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RESOURCES FOR GENERATING SOFTWARE CODE TO WORK WITH DATABASES IN MOBILE ANDROID DEVICES

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Abstract

Research focuses on automating Android app database interactions using Room Persistence Library, streamlining code generation for efficiency and developer convenience.

Keywords: automating, android app, code generation, efficiency.

Introduction

Given the rapid development of mobile technologies, the issue of efficient software development that interacts with databases in mobile applications is becoming increasingly relevant. Tools for generating code for interacting with databases play a key role in integrating, simplifying code and optimising the development process of Android applications.

The purpose of this work is to research and develop a tool that will simplify interaction and eliminate the routine work of writing code for the embedded database management system in Android applications [1].

The development is based on Room Persistence Library, which is the official Google's official library that provides a higher level of abstraction over a SQLite database [2]. It uses annotations to define the database structure, offers components for executing queries, and provides support for LiveData, which allows the user interface to be automatically updated when data in the database changes.

Effective development of Android applications requires knowledge of the specifics of generating program code for working with databases. This code can automate routine tasks, such as:

- database creation;
- creation of tables and fields to it;
- creating relationships between tables;
- query processing;
- creating complex keys;
- creation of field indexing.

Based on the analysis of the process of developing Android applications, the following tasks were formed to study the tools for generating program code for working with databases:

- to study in detail the process of developing specific functions for generating programme code for interaction with databases;
- to determine which data will be dynamic and which will be static when writing programme code;
- to develop a system for automating queries to database tables that will replace writing SQL code;
- to develop a system for generating programme code for automation relations (links) between tables;
- to develop a system for generating programme code for indexing the specified fields;
- create a code generator for interacting with the database in mobile Android applications.

The user-developer has access to a graphical interface that contains several tabs:

- database creation.
- creating tables with basic features.
- creating relationships between tables.
- creating queries.
- creating tables with advanced features (setting up complex keys and field indexing).

Based on the results of the study, the following method of storing generated code:

- the code is generated into an array of bytes.
- the byte array is written to a file with the .kt extension.
- the file name and path to store it is the folder from which the user opened the graphical interface.
- after saving, the user receives a message about the successful user receives a message about the successful creation of the file, which is automatically opened in Android Studio.

Conclusions

As a result, a plugin for Android Studio, which allows you to automatically perform all of the above tasks without writing any code.

References

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