
AnimalCrosser
Cameron-Stewart Smart
1901578
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Contents

Flow Diagram

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User Navigation Flow


Features
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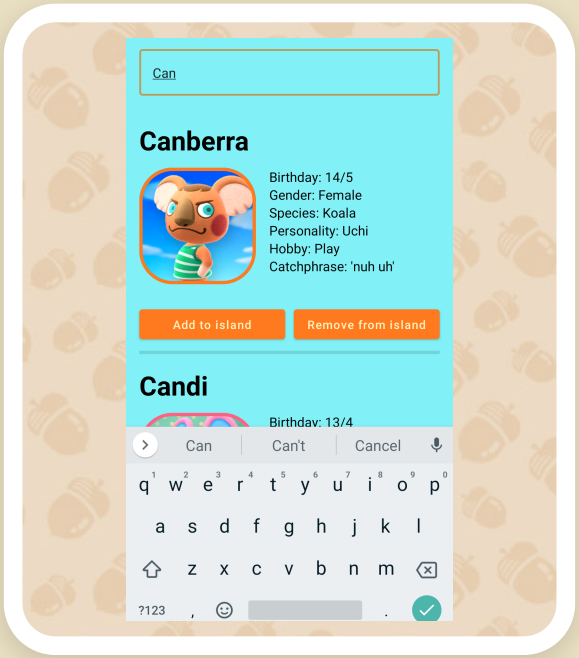
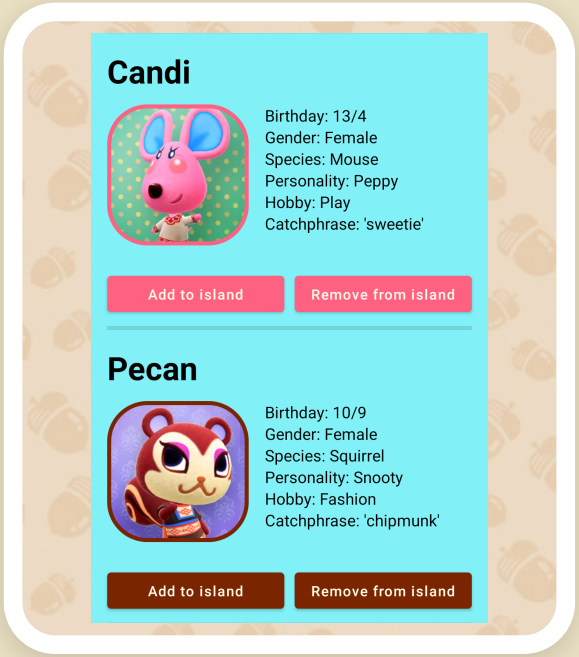
Villager Wiki



