

Abstract

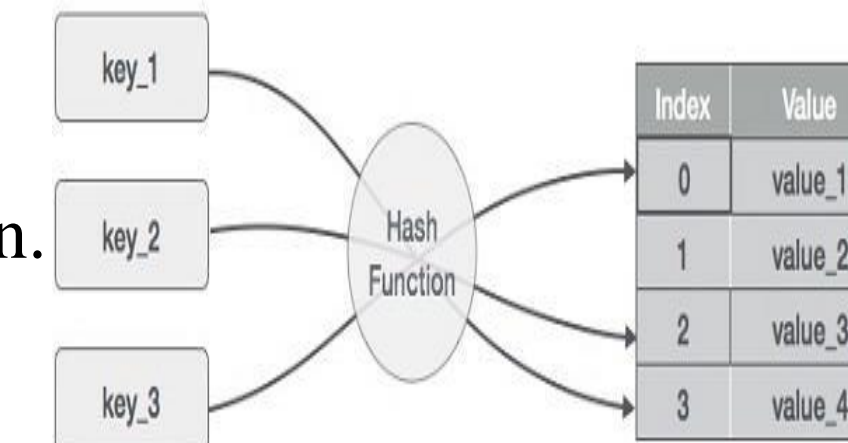
Due the lack of existence of mobile application for King Abdullah Library services, we seize the opportunity to offer a friendly interface smartphone application namely KAUlib application. KAUlib gives students, and community partners a quick access to the services and information resources provided by the King Abdullah Library without need to come in person. These services include searching for a specific book, borrowing book request, renewing books through the app (by scanning the barcode on the book), viewing the status of the book (available - not available - seconded), browsing scientific research and providing notification systems for return and renewal policies (book renewal). Since we have been provided with the database from the Deanship of Libraries at Umm Al-Qura University, we will not engage in data extraction and purification algorithms but will focus here on searching algorithms on big data..

Introduction

The importance of academic libraries in education cannot be overemphasized. Believing in the role of university libraries in supporting educational and research programs and the development of culture and knowledge, and its important role in serving the community surrounding the university, many libraries have been established in various Saudi universities including; King Abdullah University Library. However, most of these libraries comes in the form of websites. There is no doubt that mobile phones have radically reformed the way that people communicate, socialize, and facilitate work on the move in almost any place. Thus, we seize the opportunity to offer a mobile application for Umm Al-Qura university -King Abdullah Library services by developing a friendly interface smartphone application namely KAUlib application.

Methodology

- Many algorithms can be found in the literature that addressed similar tasks. However, some algorithms outperform the others. In summary, these are algorithms that we used in order to achieve our goals:
- For searching algorithm on big data, we used the hash function that search on an unordered collection of key-value pairs, where each key is unique. A hash table offers a combination of efficient lookup, insert and delete operations that takes only constant time. To take advantage of this method, we used book's call number as a search key. Hash table operations are achieved in two basic steps:
 - First, we convert a key into an integer index using a hash function.
 - Then, a new item-index- is inserted into the front of the linked list where the key-value pair record belongs.



- **Renewing book:** a borrowed book can be renewed using camera that reads the barcode or use the keyboard to enter the barcode. The numbers on the book will be compared to the numbers in the database, then the book will be renewed to another 20 days. we used the ZXing-zebra crossing - library that offers access to tested and functional barcode scanning on Android. It is a multi-format 1D/2D barcode image processing library that implemented in Java, with ports to other languages.
- ZXing focuses on built-in cameras on mobile phones being able to decode most codes directly on the device without the need of server communication.



Material

- The Android studio is the official Android IDE from Google and it is the best way to coding our application.
- PHPmyadmin software tool written in PHP, intended to handle the administration of MySQL over the Web.
- Notepad ++ will be used to write php code to connect the database to Android application



Main idea

Our project is the development of an Android application that aims to offer a perfect way for students as well as faculty, and staff to explore king Abdullah library services. KAUlib is a system that serves as an official application for UQU in which introduces the following services:

- searching for a specific book.
- Metaphor and renewal of the book by scanning the barcode .
- Book Status (Available, Not Available ,seconded) .
- Browse Scientific Research
- Add favorite books.
- keeps users informed by sending notification.

Conclusion

To best of our knowledge, despite the great services that are offered by King Abdullah library for both university staff and students, these services available only on the form of website. KAUlib application is implemented to offer the basic services provided by the King Abdullah library. It can be used by both students, and library's administrator. The proposed application presented many services include searching for a book, browsing Scientific Research, borrowing books request, renewing with a barcode, adding books to favorites, sending suggestions and comments, or viewing newly added books. Our search system was developed based on Hash-Map algorithm that is well known used for searching on big data. We also used Zxing methodology that is effective on reading barcode and retrieve the book information.

References

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