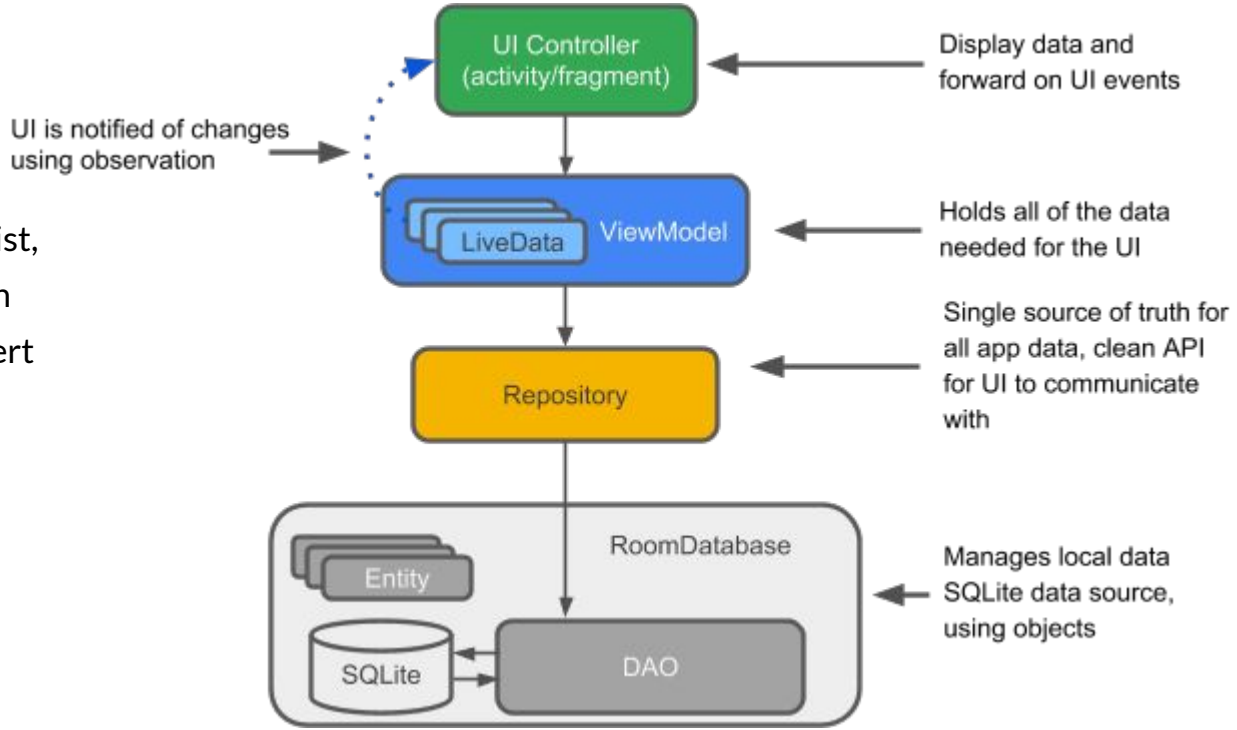
Room with Navigation in Kotlin

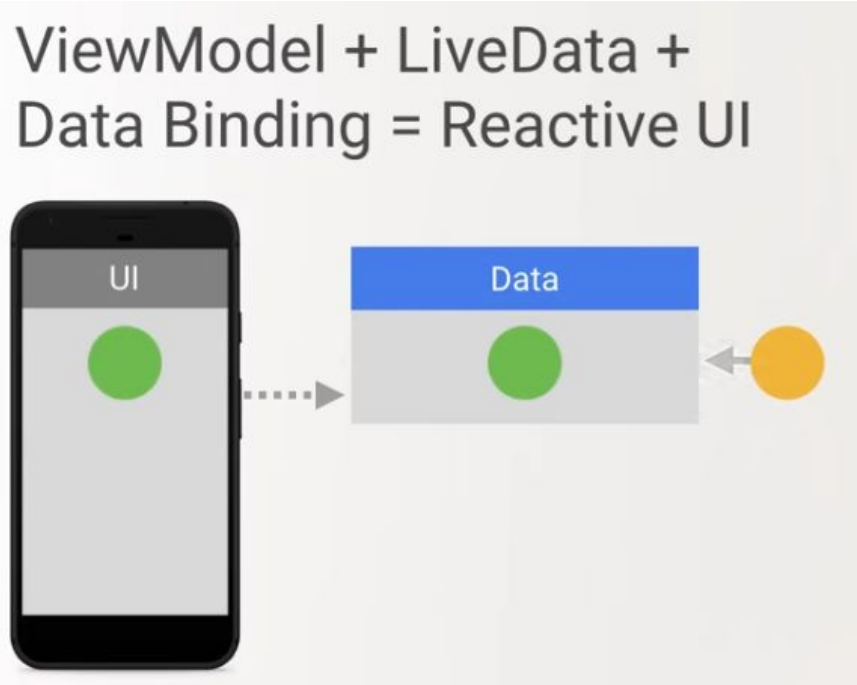
Architektur

Der Vorteil des ViewModels ist, dass es die Daten behält, auch wenn die Activity neu generiert wird. (z.B.: Rotieren des Telefons)



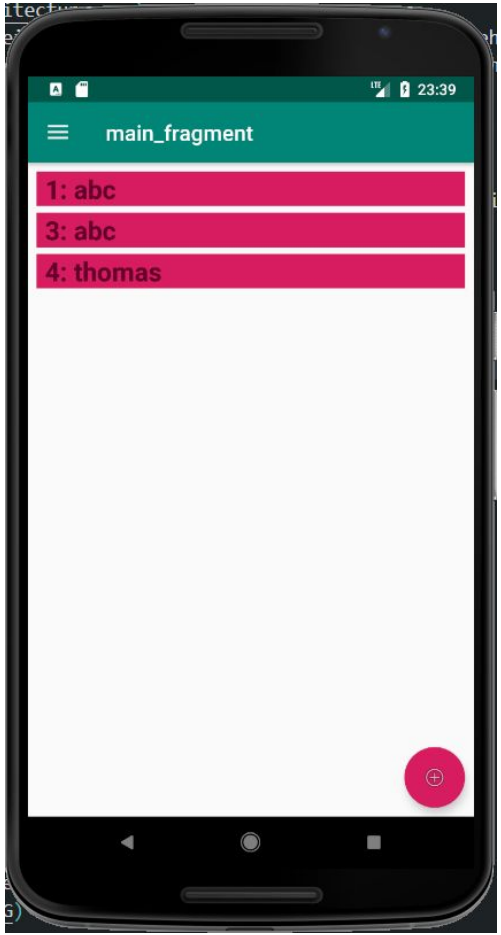
Warum LiveData

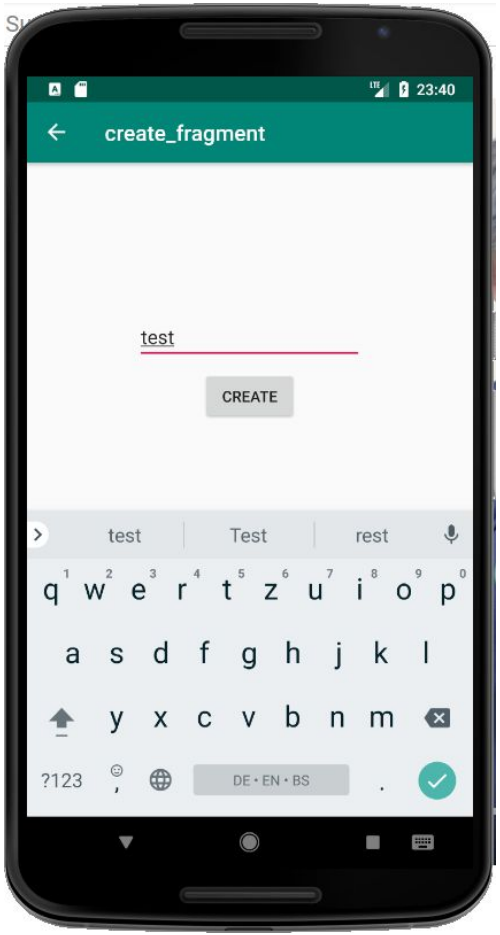
LiveData bekommt immer eine Benachrichtigung, wenn sich was in der Datenbank ändert (vergleichbar mit einer ObservableList). Das Beispiel wäre
noch mit Data Binding erweiterbar, um die Daten direkt in der App anzuzeigen.