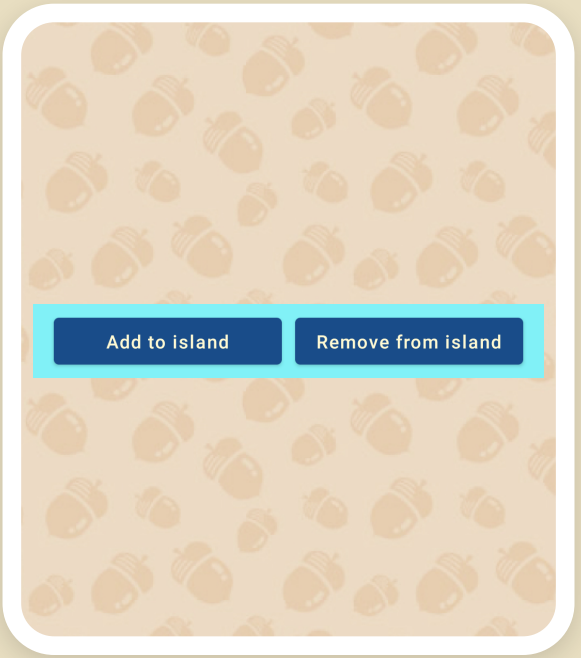
Search bar

- Updates results as typed



Villager Information

- Name
- Personality
- Species
- More



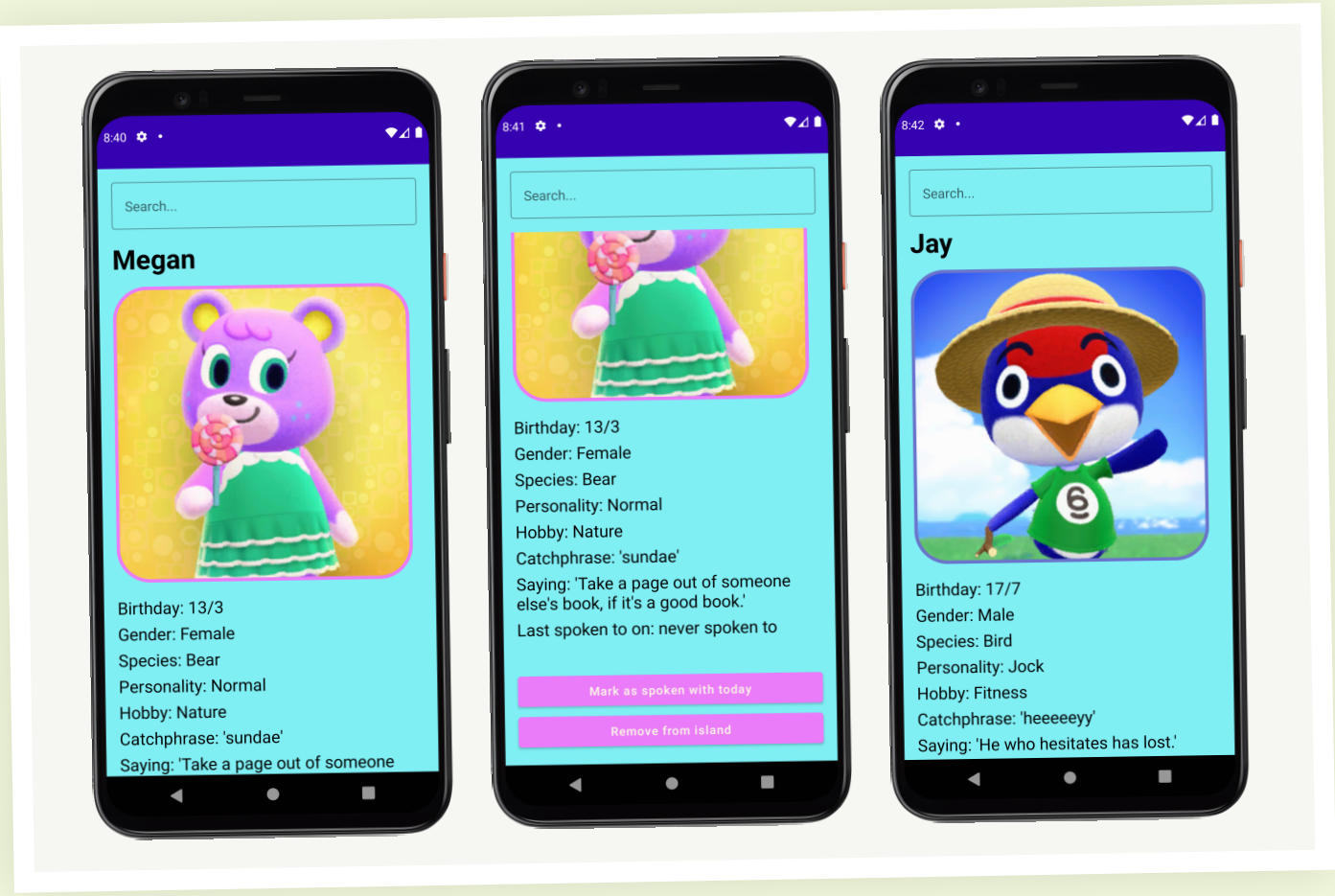
Options

- Add to village
