Cloud Computing Systems

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1 Introduction

The goal of this project is to understand how services available in cloud computing platforms can be used for creating applications that are scalable, fast, and highly available

The project will consist in the design and implementation of the backend for an auction system like EBay and companion testing scripts.

The system will manage auctions. Users can create auctions and bid on open auctions. User can also pose question about the product of an auction. A question can only be answered by the user that created the auction, and there can be only one answer for each question.

2 Design

For implementing its features, our systems must support the following information:

- **Users:** information about users such as nickname, name, (hash of the) password and photo;
- **Media:** manages images and videos saved in the system
- **Auctions:** information about auctions, including for each auction a title, a description, an image, the owner (the user that created the auction), the end time of the auction (i.e. until when bid can be made), the minimum price, the winner bid for auctions that have been closed, the status of the auction (open, closed, deleted).
- **Bid:** Each bid must include the auction it belongs to, the user that made the bid and the value of the bid.
- **Questions:** auctions' questions and replies. Each question must include the auction it refers to, the user that posed the question and the text of the message.

Our system currently supports the following endpoints:

- **Users**(/rest/users): create user, update user, delete user, get user, authenticate user, get user's auctions and get user's following auctions
- **Media**(/rest/media): upload and download media
- **Auction**(/rest/auction): create auction, update auction, list auctions about to close, list recent auctions, list popular auctions, list auctions with given query
- **Bid**(/rest/auction/{id}/bid): create bid, list bids
- **Questions**(/rest/auction/{id}/question): create question and reply, list questions, list questions with given query

3 Implementation

4 Evaluation

4.1 Application deployed in West Europe, with caching

4.2 Application deployed in West Europe, without caching

4.3 Application deployed in other region other than Europe, with(out) caching

4.4 Application deployed in multiple data centers

5 Conclusions