Project Report on
Grocery List Kotlin Android Application

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1. INTRODUCTION

1.1 Overview:

Kotlin is a programming language used in android studio to develop android application.
In this project I am going to create an android app using Kotlin to create and store list of items going to buy. I named the app as "Grocery List".
This app is user friendly and having a nice look as well as very useful.
In this project, I am using MVVM (Model View View Model) for architectural patterns, Room for database, Coroutines and RecyclerView to display the list of items. Before jumping to the project let's understand these terms.

MVVM (Model View View Model) architecture in android is used to give structure to the project's code and understand code easily. MVVM is an architectural design pattern in android. MVVM treat Activity classes and XML files as View. This design pattern completely separate UI from its logic. Here is an image to quickly understand MVVM.
ROOM DataBase Room persistence library is a database management library and it is used to store the data of apps like grocery item name, grocery item quantity.
Room is a cover layer on SQLite which helps to perform the operation on the database easily.
RecyclerView is a container and it is used to display the collection of data in a large amount of data set that can be scrolled very effectively by maintaining a limited number of views.
Coroutines are a 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.

1.2 Purpose:
As people have many things to do for all the day, they might forget the most important thing which is name of the items they have to buy. Sometimes it's also seen that we make a list on paper and in some way that paper just disappear or destroy. All of these issues can be removed by using a digital list which is store in our smartphone. And so here is the app as a solution for this "Grocery List" app. This app holds all the item with the quantity of that item need to buy. We can add as many as we want to add items and after buying, we can easily remove that item for the list.

2 THEORITICAL ANALYSIS

2.1 Block diagram:
The App is having a simple and easy layout to understand by user.
The app contains a button to add the items to list. Also, the list of items added having name and quantity. There is also a button within the row of items to delete the item if required or already/after purchased.

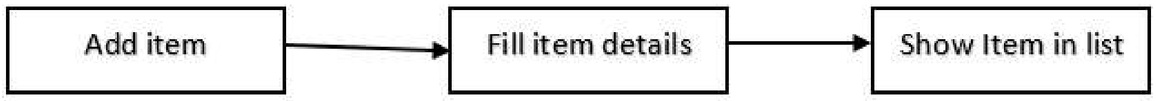


Figure: Block diagram of app

2.2 Requirements:

For develop any project we need some resources and all these resources come under requirements. And for this project requirements are as follow:

System Requirement:

- Windows OS 10+
- Active Internet
- 8GB minimum RAM
- 50GB Disk Space
- X64 CPU

Software Requirement:

- Android Studio
- Android SDK
- Virtual Device/Physical Device

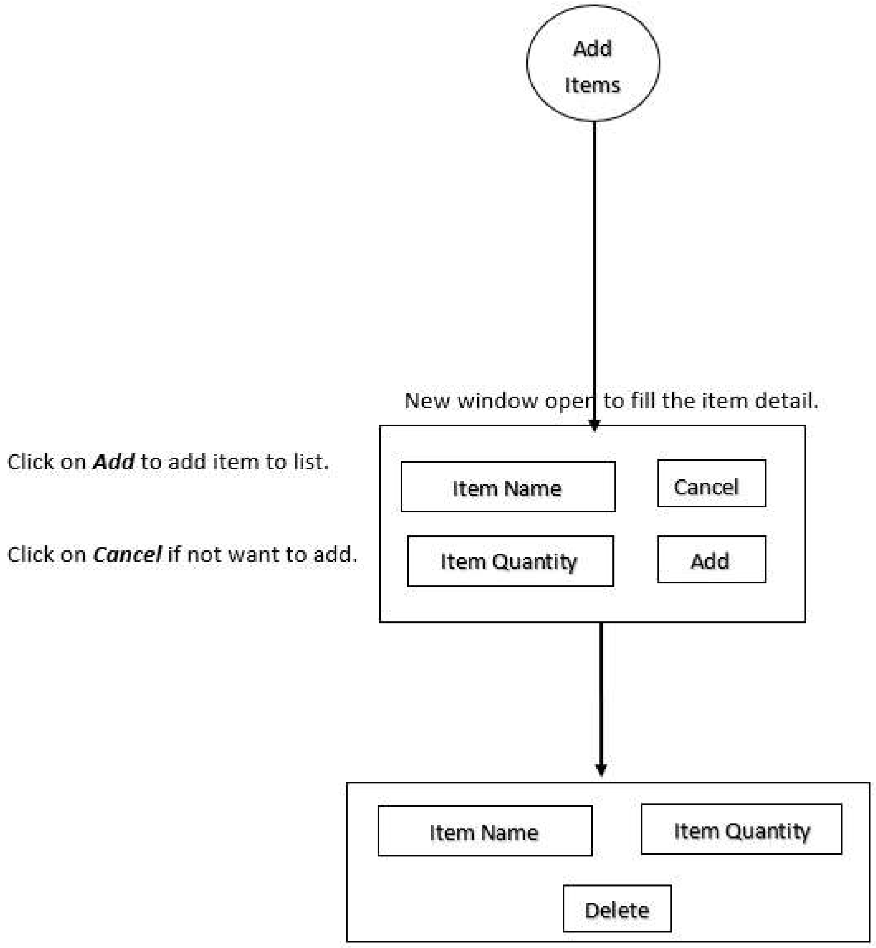
Device Requirement(For using app):

