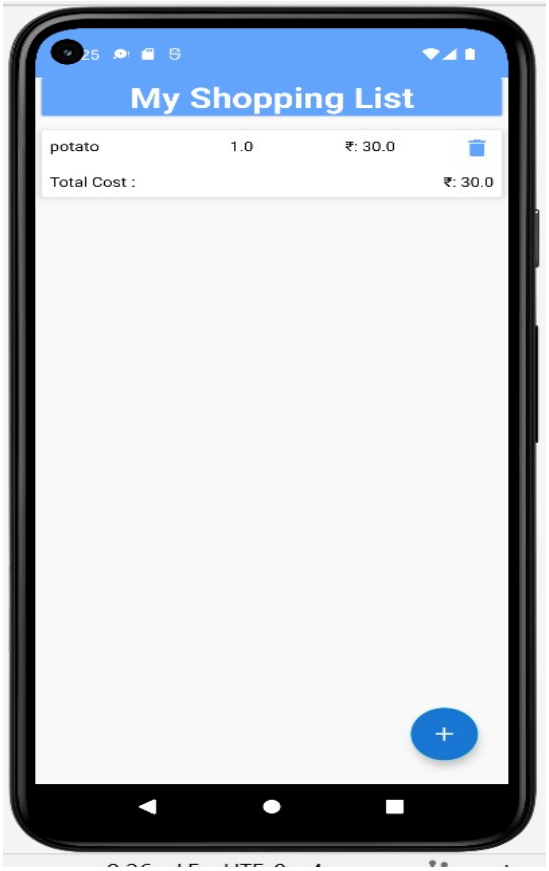
Emulator: 2 API 30



Event Log Layout inspector



Event Log Layout inspector



Event Log Layout inspector

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7. Conclusion

This project helped me to clear my concepts on Room Database, Coroutines, MVVM, etc. This project would help me not just as a developer to learn new and interesting things but also as a user we generally forgets items to purchase while shopping. Working on this project made me confident enough to apply my knowledge on android app development and create such an app. I have used Kotlin to build this application. All the functionality is coded in the classes and interfaces created and the layout is designed using xml.

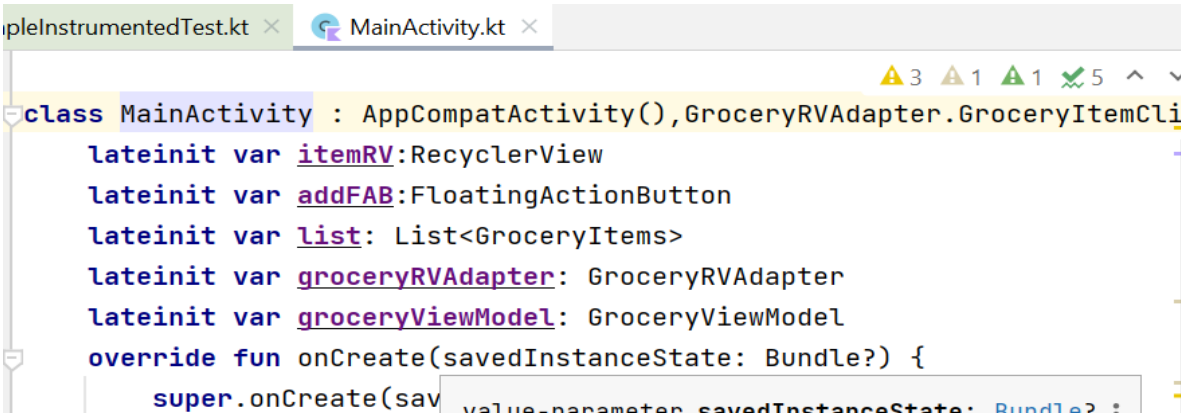
8. Reference

- Google: https://www.google.com/
- Geeksforgeeks: https://www.geeksforgeeks.org/how-to-build-a-grocery-androidapp-using-mvvm-and-room-database/
- Android Developer: hÜps://developer.android.com/codelabs/android-room-witha-view-kotlin#0
- YouTube: hÜps://www.youtube.com/watch?v=vdcLb_Y71_lc
- Smartlnternz: hÜps://smartinternz.com/Student/guided_project_workspace/55908