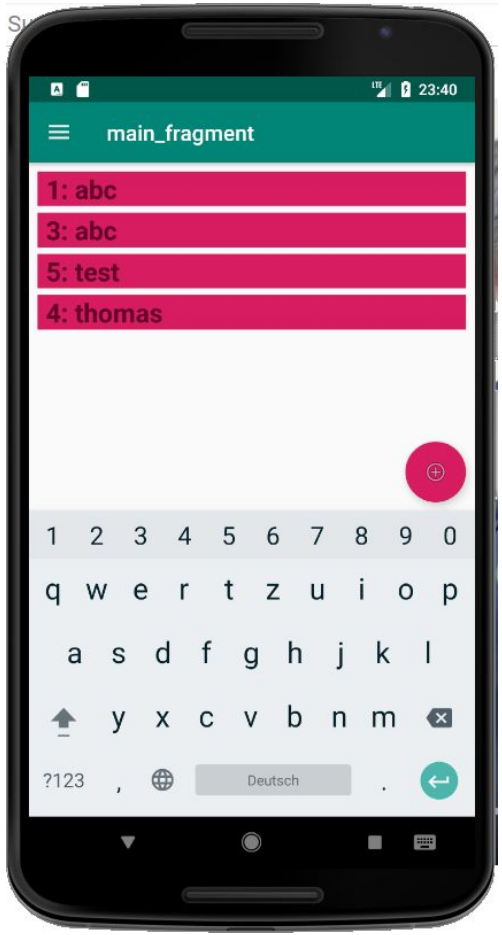


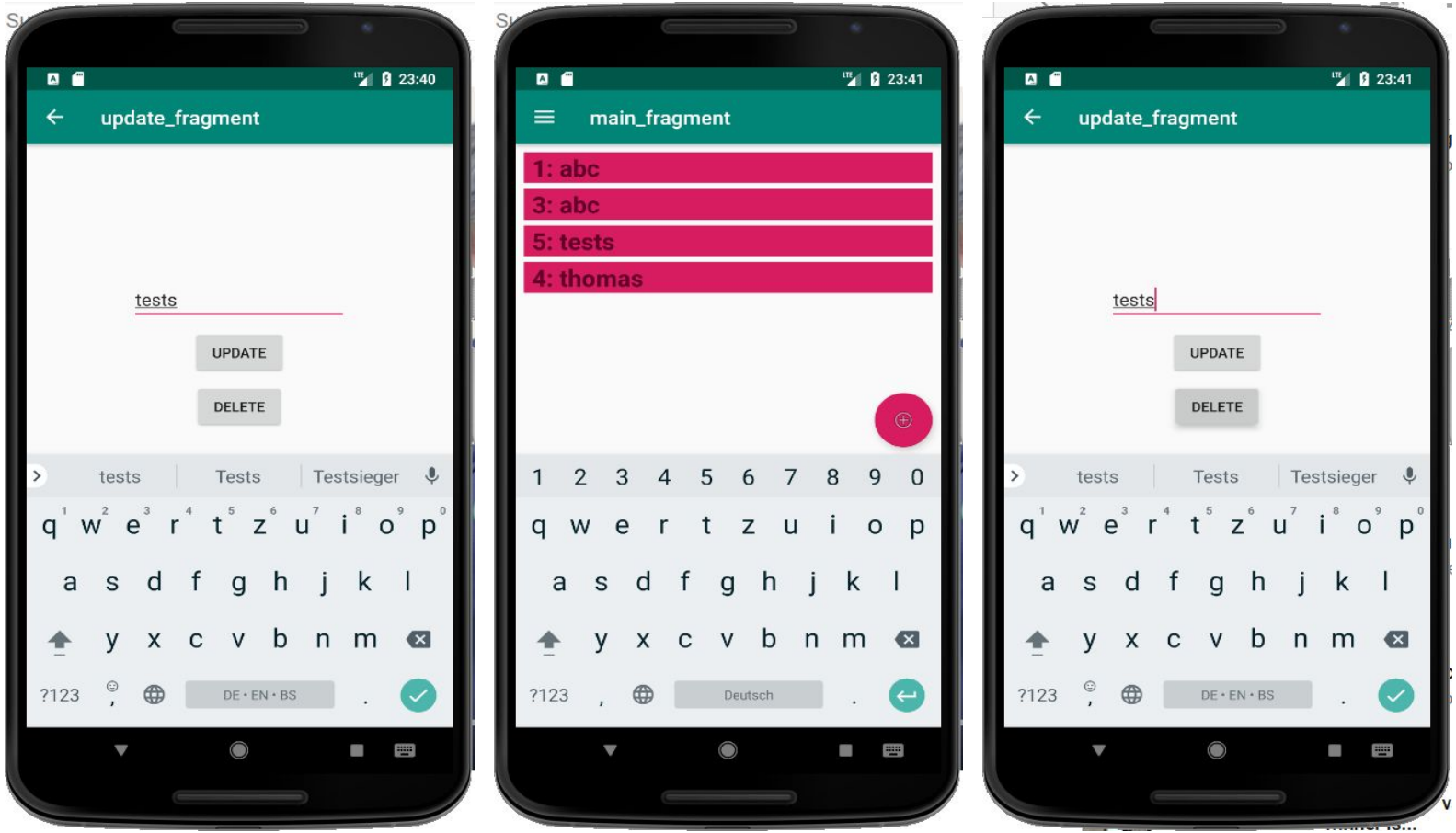
Was wir erreichen wollen

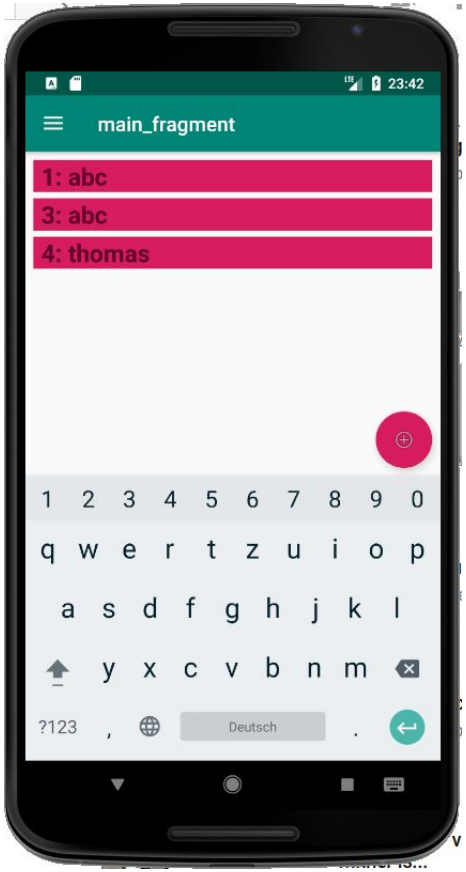
Man soll eine App entwickeln, welche mittels Room auf die SQLLite-Datenbank zugreift. Darauf soll man über die CRUD-Operationen zugreifen können.

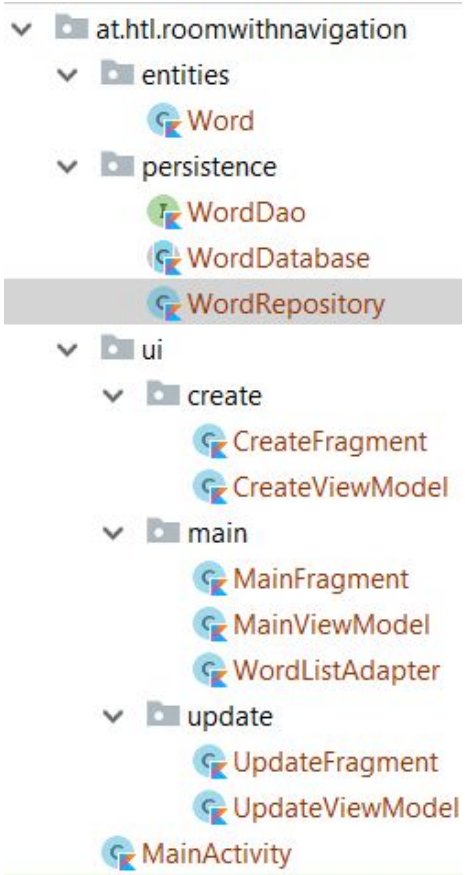

23:39
main_fragment
1: abc
3: abc
4: thomas


23:40
create_fragment
test
CREATE
test
Test
rest
DE • EN • BS

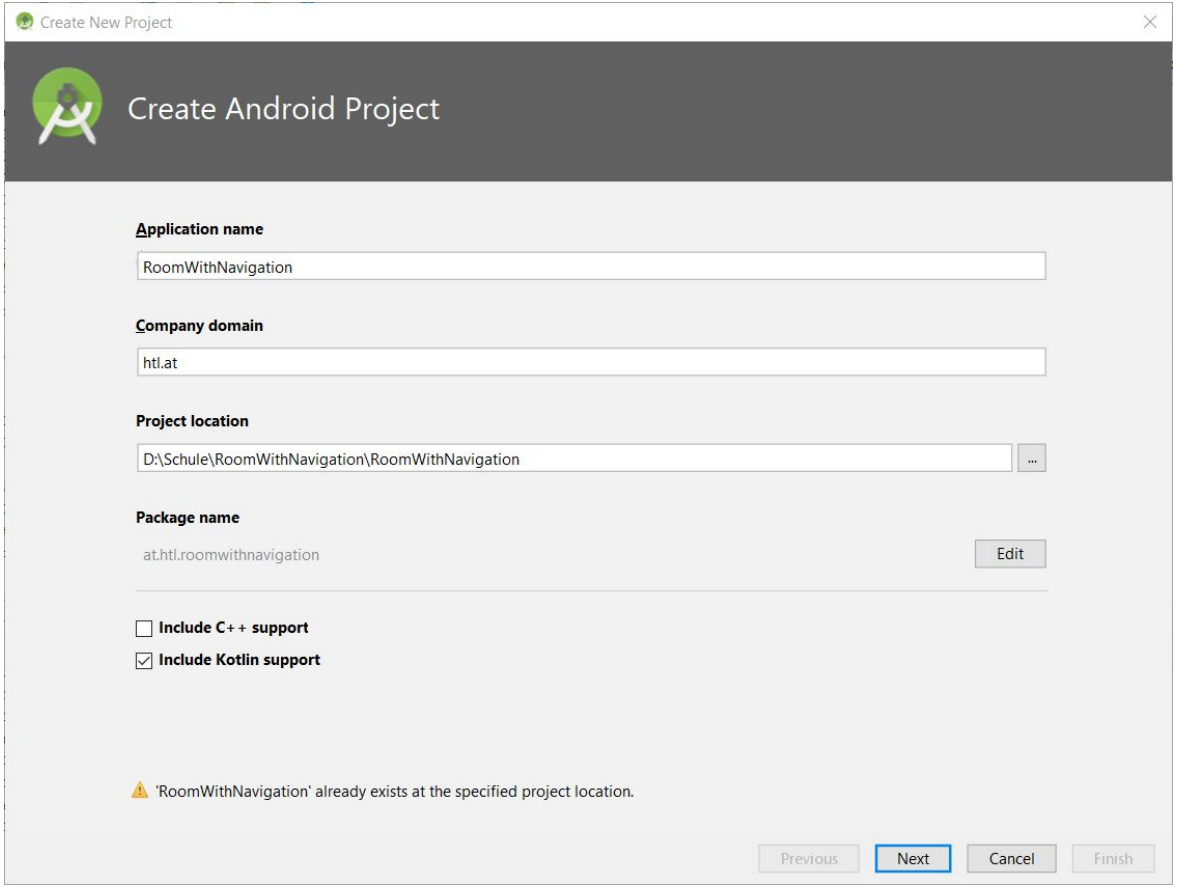

23:40
main_fragment
1: abc
3: abc
5: test
4: thomas
Deutsch

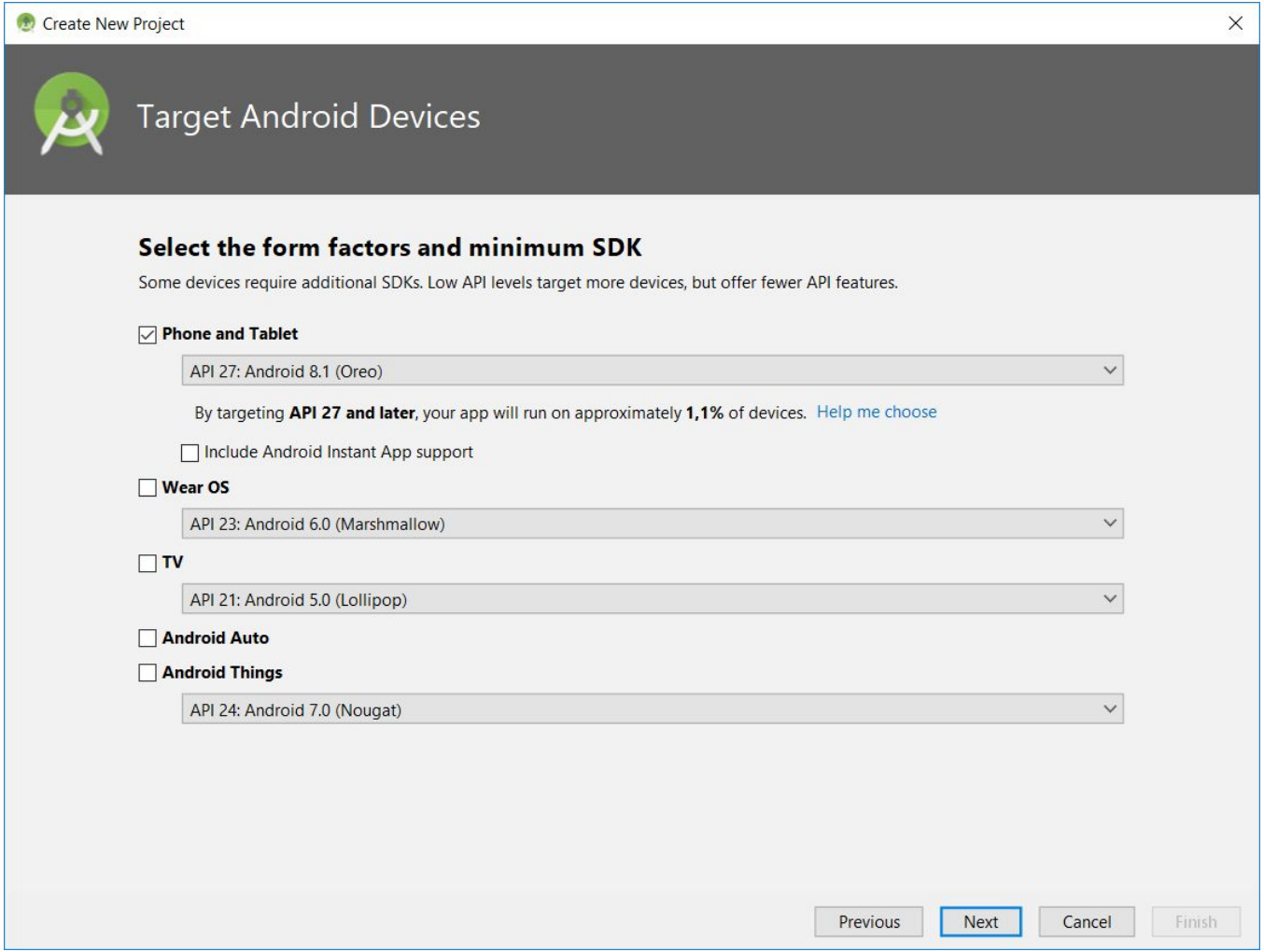

23:40
update_fragment
tests
UPDATE
DELETE
tests
Tests
Testsieger
?123
DE • EN • BS
23:41
main_fragment
1: abc
3: abc
5: tests
4: thomas
1 2 3 4 5 6 7 8 9 0
?123
Deutsch
23:41
update_fragment
tests
UPDATE
DELETE
tests
Tests
Testsieger
?123
DE • EN • BS