- Android 5.0+

- Minimum 2GB RAM
- 50+ MB empty storage

3 FLOWCHARTS

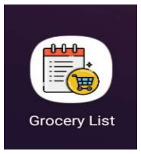
Diagram showing the control flow of the application


Add Items
New window open to fill the item detail.
Click on *Add* to add item to list.
Click on *Cancel* if not want to add.
Item Name
Cancel
Item Quantity
Add
Item Name
Item Quantity
Delete

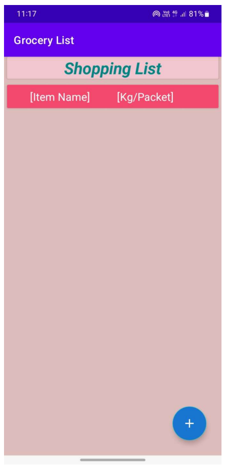
4 RESULTS

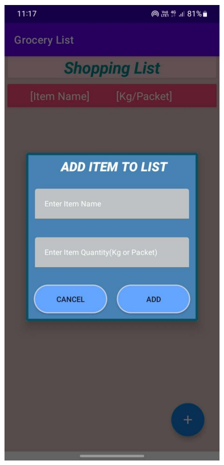
Now, let’s see the app after development how it looks and it’s working.

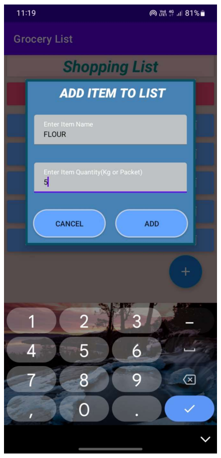
<u>App Icon</u>:

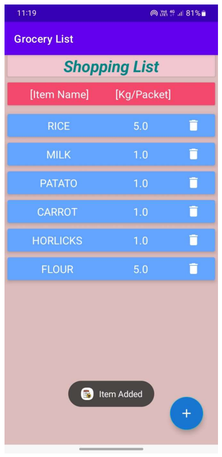


App Home Screen and others screenshots:

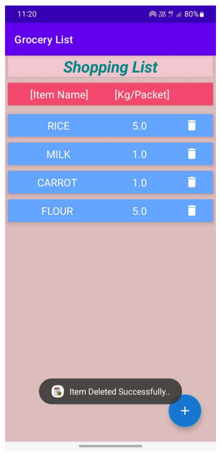








[Item Name]	[Kg/Packet]
RICE	5.0
MILK	1.0
PATATO	1.0
CARROT	1.0
HORLICKS	1.0
FLOUR	5.0



[Item Name]	[Kg/Packet]
RICE	5.0
MILK	1.0
CARROT	1.0
FLOUR	5.0

5 ADVANTAGES & DISADVANTAGES

In designing this project there are some advantages and some may be disadvantages. Now, take a look on these advantages and disadvantages.

<u>Advantages:</u>

- Not need to remember item name to buy.
- It stores the quantity of items.
- Not fear of lost the list.
- Can any number of items.
- So simple just like paper and pen method.

Disadvantages:

- Same items maybe added twice.
- Edit is not allowed.

