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«ҒЫЛЫМ ЖӘНЕ БІЛІМ – 2017»

студенттер мен жас ғалымдардың
XII Халықаралық ғылыми конференциясының
БАЯНДАМАЛАР ЖИНАҒЫ

СБОРНИК МАТЕРИАЛОВ
XII Международной научной конференции
студентов и молодых ученых
«НАУКА И ОБРАЗОВАНИЕ – 2017»

PROCEEDINGS
of the XII International Scientific Conference
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«SCIENCE AND EDUCATION - 2017»

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The proceedings are the papers of students, undergraduates, doctoral students and young researchers on topical issues of natural and technical sciences and humanities.

В сборник вошли доклады студентов, магистрантов, докторантов и молодых ученых по актуальным вопросам естественно-технических и гуманитарных наук.

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ALGORITHMS FOR DATA RECOVERY IN CASE OF DISTORTIONS IN THE CLOUD STORAGE

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Abstract

Cloud technology is a style of computing which is having dynamically scalable virtualized resources provided as a service over the Internet. This research provides brief details about the cloud computing with an overview of key features to give some idea about the new focused technology. The first phase of the research involves a considering algorithms for data recovery. The final phase involves creating client-server desktop applications where we can store our necessary files and can easily recover distorted data. The aspects explored are the skills and techniques required to identify secure way to store our materials in cloud. The findings may be useful in areas of databases, data analytics and data quality.

The research goal is to make cloud storage reliable and secure. Research has been focused on creating effective tools to improve the reliability and security of real cloud storage systems.

The aims are:

-to explore the actual already created products of cloud technology;

-to study research theme in depth using a lot of books, articles, magazines;

-to relevant theories and suggest alternatives;

-to explore different kind of files which could be recovered.

Research interests are in the areas of databases, data analytics and data quality. Current work focuses on improving the security, reliability and efficiency of cloud storage by systematically analyzing the fundamental choices available in designing and configuring them. In conclusion, we are deeply interested in the exciting possibilities of cloud computing.

Key words: cloud technology, methods, algorithms, client-server application, and database.

It is apparent that the scientific world is moving towards a more global and collaborative direction each day as well with the rest of the world. Together with the increasing amount of data grows and storage systems [1]. Using old methods to manage such systems becomes increasingly difficult, and the cost increases dramatically. Most companies use cloud technologies to store data in order to pay only for used services [2]. Cloud-computing providers offer their “services” according to different models, of which the three standard models are Infrastructure as a Service, Platform as a Service, and Software as a Service. Some cloud services shown in figure 1.

Figure 1. Cloud services

The Cloud has become a new vehicle for delivering resources such as computing and

storage to customers on demand. Examples of cloud services: Amazon Web Services and Amazon EC2, Dashlane, Google App Engine, Google Calendar, Google Docs, Microsoft OneDrive, Online backup, Oracle public cloud, OwnCloud, Windows Azure.

Cloud storage is a model of data storage in which the digital data is stored in logical pools, the physical storage spans multiple servers, and the physical environment is typically owned and managed by a hosting company [1].

Sometimes it could be distortions when we send data to the cloud due to some reasons. Disaster recovery is a complex of measures developed in case of unforeseen accidents, natural disasters, and to ensure "survival" of your system in the event of such extraordinary events. Ability to recover from disasters is limited to the frequency of the backups. In a traditional IT infrastructure, many organizations adhere to a backup strategy where a full backup into tape is done once a week, then weekly backups are stored on media that are stored outside of the building where located their data centers. Currently, in many real systems store large amounts of reliability of the stored electronic data is ensured by the introduction of triple redundancy implemented in GoogleFile, Hadoop, and many others. Triple replication, on the one hand, has as advantages the simplicity of implementation, good read speed and recovery. On the other hand, tripling the storage demands triple the overhead of hardware and software, and with the increase in the volume of data becomes a problem leading developers of digital repositories need to consider methods of error-correcting coding as an alternative [3].