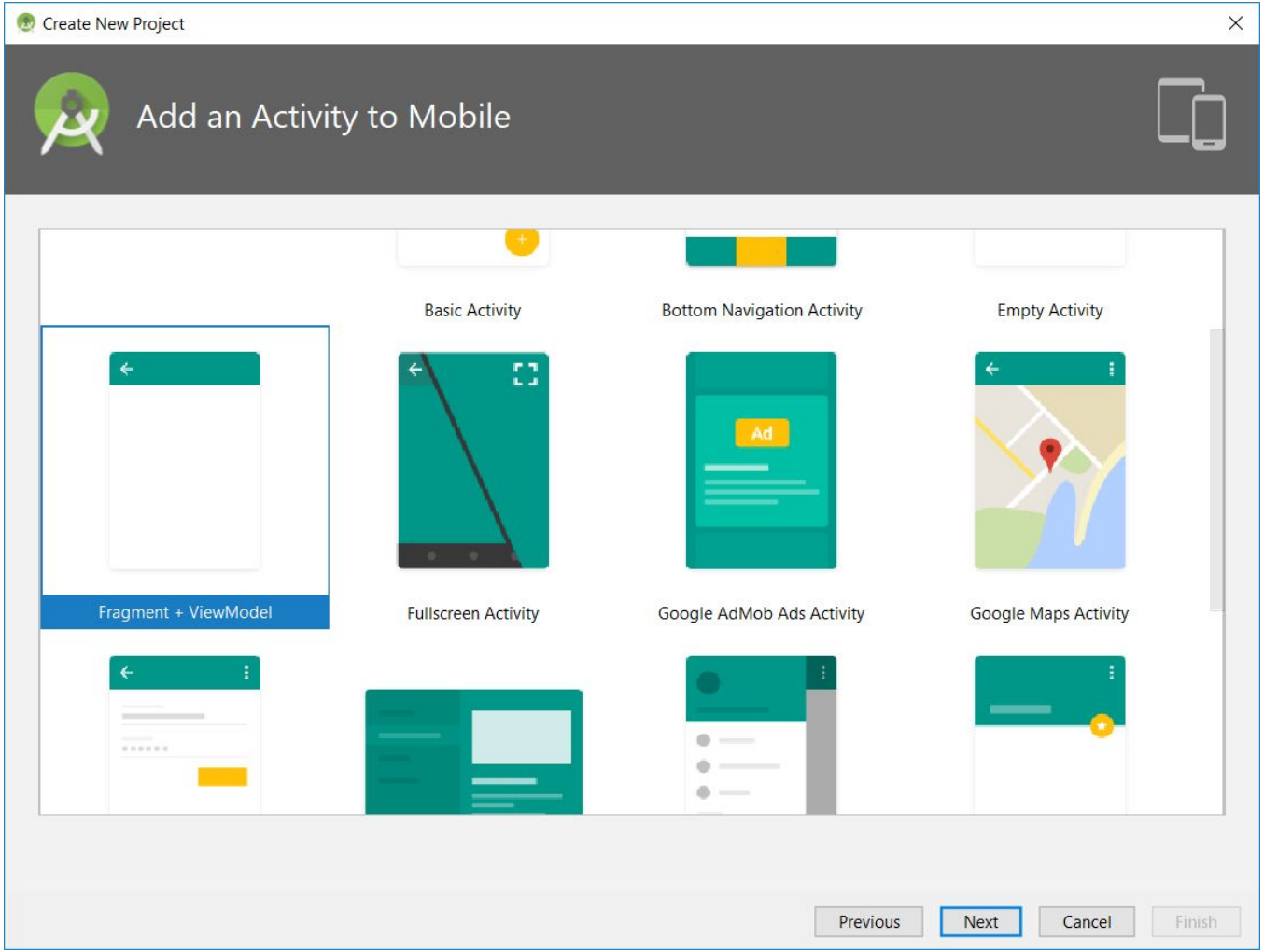

23:42
main_fragment
1: abc
3: abc
4: thomas
1 2 3 4 5 6 7 8 9 0
q w e r t z u i o p
a s d f g h j k l
y x c v b n m
?123
Deutsch

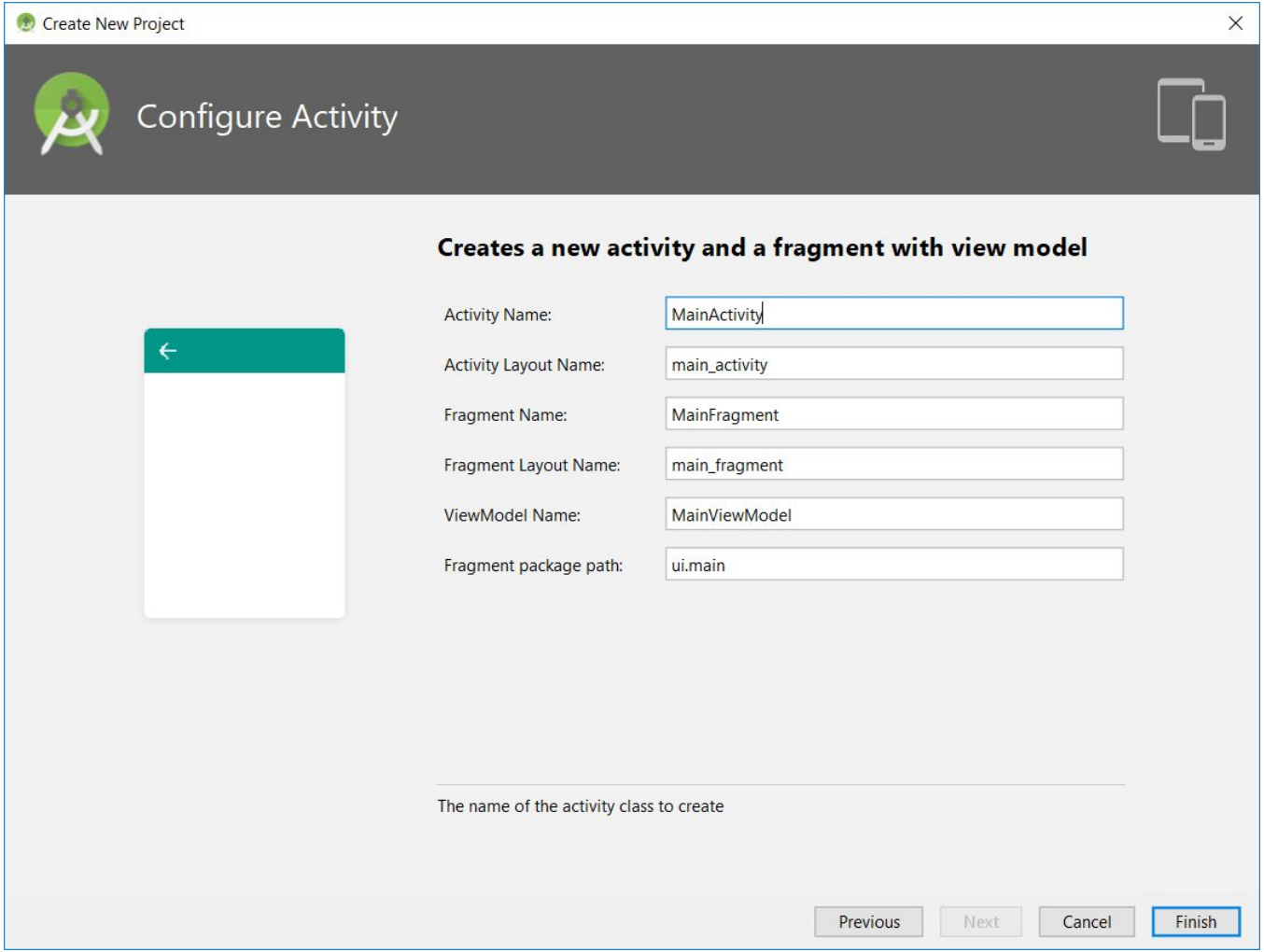

at.htl.roomwithnavigation
entities
Word
persistence
WordDao
WordDatabase
WordRepository
ui
create
CreateFragment
CreateViewModel
main
MainFragment
MainViewModel
WordListAdapter
update
UpdateFragment
UpdateViewModel
MainActivity

Los geht´s

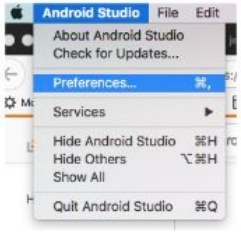

Create New Project
Create Android Project
Application name
RoomWithNavigation
Company domain
htl.at
Project location
D:\Schule\RoomWithNavigation\RoomWithNavigation
...
Package name
at.htl.roomwithnavigation
Edit
Include C++ support
Include Kotlin support
'RoomWithNavigation' already exists at the specified project location.
Previous
Next
Cancel
Finish

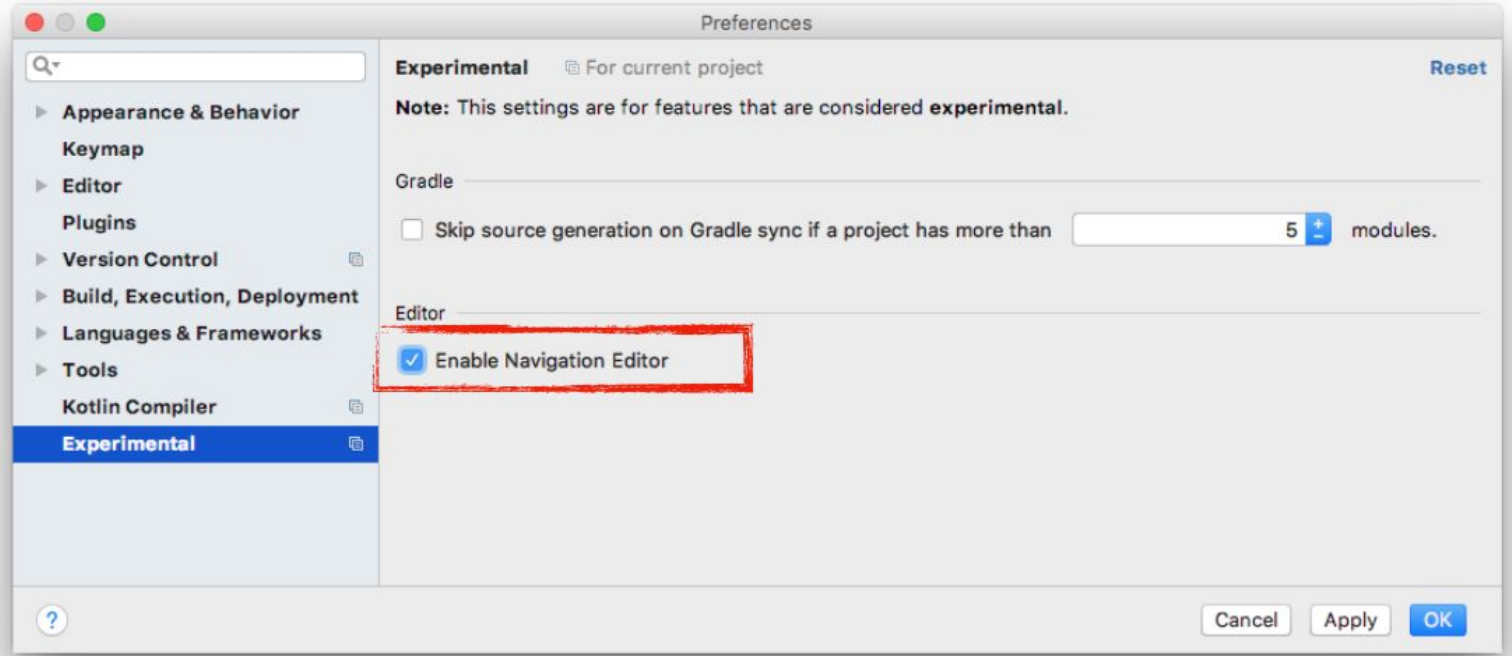

Create New Project
Target Android Devices
Select the form factors and minimum SDK
Some devices require additional SDKs. Low API levels target more devices, but offer fewer API features.
Phone and Tablet
API 27: Android 8.1 (Oreo)
By targeting API 27 and later, your app will run on approximately 1,1% of devices. Help me choose
Include Android Instant App support
Wear OS
API 23: Android 6.0 (Marshmallow)
TV
API 21: Android 5.0 (Lollipop)
Android Auto
Android Things
API 24: Android 7.0 (Nougat)
Previous
Next
Cancel
Finish


Create New Project
Add an Activity to Mobile
Basic Activity
Bottom Navigation Activity
Empty Activity
Fragment + ViewModel
Fullscreen Activity
Ad
Google AdMob Ads Activity
Google Maps Activity
Previous
Next
Cancel
Finish


Create New Project
Configure Activity
Creates a new activity and a fragment with view model
Activity Name:
MainActivity
Activity Layout Name:
main_activity
Fragment Name:
MainFragment
Fragment Layout Name:
main_fragment
ViewModel Name:
MainViewModel
Fragment package path:
ui.main
The name of the activity class to create
Previous
Next
Cancel
Finish

Kontrolliere ...





Im gradle build (Project: ...)

