

MANAGEMENT OF UNIVERSITY COURSES - UBB COURSES

Abstract

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The purpose of this thesis is to present an e-learning system built from scratch, with the applied example on “Babeş-Bolyai” University. The UBB Courses application is designed to manage videos (the recorded lectures) and academic materials (materials provided by the academic staff for each lecture).

The architectural approach was managed by delegating some operations from the application to other services, with a basic application written using the PHP programming language. The core of the application communicates with the rest of the services implied using a message broker system built on top of Redis and managed by the core. The effective data communication between services is made through REST APIs.

Thanks to this architecture, the system is scalable. This is possible due to the fact that the computational processes - actually, the most expensive processes as the necessary processing power of CPU - are sent to special services, which can run simultaneously without affecting the application’s main server (which host the core) and can preserve at the same time the data consistency. The services used are from Amazon Web Services (S3, Elastic Transcoder, SNS) and Algolia.

The novelty of this e-learning system is the architecture approach and the possibility of customizing. Compared to the classic video content platforms, UBB Courses system can be customized to the smallest level in order to fit on each of University’s needs. Also, the development perspectives are rich in bringing novelty and efficiency to academic programs.

This work is the result of my own activity. I have neither given nor received unauthorized assistance on this work.