Error-correcting coding reduces the redundancy of transmitted messages. Error correction codes of the message elements are connected to a specific dependency that allows when it abuses to point out errors and recover the data. Encoding is the representation of all kinds of messages of conditional combinations, which consist of a number of elementary symbols, each of which corresponds to a single message conditional combination of characters. Coding is adding to the original information verification information. By the received code combination, the receiver recovers the transmitted information. In order to detect and correct the error, it is applied the error-correcting encoding. Decoding is an operation which is carried out translation of the adopted code in the message [4].

In the research, the users send their data to save to the cloud and upload them back. The system remembers the hash function of the initial data. If this hash function matches with the downloaded from the cloud data's hash function, it is assumed that the data were not distorted. Otherwise, in the server side will be applied algorithm to recover the distorted data using error-correcting coding. Scheme of data exchange is shown in figure 2.

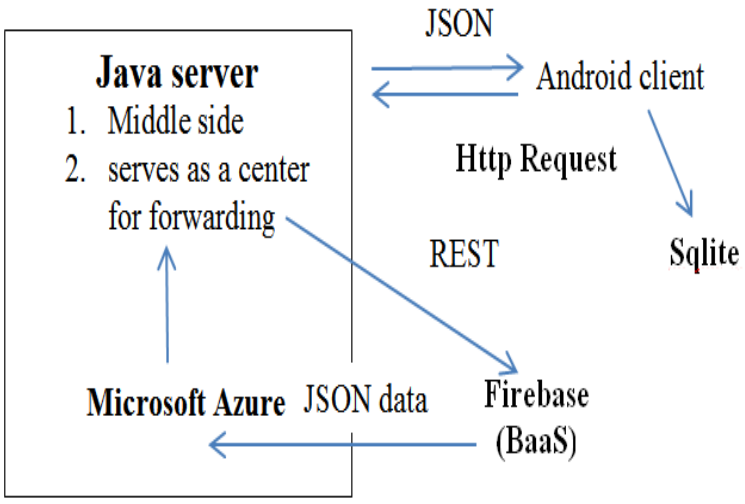

Figure 2. Scheme of data exchange

Firstly, the user should be authorized. This information is stored in Firebase authentication

page (figure 3).

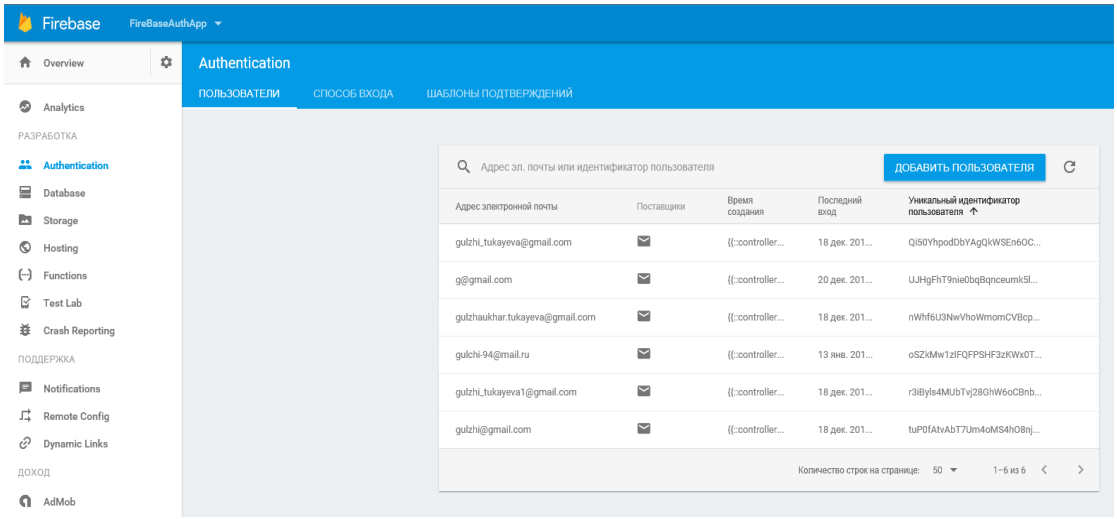

Figure 3. Authentication page

Form of uploading (figure 4) and downloading (figure 5) a file is shown.