Hier zum Kopieren

```
ext {
    roomVersion = '1.1.1'
    archLifecycleVersion = '1.1.1'
}
```

```
buildscript {
    ext.kotlin_version = '1.2.70'
    repositories {
        google()
        jcenter()
    }
    dependencies {
        classpath 'com.android.tools.build:gradle:3.2.0'
        classpath "org.jetbrains.kotlin:kotlin-gradle-plugin:$kotlin_version"

        // NOTE: Do not place your application dependencies here; they belong
        // in the individual module build.gradle files
    }
}

allprojects {
    repositories {
        google()
        jcenter()
    }
}

task clean(type: Delete) {
    delete rootProject.buildDir
}

ext {
    roomVersion = '1.1.1'
    archLifecycleVersion = '1.1.1'
}
```

Im gradle build (app)

```
apply plugin: 'com.android.application'

apply plugin: 'kotlin-android'

apply plugin: 'kotlin-android-extensions'

apply plugin: 'kotlin-kapt'

android {
    compileSdkVersion 27
    defaultConfig {
        applicationId "at.htl.roomwithnavigation"
        minSdkVersion 27
        targetSdkVersion 27
        versionCode 1
        versionName "1.0"
```

In der nächsten Folie zum Herauskopieren!

```
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
    implementation"org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin_version"
    implementation 'com.android.support:appcompat-v7:27.1.1'
    implementation 'com.android.support.constraint:constraint-layout:1.1.3'
    implementation 'android.arch.lifecycle:extensions:1.1.1'
    testImplementation 'junit:junit:4.12'
    androidTestImplementation 'com.android.support.test:runner:1.0.2'
    androidTestImplementation 'com.android.support.test.espresso:espresso-core:3.0.2'

    //Navigation
    def nav_version = "1.0.0-alpha06"

    implementation "android.arch.navigation:navigation-fragment:$nav_version" // use -ktx for Kotlin
    implementation "android.arch.navigation:navigation-ui:$nav_version" // use -ktx for Kotlin

    // Room components
    implementation "android.arch.persistence.room:runtime:$rootProject.roomVersion"
    kapt  "android.arch.persistence.room:compiler:$rootProject.roomVersion"
    androidTestImplementation "android.arch.persistence.room:testing:$rootProject.roomVersion"

    // Lifecycle components
    implementation "android.arch.lifecycle:extensions:$rootProject.archLifecycleVersion"
    kapt  "android.arch.lifecycle:compiler:$rootProject.archLifecycleVersion"
}
```

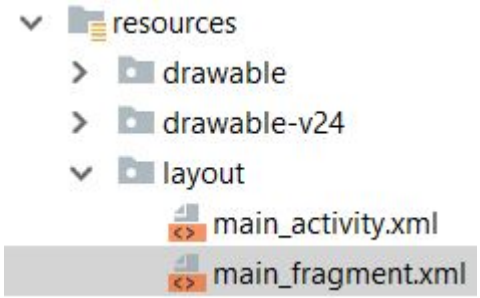
```
//Navigation
def nav_version = "1.0.0-alpha06"

implementation "android.arch.navigation:navigation-fragment:$nav_version" // use -ktx for
Kotlin
implementation "android.arch.navigation:navigation-ui:$nav_version" // use -ktx for Kotlin

// Room components
implementation "android.arch.persistence.room:runtime:$rootProject.roomVersion "
kapt "android.arch.persistence.room:compiler:$rootProject.roomVersion "
androidTestImplementation "android.arch.persistence.room:testing:$rootProject.roomVersion "

// Lifecycle components
implementation "android.arch.lifecycle:extensions:$rootProject.archLifecycleVersion "
kapt "android.arch.lifecycle:compiler:$rootProject.archLifecycleVersion "
```

ACHTUNG BEIM EINFÜGEN AUF ZEILENUMBRUCH und LEERZEILEN

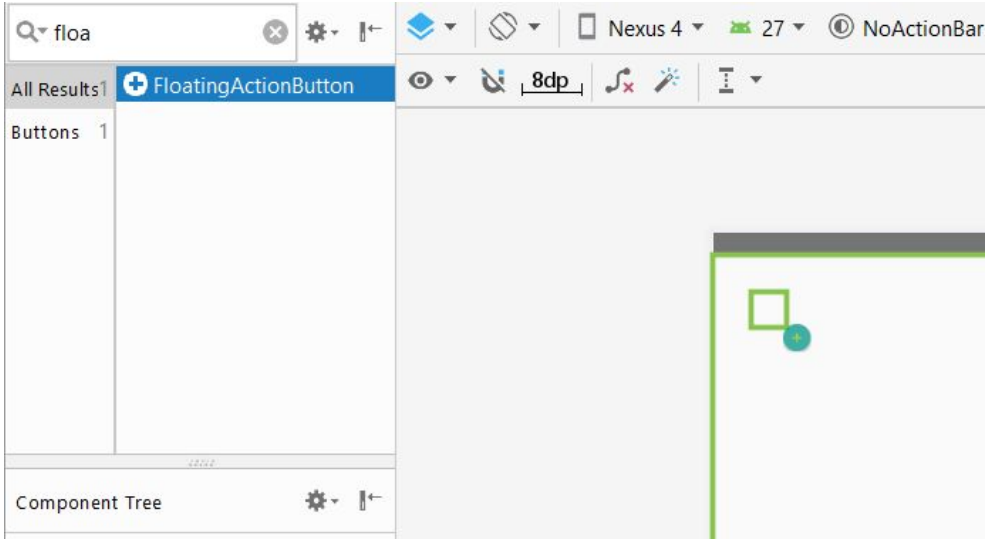
```
FAILURE: Build failed with an exception.

* Where:
Build file 'D:\RoomWithNavigation\app\build.gradle' line: 40

* What went wrong:
A problem occurred evaluating project ':app'.
> Could not get unknown property 'Kotlin' for object of type org.gradle.api.internal.artifacts.dsl.dependencies.DefaultDependencyHandler.

* Try:
Run with --stacktrace option to get the stack trace. Run with --info or --debug option to get more log output. Run with --scan to get full insights.

* Get more help at https://help.gradle.org

CONFIGURE FAILED in 0s
Could not get unknown property 'Kotlin' for object of type org.gradle.api.internal.artifacts.dsl.dependencies.DefaultDependencyHandler.
Open File
```

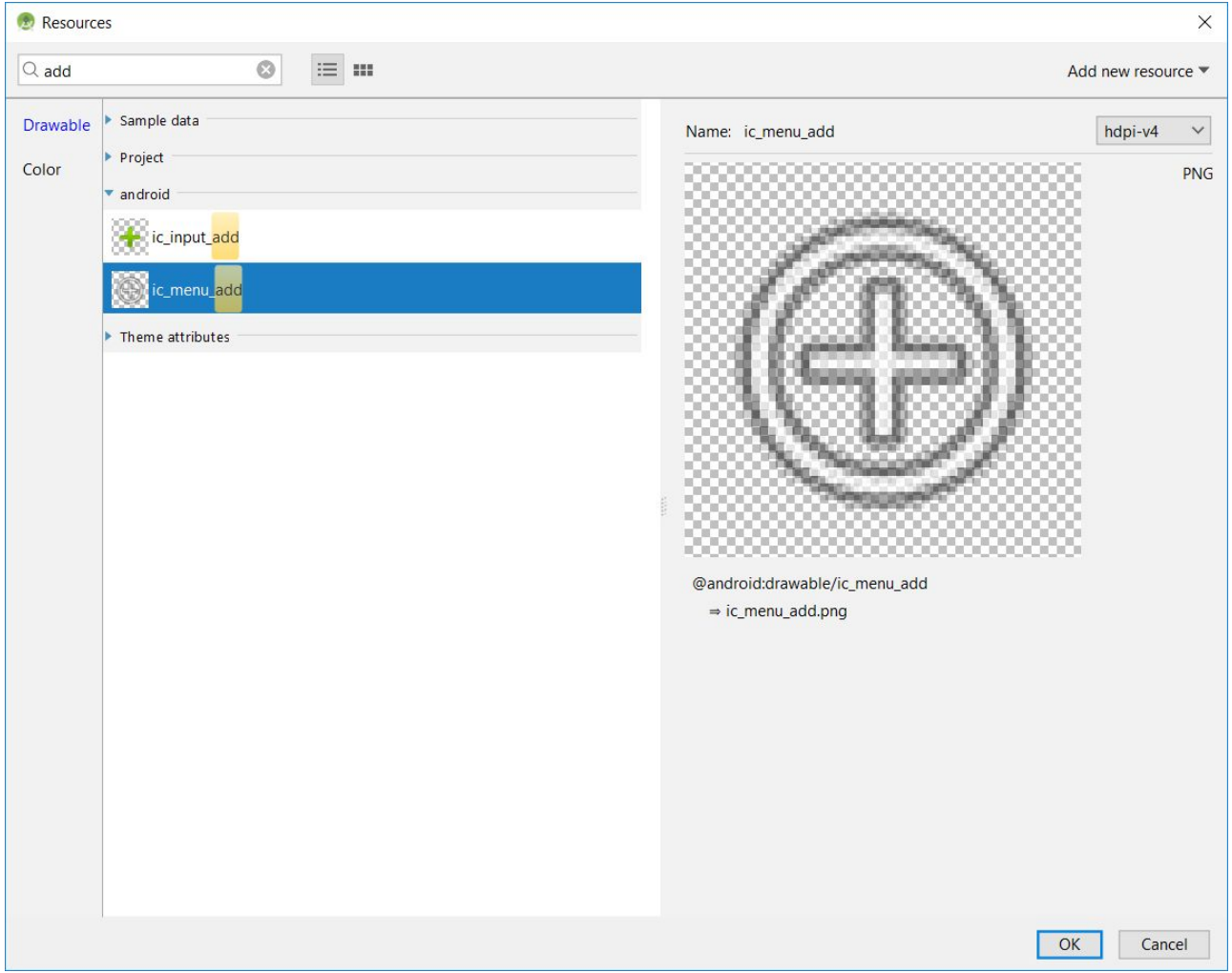
```
    //Navigation
    def nav_version = "1.0.0-alpha06"
    implementation "android.arch.navigation:navigation-fragment:$nav_version " // use -ktx for
    Kotlin
    implementation "android.arch.navigation:navigation-ui:$nav_version " // use -ktx for Kotlin
// Room components
    implementation "android.arch.persistence.room:runtime:$rootProject.roomVersion "
    kapt "android.arch.persistence.room:compiler:$rootProject.roomVersion "
    androidTestImplementation "android.arch.persistence.room:testing:$rootProject.roomVersion "
// Lifecycle components
    implementation "android.arch.lifecycle:extensions:$rootProject.archLifecycleVersion "
    kapt "android.arch.lifecycle:compiler:$rootProject.archLifecycleVersion "
```

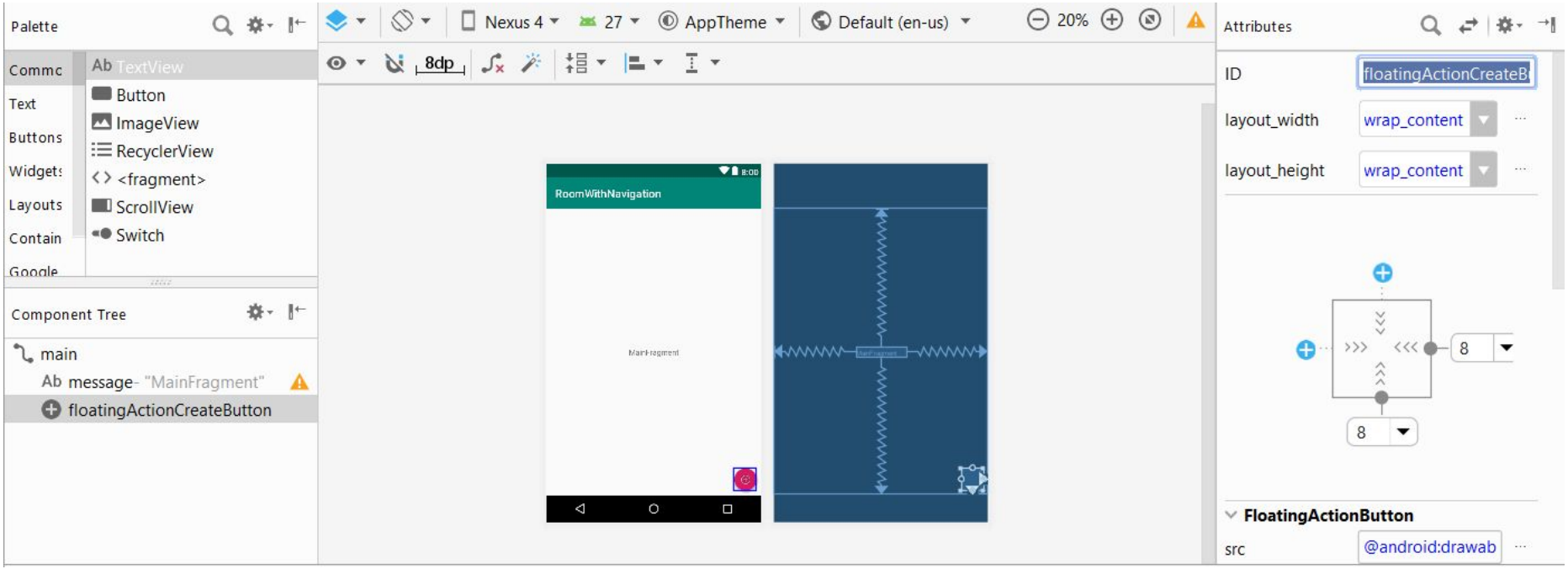
IIn resource > layout > main_fragment suchen nach floatingActionButton



