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Notifications in m-learning

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Abstract
In this project we investigate notifications in e-learning environments for mobile devices (m-learning). We describe a mechanism to implement notifications on mobile devices using Firebase Cloud Messaging (FCM), as well as an experiment with FCM.

Key words:
M-learning, Notifications, Firebase Cloud Messaging

Introduction

The globalization of communication enables the rapid dissemination of information and access to technologies to a growing amount of people anytime and anywhere. Much of this rapid dissemination of information is possible due to mobile devices like smartphones and tablets. It is very usual to see smartphone users' to check their devices just to take a quick look at application notifications, such as WhatsApp, Facebook, Messenger, among others.

In this project we investigated the notifications issue in e-learning environments for mobile devices (m-learning).

According to Allen and Seaman[1], the e-learning environments are being used more frequently over the years in institutions of higher education. They are used to offer tools as a complement to classroom activities, to provide informational content, and to make online tasks that can be conducted by students outside the classroom. In this research, we consider the dynamism that notifications of mobile devices can bring to the e-learning environments.

The objective of this research is to investigate how to perform notifications on mobile devices and apply the solution in TelEduc[2] e-learning environment.

Results and Discussion

One of the methods used to carry out notifications, in general, is called Firebase Cloud Messaging (FCM)[3]. It is a solution for cross-platform messaging, free of charge. This method was chosen to perform the notifications in TelEduc because it is free and because it offers the flexibility to work with different platforms: Android, iOS, or Web.

In this work, we show an example of the relationship of FCM with the Android platform, as illustrated in Figure 1. The mechanism of notification happens in three steps: 1. connection of the mobile device with the platform of the FCM, through the installation of an application; 2. device interaction with the database, using the FCM platform; 3. a notification of the FCM platform to the mobile device.

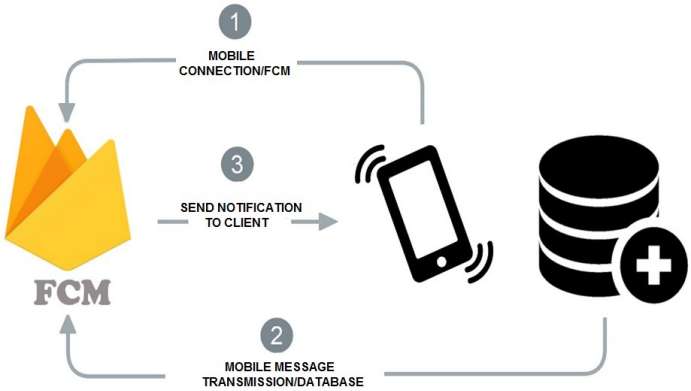

Figure 1 – Firebase with Android platform.

An experiment of this notification mechanism with the Android platform was carried out for testing purposes. The following steps were performed: create an application using the Android software studio; create a project in the console of the FCM; link to the project and the application through an identifier (ID); implement programming code provided by the website of the FCM for notification test; edit the notification template; and check whether the notification was successful. With the described steps, we can observe a notification happening in an Android phone.

Conclusions

Users' access to m-learning can be discouraged due to the difficulty in finding the news or the latest actions. So, a notification mechanism is important for the daily life of students and teachers. For this reason, we searched tor a method to include notifications mechanism in TelEduc e-learning environment. We concluded that Firebase is suitable for notifications in general and also meet the requirements necessary for TelEduc environment.

Allen, E; Seaman, J. Staying *the course – online education in the United States*, **2008**. Digital book, available at https://www.onlinelearningsurvey.com/reports/staying-the-course.pdf. Accessed in June 28th 2017.

[2] TelEduc site, available at http://teleduc.org.br/. Accessed in June 28th 2017.

[3] Firebase Cloud Messaging. https://firebase.google.com/docs/cloud-messaging/. Accessed in June 28th 2017.