Technical Project Report - Android Module

GoGetIt!

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| Subject: | Introdução à Computação Móvel |
| Date: | Aveiro, 19/06/2024 |
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| Project abstract: | The "GoGetIt" application is designed to streamline the food ordering and delivery process, catering to both customers and delivery personnel. Key achievements include real-time order tracking, integration with Firebase for backend support, and a user-friendly interface for both customers and delivery agents. |

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# 1 Application concept

# Purpose: The "GoGetIt" app is designed to simplify the food ordering and delivery process. It targets customers looking for convenient meal delivery from their favorite restaurants and delivery personnel seeking an efficient system for managing and delivering orders.

# Target Users:

* **Customers:** Can browse restaurants, place orders, and track deliveries.
* **Delivery Personnel:** Manage order pickups, navigate to customer locations, and confirm deliveries.

# Benefits: Customers benefit from a seamless ordering experience with real-time tracking. Delivery personnel gain an organized workflow, reducing delivery times and improving service quality.

# 2 Implemented solution

#### Architecture overview (technical design)

* **Architecture:** The app follows the MVVM (Model-View-ViewModel) architecture.
* **Backend Integration:** Firebase is used for database management, authentication, and real-time updates.
* **Components:**
  + **UI Layer:** Composable functions with Jetpack Compose.
  + **Data Layer:** Repositories interacting with Firebase.
  + **Domain Layer:** ViewModels handling business logic.

**Diagram:**

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| UI Layer |

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| | Composables (Jetpack) | |

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| Domain Layer |

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| | ViewModels | |

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| Data Layer |

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| | Repositories | |

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| | Firebase API | |

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**Data Models and Persistence:**

* **Firebase:** Utilized for real-time database, storing order details, user information, and restaurant data.
* **Data Structures:** Kotlin data classes representing entities like Order, Restaurant, and User.
* **Synchronization:** Real-time updates with Firebase listeners ensuring data consistency between the app and the backend.

#### Implemented interactions

* **Main Interactions:**
  + **Customer Journey:** Login -> Browse Restaurants -> Place Order -> Track Order -> Confirm Delivery.
  + **Delivery Personnel Journey:** Login -> View Assigned Orders -> Navigate to Pickup -> Deliver Order -> Confirm Delivery.

**Visual Navigation Map:**

This image represents the main user flows within the application.

#### Project Limitations

* **Incomplete Features:**
  + Advanced filtering of restaurants by cuisine type.
  + In-app chat between customers and delivery personnel.
* **Known Bugs:**
  + Occasional delays in real-time updates.
  + GPS location inaccuracies in some devices.

#### New features & changes after the project presentation

* **Improved UI/UX:** Enhanced navigation and visual elements for better user experience.
* **Error Handling:** Added comprehensive error handling for network failures and user input validation.
* **Order Confirmation Modal:** For delivery personnel to confirm order delivery using a 4-digit code.

# 3 Conclusions and supporting resources

**Lessons learned**

* **Technical Challenges:**
  + Integration with Firebase required thorough understanding of asynchronous data handling.
  + Real-time location tracking was more complex than initially anticipated.
* **Surprising Elements:** Jetpack Compose greatly simplified the UI development process, providing a reactive and declarative approach to building interfaces.
* **Course Suggestions:** More focus on advanced topics like real-time data synchronization and state management would be beneficial for future students.

#### **Work distribution within the team**

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## Project resources

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| **Resource:** | **Available at:** |
| Code repository: | https://github.com/TiagoC18/GoGetIt |
| Ready-to-deploy APK: | <put URL for apk; may be inside the code repo; the debug apk, automatically generated, would be Ok> |
| App Store page: | <put URL, only if applicable> |
| Demo video: | <optional: link to a video demonstration of the app. **Consider make a video demo if your project requires specific/complex setup**, not easily replicable.> |

## Reference materials

* **Firebase Documentation:** Essential for integrating real-time database and authentication.
* **Jetpack Compose:** [Official Documentation](https://developer.android.com/jetpack/compose) for building the UI.
* **Android Developer Blog:** Various posts on best practices and architectural patterns.