- Remove from village

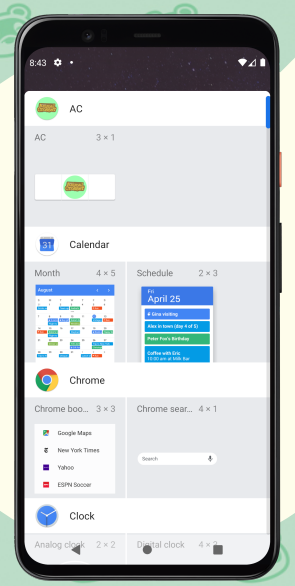
Your Village

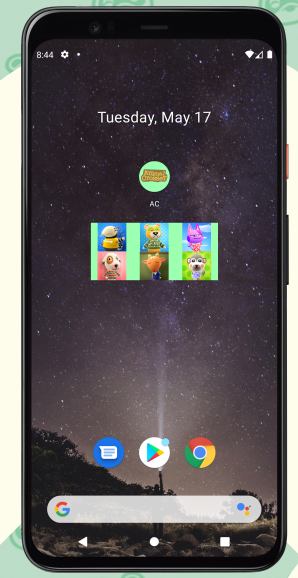
Shows:

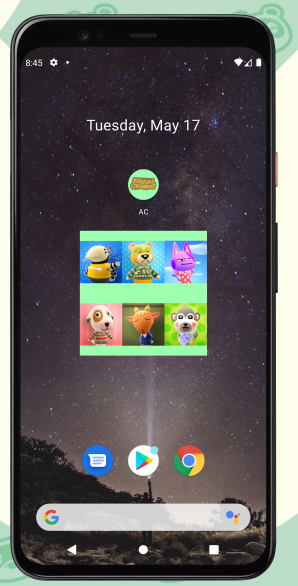
- Larger picture
- Option to remove
- **Date last spoken**