Einfach den floatingActionButton in das Fragment ziehen

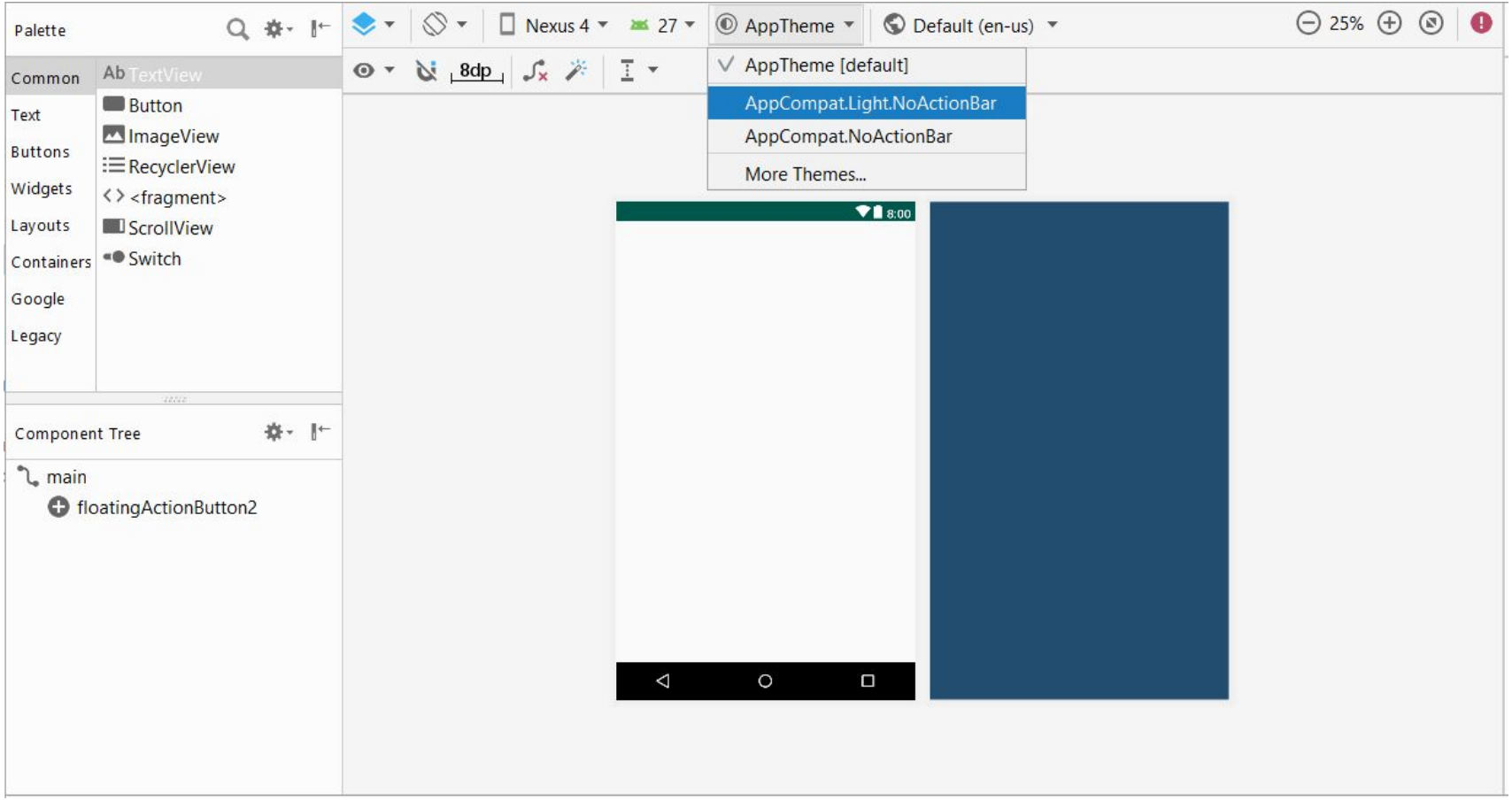



Resources
add
Add new resource
Drawable
Color
Sample data
Project
android
ic_input_add
ic_menu_add
Theme attributes
Name: ic_menu_add
hdpi-v4
PNG
@android:drawable/ic_menu_add
⇒ ic_menu_add.png
OK
Cancel

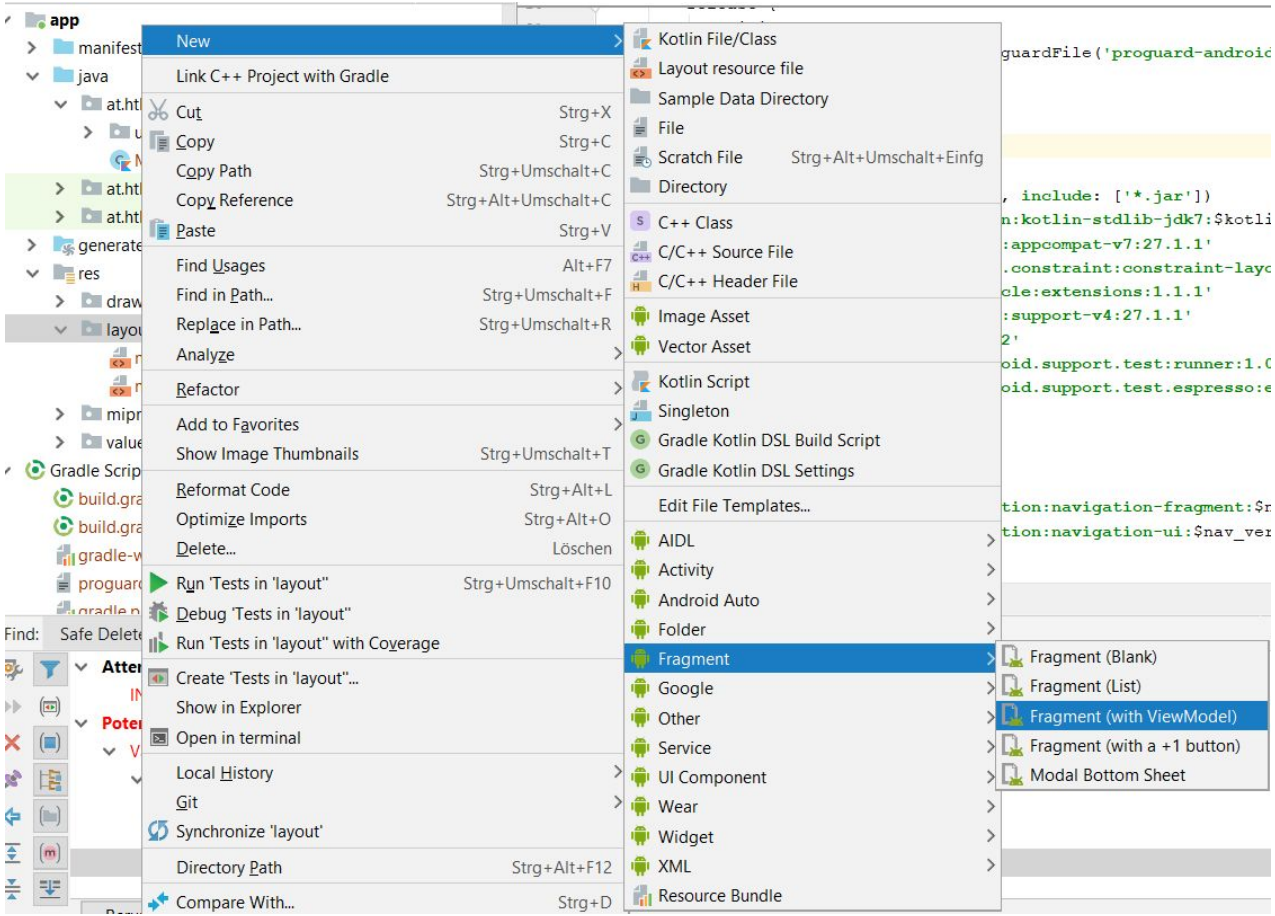


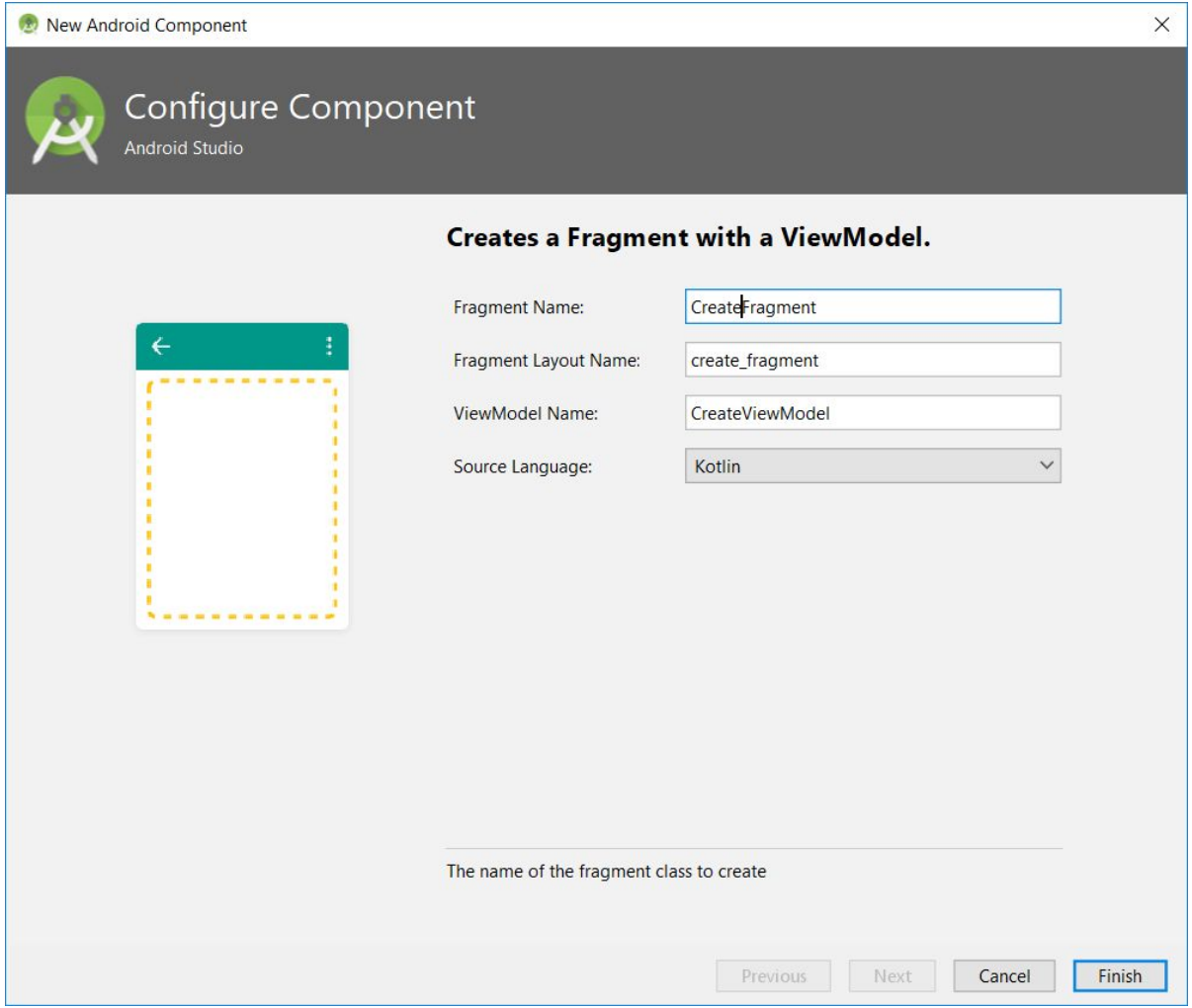
Falls der Button nicht angezeigt wird siehe nächste Folie

Wenn der Button nicht angezeigt wird, hat es geholfen das Theme zu ändern

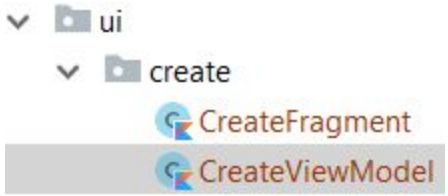


layout > new > fragment > fragment (with viewmodel)



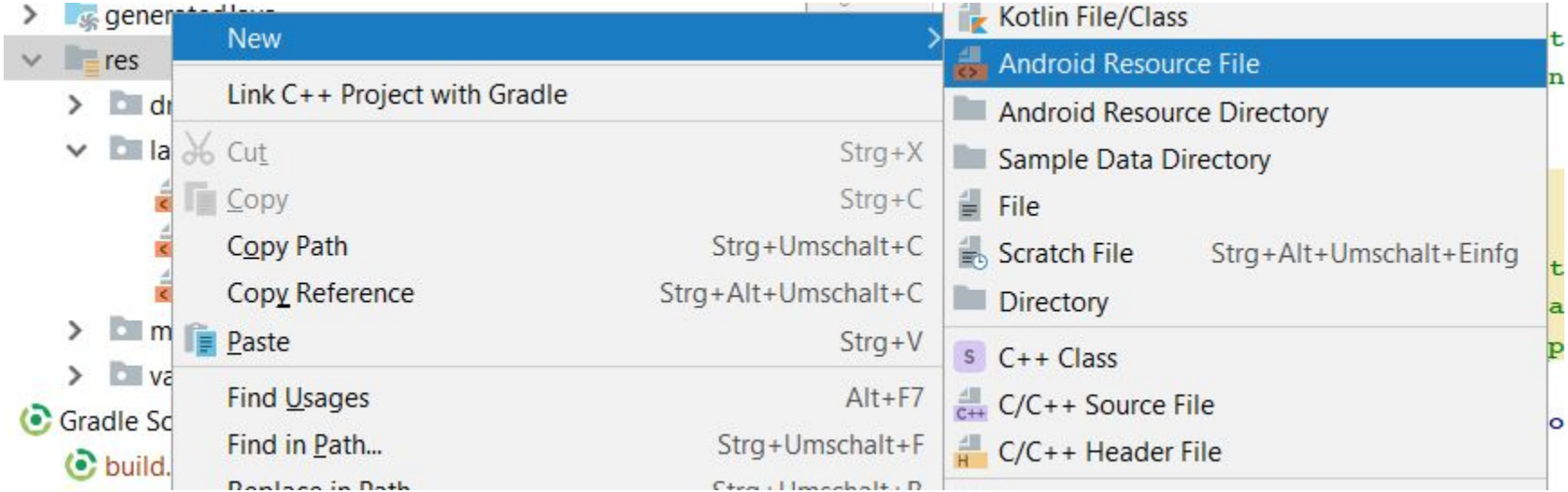

New Android Component
Configure Component
Android Studio
Creates a Fragment with a ViewModel.
Fragment Name:
CreateFragment
Fragment Layout Name:
create_fragment
ViewModel Name:
CreateViewModel
Source Language:
Kotlin
The name of the fragment class to create
Previous
Next
Cancel
Finish