6 CONCLUSIONS

The app is very useful app in daily-to-daily life. Now, we talk about the application of this app
At first this app is used to make a list of items which is need to buy by user. This app contains the list of items with the quantity of items.
Having the user-friendly look and a less complected UI.
Not so many features are added to make the app simple to use. Anyone having very little knowledge to use a smart phone can use this app very smoothly.

7 FUTURE SCOPE

The is designed with so simplicity that it can be used by any level smartphone user.
This app may have many more features to make it better. The future scope of this app is high.
The can de upgraded to make it more flexible.

Take a look at some of upgrades that can be implemented to the existing app in future as follows:

1. Can be add edit feature.

   We can a button just along with delete button so that if user want to update the value of item can be done easily. As of now no any option available.

2. Add item price.

   As of now we only can add item name and quantity but it maybe good if we add feature of to add price of item (i.e., expected or known original).

3. Remove duplicate items.

   We can add feature which can tell the use that the item already added in list, so remove occurrence of items more than once.

8 BIBILOGRAPHY

1. Android Basics in Kotlin from Google Developers.

2.Youtube channel GreekforGreeks.

APPENDIX

Source Code:

MainActivity.kt

```
package com.example.grocerylist

import android.app.Dialog
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.EditText
import android.widget.Toast
import androidx.appcompat.widget.AppCompatButton
import androidx.lifecycle.Observer
import androidx.lifecycle.ViewModelProvider
import androidx.recyclerview.widget.LinearLayoutManager
import androidx.recyclerview.widget.RecyclerView
import com.google.android.material.floatingactionbutton.FloatingActionButton
import com.google.android.material.snackbar.Snackbar
import androidx.appcompat.app.AppCompatDelegate as AppCompatDelegate

class MainActivity :
AppCompatActivity(),GroceryRVAdapter.GroceryItemClickInterface {
    lateinit var itemRV:RecyclerView
    lateinit var addFAB:FloatingActionButton
    lateinit var list: List<GroceryItems>
    lateinit var groceryRVAdapter: GroceryRVAdapter
    lateinit var groceryViewModel: GroceryViewModel
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        itemRV = findViewById(R.id.rvitems)
        addFAB = findViewById(R.id.fabAdd)
        list = ArrayList<GroceryItems>()
        groceryRVAdapter = GroceryRVAdapter(list,this)
        itemRV.layoutManager = LinearLayoutManager(this)
        itemRV.adapter = groceryRVAdapter
        val groceryRepository = GroceryRepository(GroceryDatabase(this))
        val factory = GroceryViewModelFactory(groceryRepository)
        groceryViewModel =
ViewModelProvider(this,factory).get(GroceryViewModel::class.java)
        groceryViewModel.getAllGroceryItems().observe(this, Observer {
            groceryRVAdapter.list = it
            groceryRVAdapter.notifyDataSetChanged()
        })
        addFAB.setOnClickListener{
            openDialog()
        }

    }
    fun openDialog(){
        val dialog = Dialog(this)
        dialog.setContentView(R.layout.grocery_add_dialog)
        val cancelbtn = dialog.findViewById<AppCompatButton>(R.id.idbtncancel)
        val addbtn = dialog.findViewById<AppCompatButton>(R.id.idbtnadd)
        val itemEdt = dialog.findViewById<EditText>(R.id.idEdtitemname)
        val itemQuantityEdt =
dialog.findViewById<EditText>(R.id.idEdtitemquantity)
        cancelbtn.setOnClickListener {
            dialog.dismiss()
        }
        addbtn.setOnClickListener {
            val itemname:String = itemEdt.text.toString()
            val itemquantity:String = itemQuantityEdt.text.toString()
            val qty : Double = itemquantity.toDouble()
            if (itemname.isNotEmpty() && itemquantity.isNotEmpty()){
                val items = GroceryItems(itemname,qty)
                groceryViewModel.insert(items)
                Toast.makeText(applicationContext,"Item
Added",Toast.LENGTH_SHORT).show()
                groceryRVAdapter.notifyDataSetChanged()
                dialog.dismiss()
            }
            else run {
                Toast.makeText(applicationContext,"Please fill all
details",Toast.LENGTH_SHORT).show()
            }
        }
        dialog.show()
    }

    override fun onItemClick(groceryItems: GroceryItems) {
        groceryViewModel.delete(groceryItems)
        groceryRVAdapter.notifyDataSetChanged()
        Toast.makeText(applicationContext,"Item Deleted
Successfully..",Toast.LENGTH_SHORT).show()
    }
 }
```
....