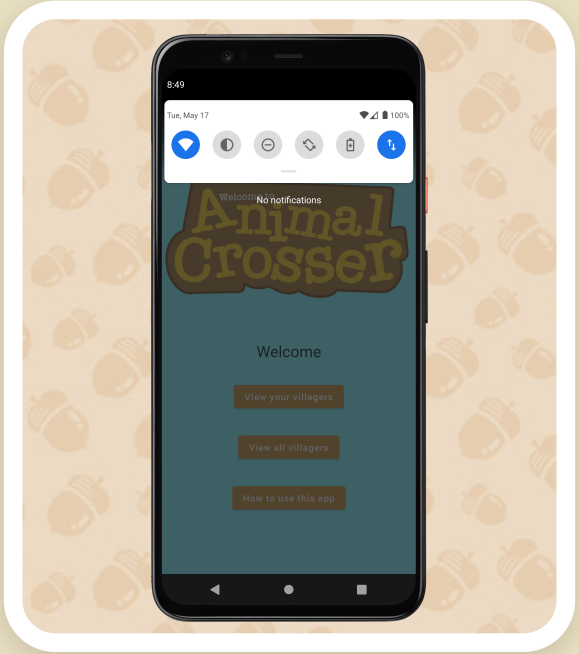
Resizable Widget





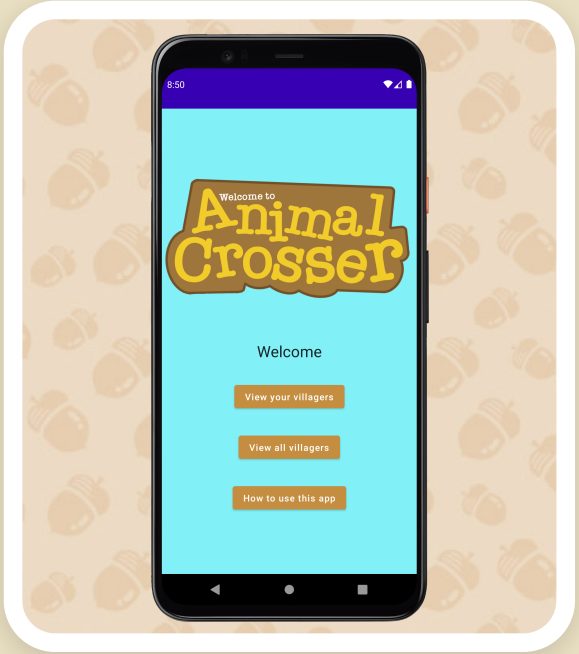


Dark Mode



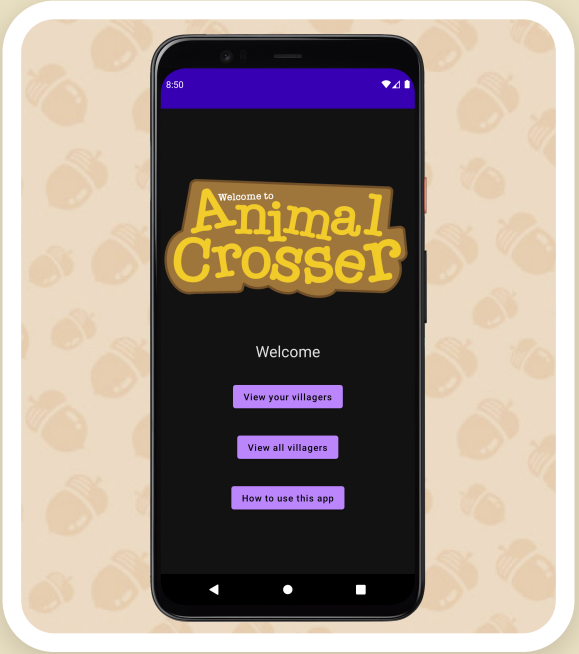
Change with Android

- Automatically adapts with your phones light mode schedule
- Can manually be changed in settings or control centre