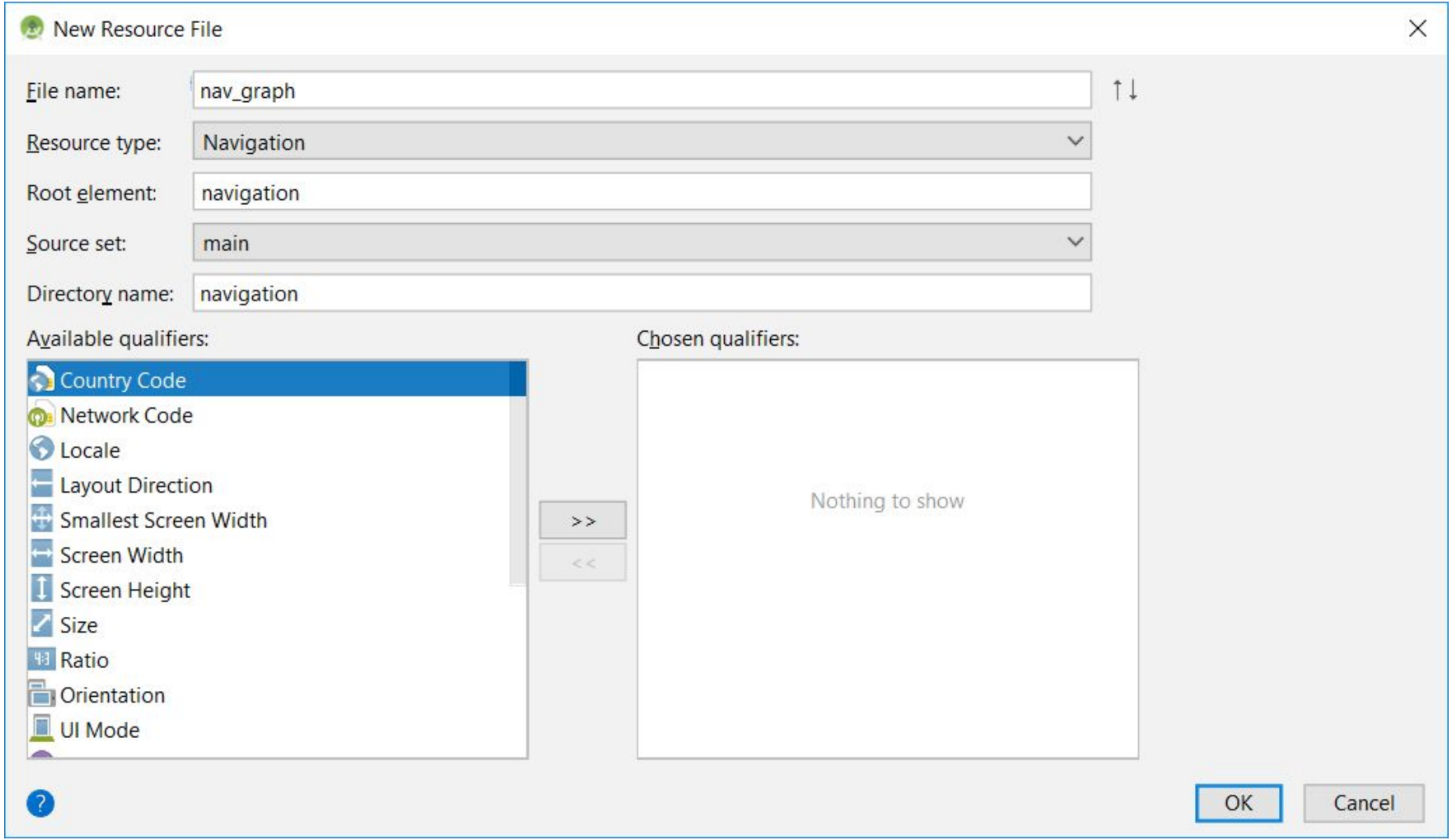
Jetzt noch das Fragment in die Ordnerstruktur bringen



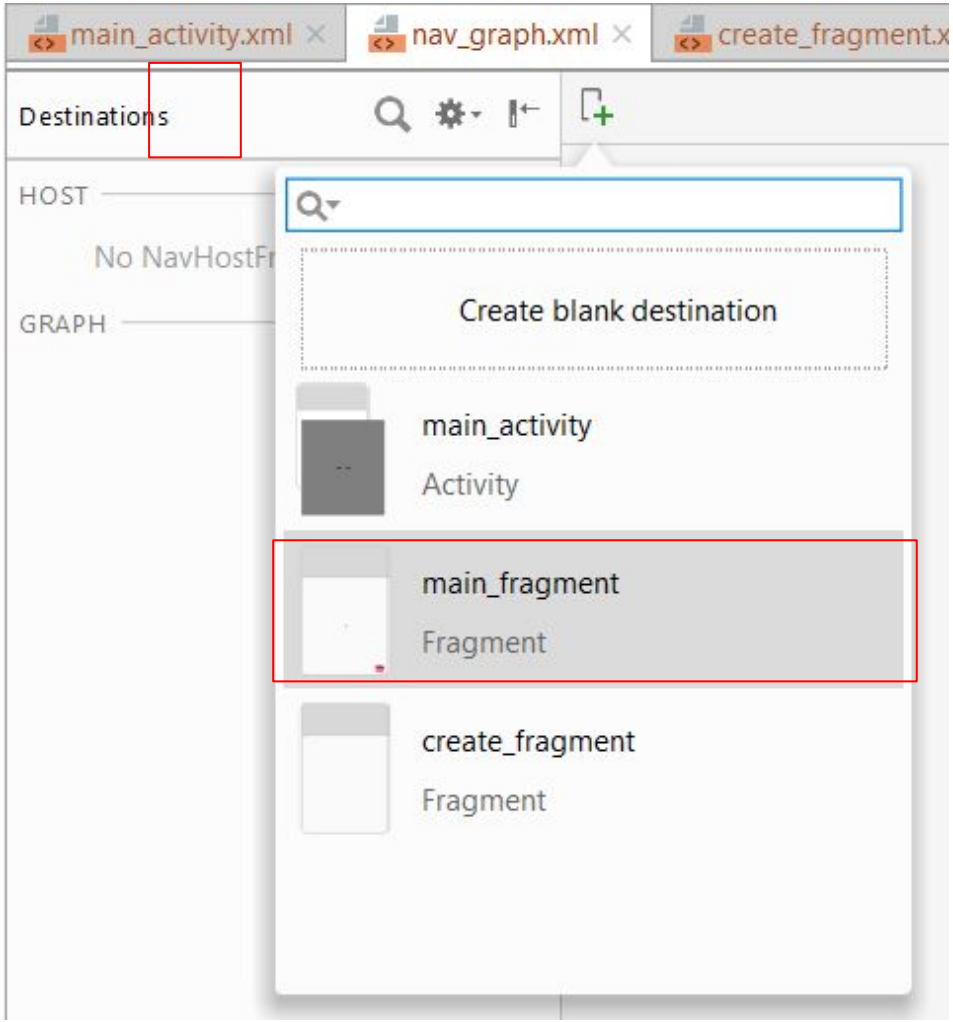
Hinzufügen des Navigation Graphs

res > new > android resource file




New Resource File
File name:
nav_graph
Resource type:
Navigation
Root element:
navigation
Source set:
main
Directory name:
navigation
Available qualifiers:
Country Code
Network Code
Locale
Layout Direction
Smallest Screen Width
Screen Width
Screen Height
Size
Ratio
Orientation
UI Mode
>>
<<
Chosen qualifiers:
Nothing to show
OK
Cancel

Im Designer


main_activity.xml
nav_graph.xml
create_fragment.x
Destinations
HOST
No NavHostFr
GRAPH
Create blank destination
main_activity
Activity
main_fragment
Fragment
create_fragment
Fragment

main_fragment.xml | app | main_activity.xml | MainFragment.kt | MainViewModel.kt | create_fragment.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.v4.widget.DrawerLayout 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:id="@+id/container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <fragment
        android:id="@+id/my_fragment"
        android:name="androidx.navigation.fragment.NavHostFragment"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:defaultNavHost="true"
        app:navGraph="@navigation/nav_graph"></fragment>

</android.support.v4.widget.DrawerLayout>
```

```
class MainActivity : AppCompatActivity() {

    lateinit var drawer: DrawerLayout

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.main_activity)

        val navController = (my_fragment as NavHostFragment).navController

        drawer = container
        NavigationUI.setupActionBarWithNavController( activity: this, navController, drawer)
    }

    override fun onSupportNavigateUp(): Boolean {
        return NavigationUI.navigateUp(drawer, Navigation.findNavController( activity: this, my_fragment.id))

    }

}
```

In **MainFragment.kt** fügt man noch diese Methode ein
Damit setzt man den onClickListener auf den FloatingActionButton

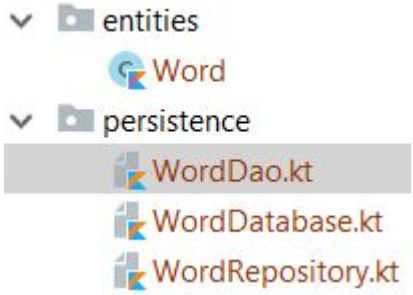
```
override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
    super.onViewCreated(view, savedInstanceState)

    floatingActionCreateButton.setOnClickListener { it: View!
        Navigation.findNavController(it).navigate(createFragment)
    }
}
```

Jetzt kann man vom main- zum create-Fragment wechseln

Nun geht es zu der Erstellung der nötigen Files für Room

Zuerst die Word Entität


```kotlin
import android.arch.persistence.room.Entity
import android.arch.persistence.room.PrimaryKey

@Entity(tableName = "word_table")
data class Word(
        @PrimaryKey(autoGenerate = true) val id: Long,
        var word: String)
```




```kotlin
@Dao
interface WordDao {
    @Insert
    fun insert(word: Word)

    @Update
    fun update(word: Word)

    @Query( value: "SELECT * from word_table ORDER BY id ASC")
    fun getAllLive(): LiveData<List<Word>>

    @Query( value: "DELETE FROM word_table")
    fun deleteAll()

    @Delete
    fun delete(word: Word)
}
```

In dem entities gibt man die Entitäten an welche in der Datenbank gespeichert werden

Die Version gibt an in welcher Version sich die Datenbank befindet und wenn man die Struktur ändert kann man eine Migrationsfunktion programmieren, sodass die aktuellen Apps auch auf die aktuelle Struktur geändert werden

```
import android.arch.persistence.room.Database
import android.arch.persistence.room.RoomDatabase
import at.htl.roomwithnavigation.entities.Word

@Database(entities = [Word::class], version = 1)
abstract class WordDatabase : RoomDatabase() {

}
```

```
@Database(entities = [Word::class], version = 1)
abstract class WordDatabase : RoomDatabase() {

    abstract fun wordDao(): WordDao

    fun getWordDao(): WordDao = wordDao()

    companion object {
        private var INSTANCE: WordDatabase? = null

        fun getInstance(ctx: Context): WordDatabase {
            if (INSTANCE == null) {
                INSTANCE = Room.databaseBuilder(ctx,
                        WordDatabase::class.java,  name: "word_database")
                        .build()

            }
            return INSTANCE as WordDatabase
        }
    }
}
```

```
class WordRepository(application: Application) {
    private val wordDatabase: WordDatabase = WordDatabase.getInstance(application)
    private val wordDao: WordDao = wordDatabase.getWordDao()

    fun insert(word: Word) {
        thread {
            wordDao.insert(word)
        }
    }

    fun update(word: Word) {
        thread {
            wordDao.update(word)
        }
    }

    fun delete(word: Word) {
        thread {
            wordDao.delete(word)
        }
    }

    fun getAllLive(): LiveData<List<Word>> = wordDao.getAllLive()
}
```

Im main-fragment löscht man zuerst die Textview