GroceryRVAdapder.kt

```
-
package com.example.grocerylist



import android.view.LayoutInflater

import android.view.View

import android.view.ViewGroup

import android.widget.ImageView

import android.widget.TextView

import androidx.recyclerview.widget.RecyclerView



class GroceryRVAdapter(

    var list: List<GroceryItems>,

    val groceryItemClickInterface: GroceryItemClickInterface)

    : RecyclerView.Adapter<GroceryRVAdapter.GroceryViewHolder>() {



    inner class GroceryViewHolder(itemView: View):
RecyclerView.ViewHolder(itemView){
        val nameTV = itemView.findViewById<TextView>(R.id.idtvitemname)

        val quantityTV = itemView.findViewById<TextView>(R.id.idtvquantity)

        val deleteIV = itemView.findViewById<ImageView>(R.id.idivdelete)

    }




    interface GroceryItemClickInterface{

        fun onItemClick(groceryItems: GroceryItems)

    }



    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int):
GroceryViewHolder {

        val view =
LayoutInflater.from(parent.context).inflate(R.layout.grocery_rv_item,parent,fals
e)

        return GroceryViewHolder(view)

    }



    override fun onBindViewHolder(holder: GroceryViewHolder, position: Int) {

        holder.nameTV.text = list.get(position).itemName

        holder.quantityTV.text = list.get(position).itemQuantity.toString()

        holder.deleteIV.setOnClickListener {

            groceryItemClickInterface.onItemClick(list.get(position))

        }
    }

    override fun getItemCount(): Int {
        return list.size
    }
}
```

....

GroceryViewModel.kt

```
package com.example.grocerylist



import androidx.lifecycle.ViewModel
import kotlinx.coroutines.GlobalScope
import kotlinx.coroutines.launch


class GroceryViewModel(private val repository: GroceryRepository):ViewModel()
{
    fun insert(items: GroceryItems) = GlobalScope.launch {
        repository.insert(items)
    }
    fun delete(items: GroceryItems) = GlobalScope.launch {
        repository.delete(items)
    }
    fun getAllGroceryItems() = repository.getAllItems()
}
```

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GroceryDao.kt

```kotlin
package com.example.grocerylist



import androidx.lifecycle.LiveData

import androidx.room.*


@Dao


interface GroceryDao {

    @Insert(onConflict = OnConflictStrategy.REPLACE)

    fun insert(item: GroceryItems)


    @Delete

    fun delete(item: GroceryItems)


    @Query("SELECT * FROM Grocery_items")

    fun getAllGroceryItems(): LiveData<List<GroceryItems>>



}
```

………

GroceryDatabase.kt

```
package com.example.grocerylist


import android.content.Context

import androidx.room.Database

import androidx.room.Room

import androidx.room.RoomDatabase




@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(LOCK)
{

            instance?: createDatabase(context).also {

                instance = it

            }
            }

            private fun createDatabase(context: Context) =
                Room.databaseBuilder(
                    context.applicationContext,
                    GroceryDatabase::class.java,
                    "GroceryApp.db"
                ).build()
        }
}
```

....

GroceryItems.kt

```
package com.example.grocerylist

import androidx.room.ColumnInfo
import androidx.room.Entity
import androidx.room.PrimaryKey

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

    var itemQuantity:Double,



)

{

    @PrimaryKey(autoGenerate = true)

    var id:Int?=null

}
```
……….

GroceryRespotory.kt

```
package com.example.grocerylist



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()

}
```
………………………………………………………………………………………………….

GroceryViewModeFactory.kt

```
package com.example.grocerylist
import androidx.lifecycle.ViewModel
import androidx.lifecycle.ViewModelProvider

class GroceryViewModelFactory(private val repository:
GroceryRepository):ViewModelProvider.NewInstanceFactory() {
    override fun <T : ViewModel> create(modelClass: Class<T>): T {
        return GroceryViewModel(repository) as T
    }

}
```