Light Mode

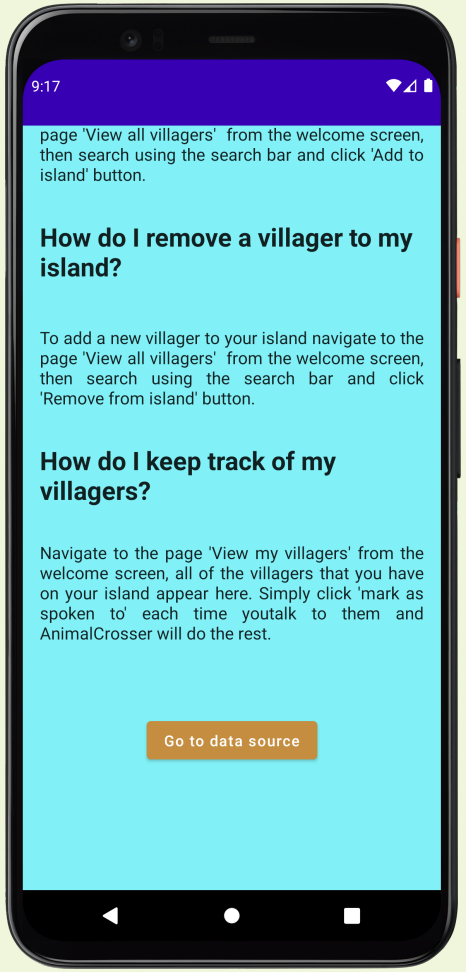
- Animal crossing colour theme

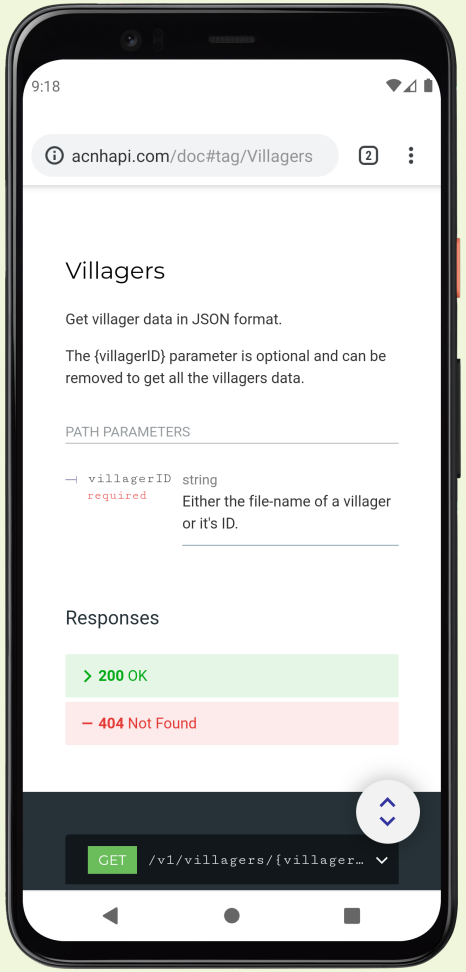


Dark Mode

- Designed for OLEDS by using black and dark grey colours

Built in Guide and API Data Source Browser






Code Snippets
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Jetpack Compose

- Simplified user interface design
- Navigation implementation that handles creation and destruction of pages
- Reusable composable components
- Works well with Kotlin
- Great documentation available

```
@Composable
@Destination
fun InfoScreen(
    navigator: DestinationsNavigator, // Used for navigation
) {
    val state = rememberLazyListState() // Holds Lazy column position
    val context = LocalContext.current
   // Used to open data source
    val intent = remember { Intent(Intent.ACTION_VIEW, Uri.parse("http://acnhapi.com/doc")) }

    Column(
        modifier = Modifier
            .fillMaxSize(),
    ) {

        LazyColumn( // Allows for scrolling through items
            horizontalAlignment = Alignment.CenterHorizontally,
            state = state
        ) {

            item { // Each object must be put in an object to allow scrolling
                Logo() // Logo.kt composable to display logo image
            }

            item {
                Text("Welcome to AnimalCrosser", // Title
                    modifier = Modifier.fillMaxWidth().padding(horizontal = 16.dp),
                    fontSize = 28.sp,
                    fontWeight = FontWeight.Bold
                )
                Spacer(modifier = Modifier.size(16.dp))
            }
...
```

API Call

```
package art.cameronsma.animalcrosser2.data.remote

import okhttp3.ResponseBody
import retrofit2.http.GET

interface VillagerApi {

    // gets villagers from provided API module
    @GET("villagers")
    suspend fun getListings(): ResponseBody

    companion object {
        const val BASE_URL = "https://mayar.abertay.ac.uk/~1901578/villagers/"
    }

}
```

- Data is initially pulled from an API hosted on Abertay's Mayar server in CSV format
- Retrofit 2 is used to get data and return as response body

Database Interface

- Android room interface was used to interact with an SQLite database stored locally on the phone
- This is used to create a local backup of data called retrieved from API

```
import androidx.room.Dao
import androidx.room.Insert
import androidx.room.OnConflictStrategy
import androidx.room.Query

// Database interface object
// Uses android room to use mySQL statements
@Dao
interface VillagerDao {

    // Insert into database
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun insertVillagerListings(
        villagerListingEntity: List<VillagerListingEntity>
    )

    // Delete from database
    @Query("DELETE FROM villagerlistingentity")
    suspend fun clearVillagerListings()

    // Select from database where id is equal to input
    @Query(
        """
            SELECT *
            FROM villagerlistingentity
            WHERE LOWER(name) LIKE '%' || LOWER(:query) || '%' OR
                UPPER(:query) == id
        """
    )
    suspend fun searchVillagerListing(query: String): List<VillagerListingEntity>

    // Select from database where id is equal to input
    @Query(
        """
            SELECT *
            FROM villagerlistingentity
            WHERE LOWER(name) LIKE '%' || LOWER(:query) || '%' OR
                UPPER(:query) == id
        """
    )
    suspend fun searchYourVillagerListing(query: String): List<VillagerListingEntity>

    // Mark as in users village where id is equal to input
...
```