Figure 4. Upload file

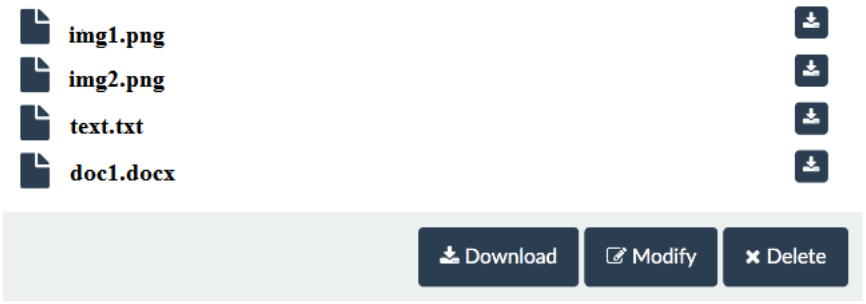

Figure 5. Download file

Conclusion

Cloud storage is a model of online storage where data is stored on multiple distributed network servers which are provided to customers. There are a lot of advantages to use cloud storage such as the ability to access data from any computer connected to the Internet, the ability of the organization to share data, the client pays only for the storage space, which actually uses, but not for a rental server, all resources which it may not be used. This research paper provided some information about the cloud computing and how to recover distorted data in cloud storage. It was created client-server desktop applications where we can store our necessary files and can easily recover distorted data.

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МОДЕЛЬНО-ОРИЕНТИРОВАННОЕ ПРОЕКТИРОВАНИЕ АЛГОРИТМОВ ВЫДЕЛЕНИЯ КОНТУРОВ С РЕАЛИЗАЦИЕЙ ДЛЯ ПЛВМ

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В данной работе рассматриваются методы обработки сигналов с целью написания алгоритма выделения контуров изображения и дельнейшей реализации для устройств программируемых логических вентильных массивов (ПЛВМ). Объектом изучения являются способы обработки и анализа цифрового изображения или видео, а предметом цифровое изображение или потоковое видео, содержащее высокие пространственные частоты. Были рассмотрены методы Робертса, Собеля, Прюитта. Указанные методы основываются ключевом свойстве цифрового сигнала – разрывности. Была спроектирована модель, с возможностью подстановки нужной реализации с помощью инструмента модельно-ориентированного проектирования на основе пакета Mathworks Simulink. В качестве реализации использованы три вышеупомянутых алгоритма. Построенная модель может быть адаптирована под другие аналогичные алгоритмы выделения контуров, а также преобразована в исполняемый на ПЛВМ код с помощью встроенного инструмента Mathworks HDL Coder.

Определение краев изображения является начальным шагом во многих приложениях компьютерного зрения. Определение краев изображения значительно уменьшает количество данных и отфильтровывает ненужную или незначительную информацию, а также дает значительную информацию в изображении. Данная информация используется в обработке изображения для определения объектов в которых есть проблемы, такие как, ложные границы, отсутствующие или и низкоконтрастные пределы, проблемы с шумами и т.д.

Одной из методик определения краев изображения считается разведка точек, в частности определение контуров изображения. Объектом предоставленного изучения является способы обработки и анализа цифрового изображения, а предметом возможно считать цифровое изображение, содержащее высочайшие пространственные частоты. В данной работе были исследованы наиболее распространенные на данный момент алгоритмы выделения контуров изображения [1].

Оператор Робертса. Данный способ делает обычные и резвые вычисления двумерного