```
<TextView
    android:id="@+id/message"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="MainFragment"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

im main-fragment

```
<android.support.constraint.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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.main.MainFragment">

    <android.support.design.widget.FloatingActionButton
        android:id="@+id/floatingActionCreateButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:clickable="true"
        android:src="@android:drawable/ic_menu_add"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />

    <android.support.v7.widget.RecyclerView
        android:id="@+id/recyclerview"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:listitem="@layout/content_item" />

</android.support.constraint.ConstraintLayout>
```

Keine Sorge wegen des content_items. Das erstellen wir jetzt gleich

im res > values > styles xml fügen wir einen neuen style für unser content_item
den kann man ähnlich wie eine css-klasse verwenden

content_item.xml | create_fragment.xml | MainViewModel.kt | WordDatabase.kt | WordRepository.kt | colors.xml | strings.xml | styles.xml

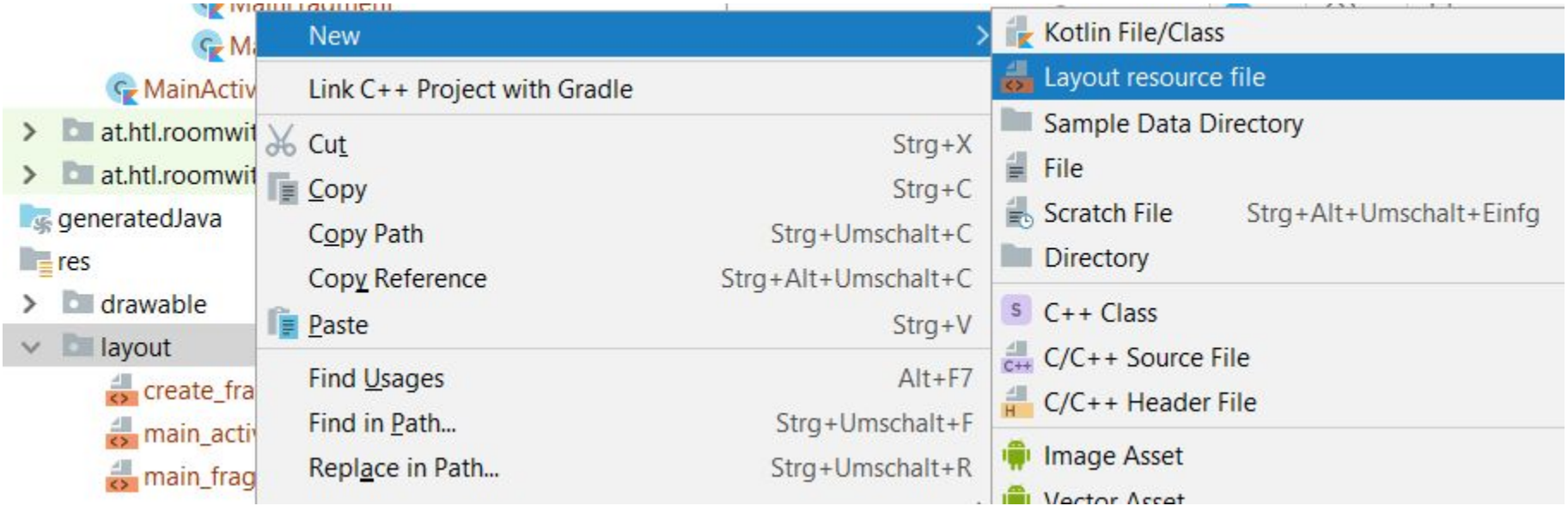
hemes in the project in the theme editor. Open editor Hide notificatic

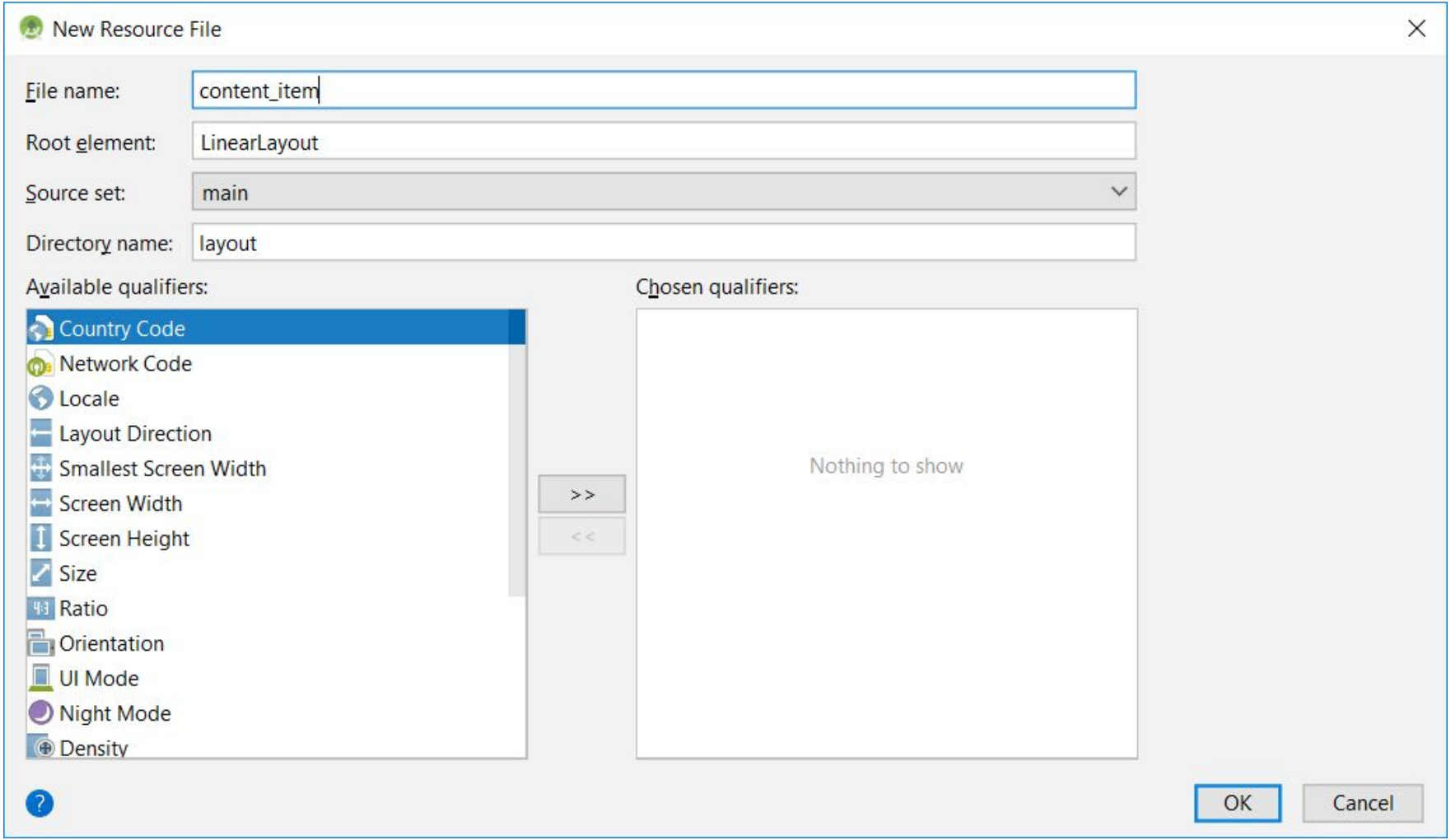
```
<resources>

    <!-- Base application theme. -->
    <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your theme here. -->
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
    </style>

    <style name="word_title">
        <item name="android:layout_width">match_parent</item>
        <item name="android:layout_height">26dp</item>
        <item name="android:textSize">24sp</item>
        <item name="android:textStyle">bold</item>
        <item name="android:layout_marginBottom">6dp</item>
        <item name="android:paddingLeft">8dp</item>
    </style>
```

Sollte es so aussehen kann man es ignorieren und weiterarbeiten. Es funktioniert genauso.

```
<item name="android:layout_width">match_parent</item>
<item name="android:layout_height">26dp</item>
<item name="android:textSize">24sp</item>
<item name="android:textStyle">bold</item>
<item name="android:layout_marginBottom">6dp</item>
<item name="android:paddingLeft">8dp</item>
```

layout > new > layout resource file

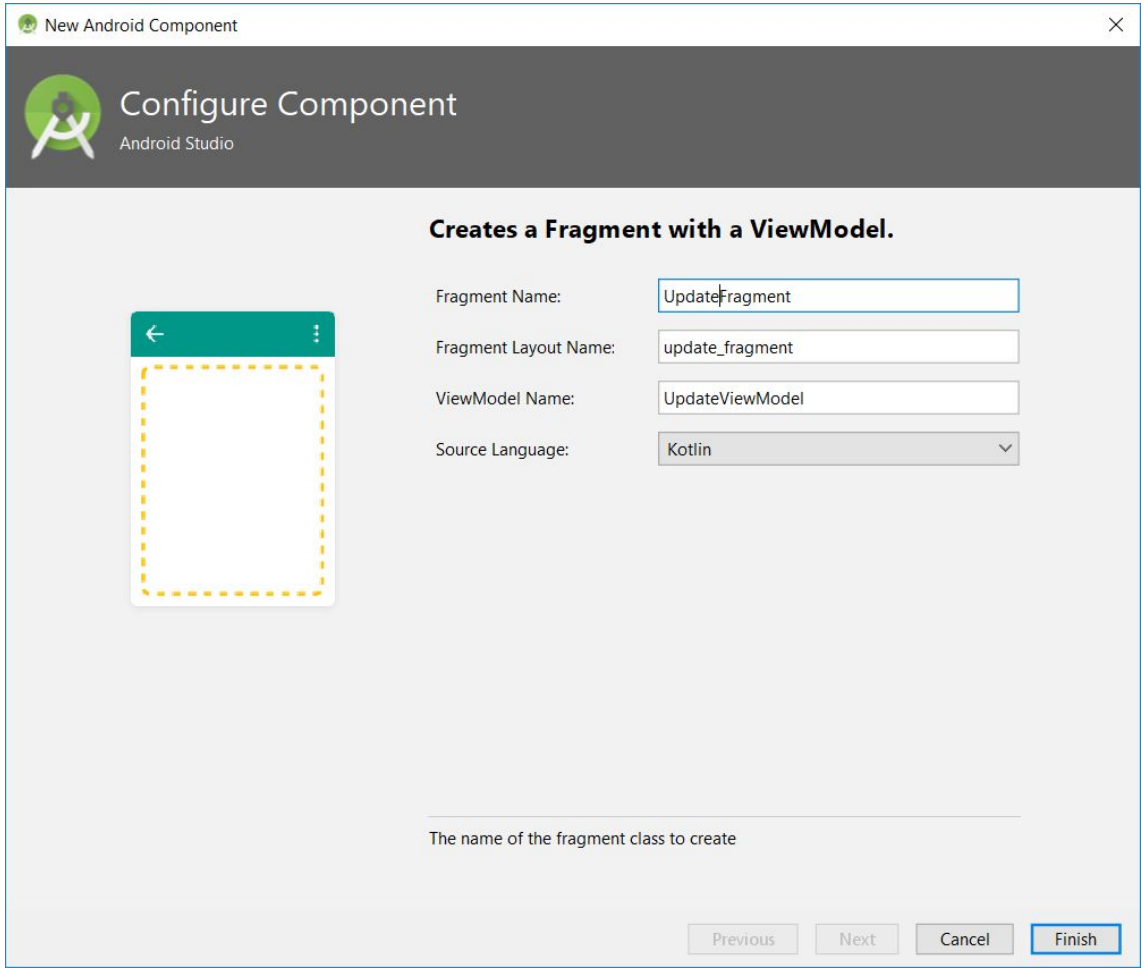


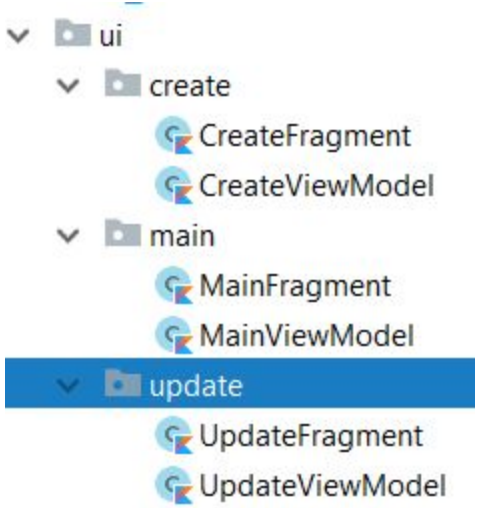

New Resource File
File name:
content_item
Root element:
LinearLayout
Source set:
main
Directory name:
layout
Available qualifiers:
Country Code
Network Code
Locale
Layout Direction
Smallest Screen Width
Screen Width
Screen Height
Size
Ratio
Orientation
UI Mode
Night Mode
Density
>>
<<
Chosen qualifiers:
Nothing to show
OK
Cancel