Local Data Backup

```
override suspend fun getVillagerListings( // Function to return villager listing of specific id
        fetchFromRemote: Boolean,
        query: String
    ): Flow<Resource<List<VillagerListing>>> { // Returns data flow for list of database objects
        return flow {
            emit(Resource.Loading(true)) // Tells resource object to load data remotely from Api
            val localListing = dao.searchVillagerListing(query)
            emit(Resource.Success( // Tells resource object that data load is successful
                data = localListing.map { it.toVillagerListing() }
            ))

            val isDbEmpty = localListing.isEmpty() && query.isBlank() // Is database empty check
            val shouldJusLoadFromCache = !isDbEmpty && !fetchFromRemote // Id data is not to be loaded
            // remotely and database is empty
            if(shouldJusLoadFromCache) {
                emit(Resource.Loading(false)) // Tells resource object to load data locally from database
                return@flow // Returns data to flow
            }
            val remoteListings = try {
                val response = api.getListings() // Gets data from API
                villagerListingsParser.parse(response.byteStream()) // Parses data from response body
            } catch(e: IOException) { // Exception catcher
                e.printStackTrace()
                emit(Resource.Error("Couldn't load data")) // Tells resource object error occurred
                null // returns null
            } catch (e: HttpException){ // Exception catcher
                e.printStackTrace()
                emit(Resource.Error("Couldn't load data")) // Tells resource object error occurred
                null // returns null
            }

            remoteListings?.let { listings -> // Puts data loaded from remote API into local database
                dao.clearVillagerListings() // Clear entry from database
                dao.insertVillagerListings( // Inserts entry to database
                    listings.map { it.toVillagerListingEntity() }
                )
                emit(Resource.Loading(false)) // Tells resource object to load data locally from database
                emit(Resource.Success( // Tells resource object data load was successful
                    data = dao
                        .searchVillagerListing("")
                        .map { it.toVillagerListing()}
                ))
            }
        }
    }
```

- A local copy of data is kept in the SQLite database and can be used if API is not available and while data is being loaded
- Holds information from API as well as users information such as villagers in village and when last spoken to

Villager List

- Composbable used to show all villagers
- Similar code is used for show your villagers page

```
@Destination
@Composable
fun VillagerListingsScreen(
    navigator: DestinationsNavigator, // Used for navigation
    viewModel: VillagerListingsViewModel = hiltViewModel() // View model for page
) {
...
        SwipeRefresh( // Object that allows for swiping down to refresh that holds rest of page
            state = swipeRefreshState,
            onRefresh = {
                viewModel.onEvent( // Refresh the page when dragged down
                    VillagerListingsEvent.Refresh
                )
            }
        ) {
            LazyColumn( // Column that allows scrolling through items
                modifier = Modifier.fillMaxSize()
            ) {
                items(state.villagers.size) { i -> // Loops through villagers
                    val villager = state.villagers[i] // Villager set to current villager in loop
                    VillagerItem( // Displays current villager using villager item composable
                        villager = villager,
                        modifier = Modifier
                            .fillMaxWidth()
                            .padding(16.dp)
                    )
                    Column (
                       ...
                     )
...
}
```

Custom Colour Theme

```
import androidx.compose.foundation.isSystemInDarkTheme
import androidx.compose.material.MaterialTheme
import androidx.compose.material.darkColors
import androidx.compose.material.lightColors
import androidx.compose.runtime.Composable

private val DarkColorPalette = darkColors(
    primary = Purple200,
    primaryVariant = Purple700,
    secondary = Teal200,
    surface = graySurface
)

private val LightColorPalette = lightColors(
    primary = darkGoldenrod,
    primaryVariant = darkGoldenrod,
    secondary = icterine,
    surface = electricBlue,
    background = electricBlue,

    )

@Composable
fun AnimalCrosser2Theme(
    darkTheme: Boolean = isSystemInDarkTheme(),
    content: @Composable () -> Unit
) {
    // Sets as dark theme if system is in dark mode
    val colors = if (darkTheme) {
        DarkColorPalette
    } else {
        LightColorPalette
    }

    MaterialTheme(
        colors = colors,
        typography = Typography,
        shapes = Shapes,
        content = content
    )
}
```