9. Appendix

Source Code

MainActivity.kt




```
t11porL arid r Oidx. 11 recycle . Observer

rnport androidx . li fecycle . ViewMode1Provider

import androidx . recyclerview . widget . LinearLayoutManager

import androidx . recyclerview . widget . RecyclerView

import com.google . android . material . float ingactionbutton .        on
       FloatingAct
•lass MainActivity : AppCompatActivity ( ) ,
GroceryRVAdapter . GroceryTtemC1ickTnterface {
    lateinit var itemsRV: RecyclerView
    lateinlt var adclFAB: FloatingActionButton
    lateinlt var list : List
    lateinlt var groceryRVAdapter: GroceryRVAdapter
    lateinit var groceryViewModal: GroceryViewMode1

                onCreate        (savedInstanceState:
    override fun Bundle?)
        super     .     onCreate     (savedInstanceState)
        setContentView (R. layout . acti vity_main)


        itemsRV = findViewById (R.id. idRVItems)
        addFAB = findViewByTd (R. id. idFABAdd)
        list —                        ( )
        graceryRVAdapter = GroceryRVAdapter (1 i st, this) itemsRV .
layoutManager — LinearLayoutManager (this) itemsRV. adapter —
groceryRVAdapter val groceryRepository — GroceryRepository
(GroceryDatabase (this) ) val factory = GroceryViewMode1Factory
(groce ryRepository) groceryViewMoclal = ViewMode1Provider (this,
factory) . get (GroceryViewModeI : :class . java) groceryvlewmodal .
getA11GroceryIterns ( ) . observe (this, Observer {
groceryRVAdapter.1ist — groceryRVAdapter . notifyDataSetChanged ( )
```

```
        addFAB   .   set   OnC1ickListener
            openDia10g ( )



    fun  openDiaIog  (  )  val  dialog
        Dialog    (this)    dialog    .
        setConter,tView (R. layout .
            cancelBtndialog .findViewById<Button> (R. id. idBtnCance1)
        val addBtn = dialog . (R. id. idBtnAdd) val itemEdt — dialog
        .   (R. id. idEdt Tternmame) dxalog .   (R.   ce) val
        itemQuantityEdt = dialog . findViewById<EditText > (R . icl.
        idEdtItemQuanti ty) cancelBtn . setOnC1ickListener { dialog
        . dismiss ()


        addBtn . setOnC1ickListener val itemName: String = itemEdt.
text . tostring ( ) val itemPrice: String — itemPriceEdt . text .
toString ( ) val itemQuantity: String = itemQuantityEdt . text .
toString ( ) val qty: Int = itemQuantity . tolnt ( ) v al pr: Int
itemPrice . tornt ( ) i f (itemName . isNotEmpty() S S itemPrice.
isNotEmpty() itemQuantity . isNotEmpty() ) val items = Groceryltems
(itemName, qty, pr) groceryViewModa1. insert (items)
             Toast . makeText (applicationCont ext,Item Inserted. .
roast.LENGTH_SHORT) . show ( ) groceryRVAdapter .
               notifyDataSetChanged ( ) dialog .
               dismiss ( )

               Toast . makeText (
                  applicationCon
                  text,
                  '1 Please Enter all  data. . '1 ,
                  Toast . LENGTH—SHORT
               ) . show ( )



        dialog . show ()


    override  fun  onltemC1ick  (groceryltems:  Grocery
        Items) groceryV1ewModa1 . delete (groceryltems
        ) groceryRVAdapter . not ifyDat aSetChanged ( )
      Toast . makeText (applicationContext,Item Deleted. .
```

```
roast.LENGTH—SHORT) . show ( )
```

activity_main.xml

<

oid= 'l http: / /schemas . android. com/apk/rets/android" xmlns : app=" / / schemas . android . com/apk/ res—autc ' xmlns: tools= 'l http: //schemas . ar

android:layout_height— "mat
ch_parent ' android : background= @
c•olortools:context="
.MainActivity 'I >

```
lateinit var itemRV:RecyclerView
lateinit var addFAB:FloatingActionButton
lateinit var list: List<GroceryItems>
lateinit var groceryRVAdapter: GroceryRVAdapter
lateinit var groceryViewModel: GroceryViewModel
```

/ >

<corn. google . android . material . float ingact ionbutt on .
Float ingActionButton android: id— " @+id/ idFABAdcl " android: layout_width— t ' wrap_content '
android : wrap_ccntert android : " t
rue android.•"true '
android: layout_a1ignParentBottorn— '
I t rue " android: layout_margin— " 2 8dp android android: src= " "

/Re1ativeLayout>

<

GroceryDao.kt

```kotlin
import ...

@Dao

interface GroceryDao {
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun insert(item: GroceryItems)
    @Delete
    suspend fun delete(item: GroceryItems)
    @Query("SELECT * FROM Grocery_items")
    fun getAllGroceryItems(): LiveData<List<GroceryItems>>
```

