Programming Environments for Creating Mobile Applications on the Android Operating System

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INTRODUCTION

As a result of the transition of the higher education system of our country to the credit-module system, great changes have been made in this system. Decree No. PF-5953 dated March 2, 2020 of the Cabinet of Ministers of the Republic of Uzbekistan on measures to improve the system related to the organization of the educational process in higher education institutions " 2020/2021 academic year It is said that the procedure for gradually transferring the educational process to the credit-module system should be introduced in higher educational institutions of the republic starting from 2016. In this system, the percentage of hours allocated to independent work of students has been increased.

Based on this, in order to improve the quality of the educational system in higher education institutions, it is necessary to create and use modern information and communication technologies along with traditional teaching tools. To solve this problem, it will be necessary to develop software tools intended for teaching, including electronic teaching-methodical complexes. The mobile application platform for the monitoring of educational centers of the Republic allows users to choose the right educational centers from their location, to save time, to adjust the distance, to monitor their educational activities. will have.

Android operating system in the system mobile applications to create intended programming environments

In fields related to programming, this term is used a lot. The abbreviation API is derived from the initials of the words Application Programming Interface, which is translated as the program programming interface or program software interface.

WWW can be thought of as a large network of interconnected servers, where each page is stored. It is also possible to turn an ordinary laptop into a server, which ensures the operation of an entire site on the network. Local servers can act as temporary servers for developers to create sites. When www.facebook.com is written in the address bar of the browser, the necessary request is sent to the facebook server in another location. As soon as the browser receives a response from the server, it interprets ("draws") the code and displays the page to the user.

Every time a user visits a page on the network, he communicates with a server API somewhere else. The API is the main part of the server that receives requests and returns responses to them.

Many companies provide their API as a ready-made product. For example, Weather Underground sells an API to retrieve meteorological data.

The browser waits for the response in the HTML markup language to generate the entire web page. Google Calendar API si returns data in JSON or XML format.

If a request to the API is sent by the company's website server, the company's server is the client (just as the browser is the client when the user visits the site).

With the help of API, the user will be able to perform various actions without leaving the site.

Currently, most sites use multiple API services. Many tasks have ready-made solutions, in which case they offer libraries or other services to programmers. Many developers distribute parts of the application to multiple servers during the development process. These parts communicate with each other using APIs. Programs that provide additional or auxiliary functions to the main server are called microservices.

So, when a company provides an API to its users, it means that the company has created a bunch of custom URLs, which in turn only return data.

Java programming language mainly uses Spring Framework and Spring Boot to work with APIs.

A CRUD system is created according to an API. CRUD is the general name for Create, Read, Update and Delete methods. The Create method corresponds to the Post method in the API. It is used to save data to the database. The Read method corresponds to the Get method in the API and is used to read data from the database. Update is used to update data, to edit and Delete to delete.

In the Java programming language, Controller or RestController is used to create APIs. Their job is to create Beans for CRUD when the application starts. Each CRUD method is declared with its own annotation. For example @GetMapping, @PostMapping, @PutMapping, @DeleteMapping.

The class itself is annotated with @RestController or @Controller. The difference between these is that RestController is only used for issuing API, Controller can return web page and not Json value only.

The programmer working in the front-end part sends the necessary parameters to these APIs, specifying the type of the method. This request comes to the server where the program is running through internet traffic and performs its work through the methods of the Controller or RestController class that we have created and returns a value from the database. The returned response is displayed to the user in the UI section. This is the principle of operation of web applications.

Java technology is a very simple, highly secure, powerful, fully object-oriented programming language that is platform-independent. With it, you can write programs even for the smallest devices. Java technology is completely based on Java's syntax, C++. Therefore, those who know C++ can easily learn Java. But most of its features have been removed. For example: Direct work with pointers, that is, there is no concept of a separate pointer in Java. Reloading operators has also been removed. More importantly, unused memory (unreferenced objects) is automatically cleaned. This is done by Garbage Collector (GC) in Java. In C++, this is done manually through destructors.

Currently, the activities of various enterprises cannot be performed without an information system, which allows the automation of data collection and processing. A database was created to store and access data containing the required information.

The goal of any information system is to process information about the size of the real world. In a broad sense, a database is a collection of information about specific objects of the real world in any field. Under the subject area, it is common for the real world (Enterprise or University) to be studied to organize control and automation.

The term "database" has several terms. They are not opposites, but different points of view on the same concept. Let's live in one of them:

Database - a set of data stored in computer memory and in the form of a data set that defines the general principles of their description, storage and manipulation.

The information model understands the information about the object selected and structured according to this purpose.

A data model is a way to define the types of logical structures in the database and to define and maintain the integrity of the database.

The first databases were created on the basis of file systems, and all responsibility for working with them was implemented in the software that used these databases. File databases are now deprecated. In modern database technology, database creation, its support and user access are centralized using special software tools - database management systems.

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