- Two custom colour sets are used to implement a light and dark mode
- Light mode uses animal crossing themed colours
- Dark mode uses more traditional Android dark mode colours such as purple


Usability
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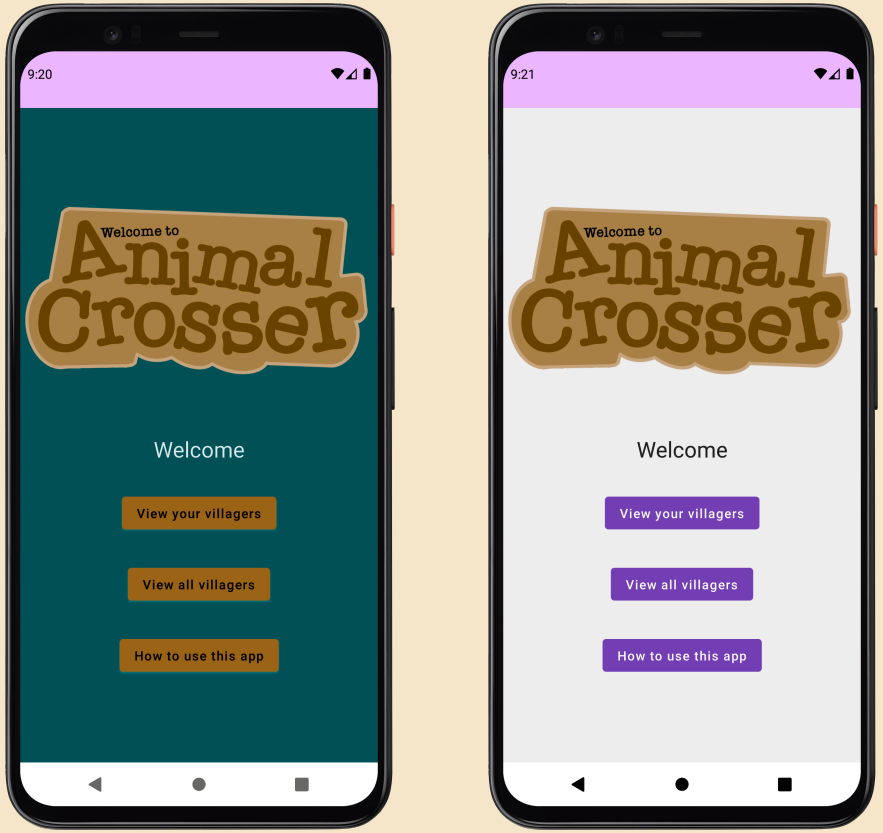
Usability



- The app allows the user to change colour themes for visibility
- Also works well with androids high contrast visibility setting for visually impaired users
- No text is displayed as an image so all text can be read by a screen reader

