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DESIGNING THE PROCESS OF REMOTE EXCHANGE OF ECG DATA

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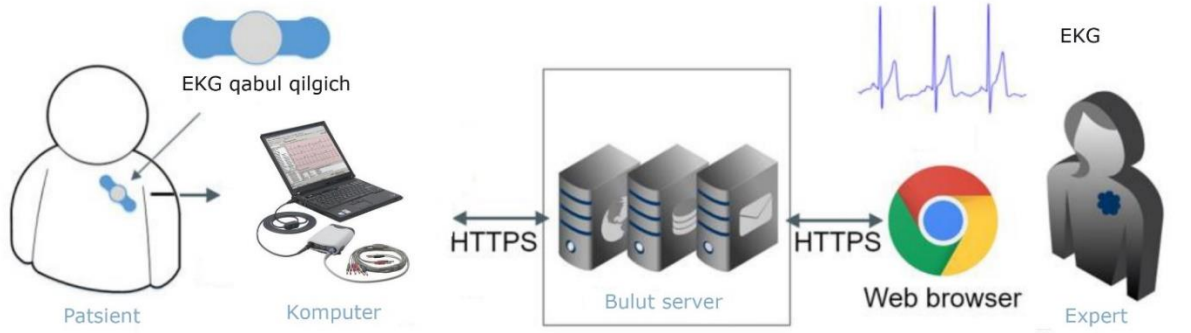
Abstract
To study the properties of cardiosignals and store the data of signals received using the AD8232 ECG module, which is considered important for signal processing, we will consider the cloud technology to ensure database and remote data exchange.

Keywords. EKG, ma'lumot baza, API, JSON, REST, SOAP.

Introduction

Cloud technology is used to design the process of remote transfer and reception of ECG data. Cloud technology is a data processing technology that provides internet users with computer resources as internet services. The word "cloud" is a metaphor that represents a complex infrastructure that hides all the technical details here. Cloud computing is a data processing technology where the user is provided with computer resources and capabilities as an Internet service[1].



2.17-rasm. architecture of the system for remote online monitoring of ECG signals from the post office.

First of all, it is necessary to consider the technology for linking EKG data to a distance i.e. server. There is an API (application programming interface) technology to perform these sequences.

API is a collection of ready-made classes, functions, procedures, structures and constants. All of this information is provided by the application itself (or operating system). However, the user doesn't have to understand that API technology provides the interaction of modules. The purpose of the provided information is to use this information to work with external applications (mobile, desktop apps)[2][3][4][5][6][7][1].

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2.18-rasm. Client API – server architecture

Various products (internet magazines, media information, etc.) are used by remote data exchange APIs to create applications that interact with each other by developers.

Generally, this mechanism is used to integrate the work of various applications into a single system.

API Functions

In the process of data exchange, elements of the API mechanism form a multi-level hierarchy. In this case, the subjugational components of the hierarchy have the same structure. Within the standard OSI (Open Systems Interconnection) network model, there are at least 7 internal layers. They are classified into applications such as HTTP (HyperText Transfer Protocol) and IMAP (Internet Message Access Protocol). Thus, the API uses the IMAP function.

One of the most important components of organizing information in the description of the APO is functionality and classroom libraries. They contain descriptions of the signature and semantics. API functions here are only part of the interface mechanism.

In this case, the signage acts as part of a common function declaration and is used to identify the element. It is offered in different programming languages in different ways. Thus, it is determined by the possibilities of restarting it.

The semantics of the function give the developer a description of his work and actions performed. Usually it includes the result of the calculation and the associated parameters. In this case, the result of the execution may include a dependence not only on the arguments, but also on the actual state.

Web APIs are especially important for webmatters and developers. Such management systems include a set of HTTP requests. As a result of receiving such requests, the module creates a clearly defined structure of HTTP responses. It is quite common for you to use XML (Extensible Markup Language) or JSON (JavaScript Object Notation) formats to transport information between them.

In fact, in this case, the Web API name will be synonymous with the web service mark. In other words, these are certain software systems that have their own interfaces. To access them specifically, web identification is used by web address. For example, the server API is used to transmit data to the server.

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Thus, in the dissertation work, the process of exchanging EKG data with the server will be implemented using the JSON-format API.

Writing EKG data from the posient to the server, i.e. to the base, has been done in the API section to accept the ECG signal digital values from the mailbox, receive and monitor it via USB to the computer, distinguish signal values, and send them to the server in JSON format.

The process of exchanging signal values with the server is a review of the API data exchange application script in JSON format.

Request entries

"{\"id_ecg_db\":1}"

A request for EKG base ID will be sent to obtain EKG entries on this JSON base. As a result, responsive entries are taken in the following view.

Respons entries

```
{{
  "records": [
    {
      "id": 1,
      "record": "1000066 ",
      "id_ecg_db": 1,
    },
  ]
}}
```

To obtain EKG base names, you will be contacted by the "get_ecg_DBName" function written to the server and the following result will be obtained.

Getting Base Names

```
{{
  "db": [
    {
      "id": 1,
      "name": "CHallenge 2011 Test Set B",
      "annotations": null,
    },
    ]
}}
```

Request EKG signal uchun

"{\"id_signal\":1}"

In this case, JSON is presented to obtain EKG values, and as a result it has the following view.

Respons EKG signal

```
{{
  "data": [
    {
      "id": 1,
      "ecg": "-0.060
-0.050
-0.050
-0.055
-0.060
-0.055
```

…",
"id_signal": 1,
}
]
}}

For Request signal types (channel)
{ "id_record": 1,}
This JSON will follow the get_ecg_SignalName function on the server and a id_record request will be sent, resulting in the ECG responsing channels. This allows you to obtain EKG data by signal type (channel).
Respons signal types (channel)

{{
"signals": [
{
"id": 1,
"signal": "I",
"id_record": 1,
},
…
]
}}

To write ekg sheets to the base over a certain period of time obtained using the device, JSON in the following view is sent and stored according to the required table fields on the base.
Request Bazaga saqlash

"{\"record_name\":\"654\",\"otvedeniya_name\":\"II\",\"ecg\":null,\"db\":\"2\"}"

Table 2.8 provides database functional protocols

Table 2.8 Database Functional Link Schedule

№	Function Name	Function
Database typing of egg data		
1	add_ecg_ad8232	Receive heart activity signals from the Ad8232 ekg module and write them to the database
Monitoring		
2	get_ecg_bdName	Returns ekg database names from database
	get_ecg_recordName	Releases information about the posients in a table called Record
	get_ecg_signalName	Ekg signal returns channel names
	get_ecg_signal	Extracts the recorded ekg signal values from the posient from the database
Analysis Process		
3	get_wavelet_func	Wavelet returns function names
	Add_ecg_wavelet	The database will be written the wavelet function sum coefficients and irreversible parameters processed in the ekg signal
View analysis results		
4	Get_wavelet_posient	Brings analysis results from the database

Summary

In many countries, they allocate significant amounts of money to carry out health research work. Sometimes, highly qualified doctors will have to travel all over the country to screen patients. This takes a lot of time in turn. In this case, monitoring patients and keeping their data in the "cloud" is very important for the doctor to know about the current state of their patients and take appropriate action. At the same time, the role of cloud technology is important. The doctor can easily check the observed data using the Internet and give appropriate instructions. This not only helps to track the data, but also gives each patient the necessary attention for recovery.

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