GroceryItems.kt

```kotlin
import ...

@Entity(tableName = "Grocery_items")
data class GroceryItems (
    @ColumnInfo(name = "itemName")
    var itemName:String,

    @ColumnInfo(name = "itemQuantity")
    var itemQuantity:Double,

    @ColumnInfo(name = "itemPrice")
    var itemPrice:Double,
)
{
    @PrimaryKey(autoGenerate = true)
    var id:Int?=null
}
```

GroceryRepository.kt

```kotlin
package com.divyanshu.groceryapp

class GroceryRepository(private val db:GroceryDatabase) {
suspend fun insert(items: GroceryItems) =
db.getGroceryDao().insert(items)
suspend fun delete(items: GroceryItems) =
db.getGroceryDao().delete(items)

fun getAllItems() = db.getGroceryDao().getAllGroceryItems()
}
```

GroceryDatabase.kt

```
package com.divyanshu.groceryapp                                C:\GroceryApp-n

import ...


@Database(entities = [GroceryItems::class], version = 1)

abstract class GroceryDatabase : RoomDatabase() {

    abstract fun getGroceryDao() : GroceryDao
    companion object {
        @Volatile
        private var instance: GroceryDatabase? = null
        private val LOCK = Any()

        operator fun invoke(context: Context) = instance ?: synchronized(
            instance?: createDatabase(context).also {
                instance = it
            }

        }


        private fun createDatabase(context: Context) =
            Room.databaseBuilder(
                context.applicationContext,
}
```

GroceryRVAdapter.kt

```
Package
 com.example.groceryappsunidhi

 mport android. view . Layout Inflater
import android. view . View
import android. view . ViewGroup
 mpo   android. widget . ImageView
 rt
```

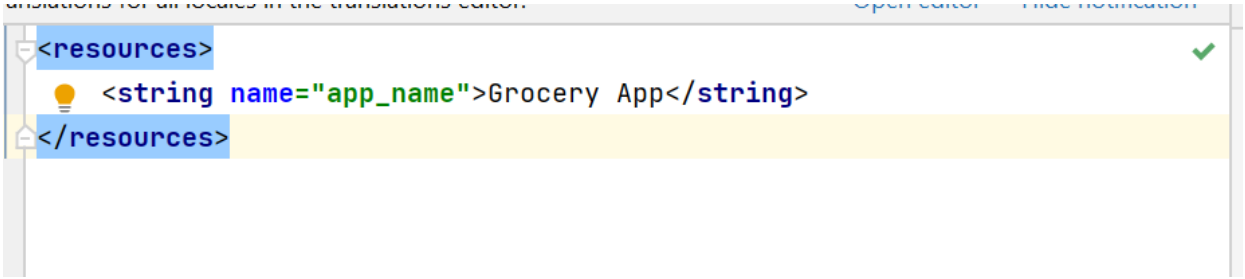
```
rnpo rt android. widget . TextView
mport androidx . recyclerview . widget .
      RecyclerView
---•lass  GroceryRVAdapter
    ( var list:
    val groceryItemC1ickInterface: GroceryItemC1ickInterface
    RecyclerView . Adapter<GroceryRVAdapter . GroceryViewE01der> ( )

    inner class GroceryViewH01der (itemView: View)
RecyclerView . ViewH01der (itemView) (
        val nameTV — itemView .     (R.      id.iciTVItemlVame)      val
        quantityTV — itemView .     (R. id.idTVQuantity)
        val rateTV = iternView.findViewByTd<TextView> (R.id. idTVRate)
        val amount TV — itemView .                    (R.            id.
                                                      idTVTota1Amt)
        val deleteTV = itemView .                      (R. id.
                                                       idTVDe1ete)
    interface  GroceryItemC1ickInterface  {  fun
        onltemC1ick  (grocerylterns  :  Grocery
        Items)


    override fun onCreateViewH01der (parent: ViewGroup, viewType : Int):
GroceryViewHoIder  {
        val view
     Layout Inflater . from (parent . context) . inflate (R. layout .    tern,
oarent      ,      false)      return
        GroceryViewH01der (view)


    override fun onBindViewH01der (holder: GroceryViewH01der, position:
        Int) holder . nameTV . text = list. get (position) . itemName
        holder . i tv TV . text l i st . get (position) . i temQu:anti
        t.v
        .toStrinq()
```

strings.xml



Note :- Since the page limit is exceeding I can't put the whole source code here. Please check the drive link or the github link below for full code.

Drive link: https://drive.google.com/file/d/1JbBKwASgGicXqYgrzSk1Jbf4swBvvBpV/view?usp=sharing
Github link: https://github.com/smartinternz02/SI-GuidedProject-54600-1664010643