Compatibility

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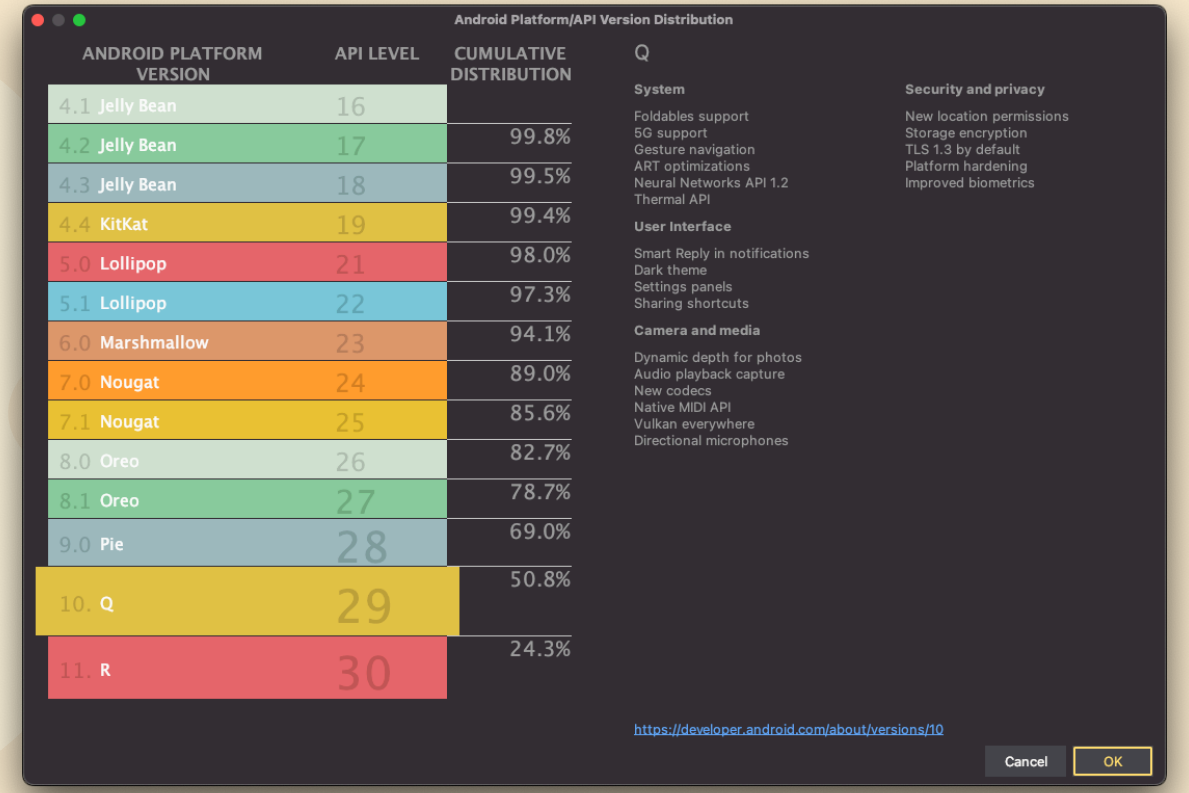
Compatibility

- Supports android API 29 so will work with 50.8% of all Android devices




Dodo
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Security
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Security

- This app does not store any of the users sensitive personal information
- The app uses the appropriate permissions request cycle to request local data storage and internet access
- All individual information (villagers in village and when last spoken to) are stored locally only


Demonstration


The End
Thank you for watching
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References

Google Inc. (2022) ‘Compose to Kotlin Compatibility App’. Available at: https://developer.android.com/jetpack/androidx/releases/compose-kotlin (Accessed: 07/05/2022)

Veschi, Gianluca. (2021) ‘Draw two buttons in a row using jetpack compose’. Available at: https://stackoverflow.com/questions/67185495/draw-two-buttons-in-a-row-using-jetpack-compose (Accessed: 08/05/2022)

Asri, Vipul (2020) ‘Colour from hex string in jetpack compose’. Available at: https://stackoverflow.com/questions/60247480/color-from-hex-string-in-jetpack-compose (Accessed: 09/05/2022)

Retool API. (2021) ‘Retool API generator’. Available at: https://retool.com/utilities/generate-api-from-csv (Accessed: 07/05/2022)

Nookipedia. (2021) ‘Animal Crossing API’. Available at: https://api.nookipedia.com/ (Accessed: 07/05/2022)

Lackner, P. (2022) ‘How to build a clean architecture stock market app’. Available at: https://www.youtube.com/watch?v=uLs2FxFSWU4&t=6422s (Accessed: 07/05/2022)

Google Inc. (2022) ‘Use Hilt with other Jetpack libraries’. Available at: https://developer.android.com/training/dependency-injection/hilt-jetpack (Accessed: 09/05/22)

Zeilla. (2021) ‘Animal Crossing New Horizon Icons’. Available at: https://www.spriters-resource.com/nintendo_switch/animalcrossingnewhorizons/sheet/128282/ (Accessed: 11/05/22)

Story, D. (2021) ‘Designing an Animal Crossing Themed Powerpoint’. Available at: https://www.youtube.com/watch?v=1d29CVe1uOw (Accessed: 10/05/22)