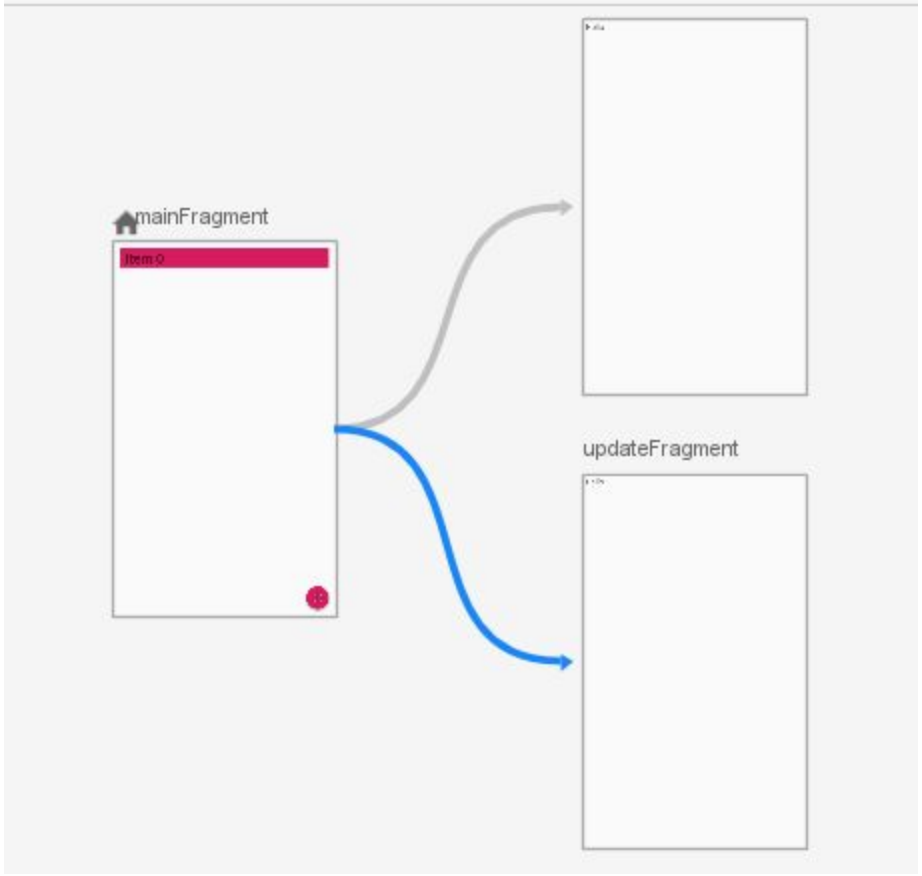
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <TextView
        android:id="@+id/textView"
        style="@style/word_title"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/colorAccent"/>
</LinearLayout>
```

Hier setzt man dann den style

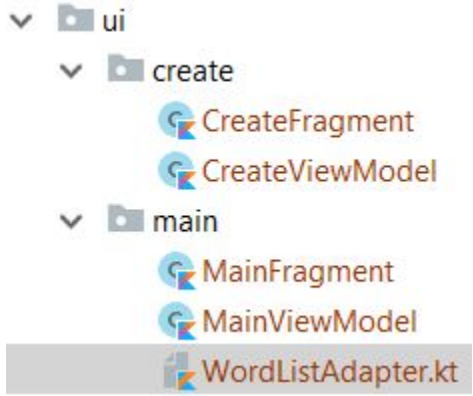
layout > new > fragment > fragment (with viewmodel)




ui
create
CreateFragment
CreateViewModel
main
MainFragment
MainViewModel
update
UpdateFragment
UpdateViewModel


mainFragment
Item 0
updateFragment

Jetzt müssen wir einen Adpater für die RecyclerView erstellen

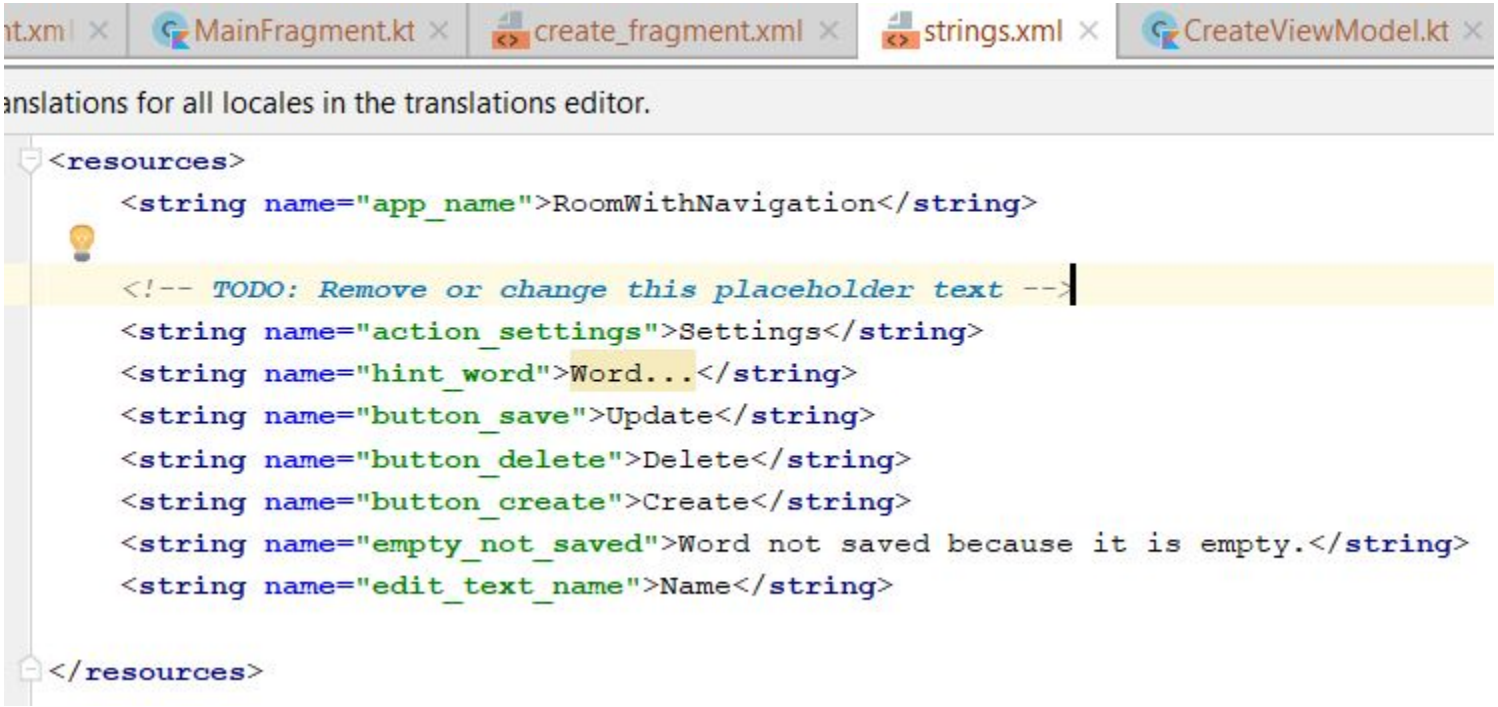


```
class WordListAdapter(var list: List<Word> = listOf()) : RecyclerView.Adapter<WordListAdapter.WordViewHolder>() {

    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): WordViewHolder {
        val view = LayoutInflater
                .from(parent.context)
                .inflate(R.layout.content_item, parent, attachToRoot: false)
        return WordViewHolder(view)
    }

    override fun getItemCount(): Int = list.size

    override fun onBindViewHolder(holder: WordViewHolder, position: Int) {
        val current: Word = list[position]
        holder.view.textView.text = "${current.id}: ${current.word}"
        holder.view.setOnClickListener { it: View!
            var bundle = Bundle()
            bundle.putLong("Id", current.id)
            bundle.putString("Word", current.word)
            Navigation.findNavController(it).navigate(action_mainFragment_to_updateFragment, bundle)
        }
    }

    class WordViewHolder(val view: View) : RecyclerView.ViewHolder(view)
}
```

```
class MainViewModel(application: Application) : AndroidViewModel(application) {

    private val mRepository: WordRepository = WordRepository(application)
    private var mAllWords: LiveData<List<Word>> = mRepository.getAllLive()

    fun getAllWords(): LiveData<List<Word>> = mAllWords

}
```

```
class MainFragment : Fragment() {

    companion object {
        fun newInstance() = MainFragment()
    }

    private lateinit var viewModel: MainViewModel

    override fun onCreateView(inflater: LayoutInflater, container: ViewGroup?,
                              savedInstanceState: Bundle?): View {
        return inflater.inflate(R.layout.main_fragment, container, attachToRoot: false)
    }

    override fun onActivityCreated(savedInstanceState: Bundle?) {
        super.onActivityCreated(savedInstanceState)
        viewModel = ViewModelProviders.of( fragment: this).get(MainViewModel::class.java)

        var adapter = WordListAdapter()
        recyclerview.adapter = adapter
        recyclerview.layoutManager = LinearLayoutManager(this.context)

        viewModel.getAllWords().observe( owner: this, Observer<List<Word>> { it: List<Word>?
            adapter.list = it!!
            adapter.notifyDataSetChanged()
        })
    }
```

In das string xml file fügen wir die notwendigen Strings ein



Auf den nächsten beiden Seiten zum Kopieren

agment.xml × MainFragment.kt × create_fragment.xml × strings.xml

```
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.create.CreateFragment">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:ems="10"
        android:hint="@string/edit_text_name"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:text="@string/button_create"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText" />
</android.support.constraint.ConstraintLayout>
```

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.create.CreateFragment">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:ems="10"
        android:hint="@string/edit_text_name"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
 <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:text="@string/button_create"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText" />

</android.support.constraint.ConstraintLayout>
```

```
class CreateViewModel(application: Application) : AndroidViewModel(application) {

    private val mRepository = WordRepository(application)

    fun insert(word: Word) {
        mRepository.insert(word)
    }
}
```

```
class CreateFragment : Fragment() {

    companion object {
        fun newInstance() = CreateFragment()
    }

    private lateinit var viewModel: CreateViewModel

    override fun onCreateView(inflater: LayoutInflater, container: ViewGroup?,
                              savedInstanceState: Bundle?): View? {
        return inflater.inflate(R.layout.create_fragment, container, attachToRoot: false)
    }

    override fun onActivityCreated(savedInstanceState: Bundle?) {
        super.onActivityCreated(savedInstanceState)
        viewModel = ViewModelProviders.of( fragment: this).get(CreateViewModel::class.java)
    }

    override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
        super.onViewCreated(view, savedInstanceState)


        button.setOnClickListener { it: View!
            viewModel.insert(Word( id: 0, editText.text.toString()))
            Navigation.findNavController(it).popBackStack()
        }
    }
```

Im update_fragment

Auf den Seiten danach zum Herauskopieren

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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=".ui.update.UpdateFragment">

<EditText
    android:id="@+id/editText"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginBottom="8dp"
    android:ems="10"
    android:hint="@string/edit_text_name"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/button_update"
    android:layout_width="91dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:text="@string/button_save"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText" />
```

```
<Button
    android:id="@+id/button_delete"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:text="@string/button_delete"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button_update" />
</android.support.constraint.ConstraintLayout>
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.update.UpdateFragment">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:ems="10"
        android:hint="@string/edit_text_name"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
    <Button
        android:id="@+id/button_update"
        android:layout_width="91dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:text="@string/button_save"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText" />

    <Button
        android:id="@+id/button_delete"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:text="@string/button_delete"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button_update" />

</android.support.constraint.ConstraintLayout>
```

```kotlin
class UpdateViewModel(application: Application) : AndroidViewModel(application) {

    private var mRepository = WordRepository(application)

    fun update(word: Word) {
        mRepository.update(word)
    }

    fun delete(word: Word) {
        mRepository.delete(word)
    }
}
```

```
class UpdateFragment : Fragment() {

    companion object {
        fun newInstance() = UpdateFragment()
    }

    private lateinit var viewModel: UpdateViewModel

    override fun onCreateView(inflater: LayoutInflater, container: ViewGroup?,
                              savedInstanceState: Bundle?): View? {
        return inflater.inflate(R.layout.update_fragment, container,  attachToRoot: false)
    }

    override fun onActivityCreated(savedInstanceState: Bundle?) {
        super.onActivityCreated(savedInstanceState)
        viewModel = ViewModelProviders.of( fragment: this).get(UpdateViewModel::class.java)
    }

    override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
        super.onViewCreated(view, savedInstanceState)

        val id = arguments?.getLong( key: "Id")!!
        editText.setText(arguments?.getString( key: "Word").toString())

        button_update.setOnClickListener { it: View!
            viewModel.update(Word(id, editText.text.toString()))
            Navigation.findNavController(it).popBackStack()
        }

        button_delete.setOnClickListener { it: View!
            viewModel.delete(Word(id, editText.text.toString()))
            Navigation.findNavController(it).popBackStack()
        }
```

Damit ist es auch schon geschafft :)

Quellen

https://www.youtube.com/watch?v=5qlIPTDE274

https://codelabs.developers.google.com/codelabs/android-room-with-a-view/#0

Github:

https://github.com/ThomasKaar/RoomWithNavigation