Project Proposal - Cloud Computing

Group 1

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Project Idea

The idea of this project is a website that allows students not only to interact with one and other but to share notes and study materials for courses and upcoming exams. It is not a completely new idea but the current implementations lack a way for fellow students to interact and share not only there course notes but their experiences for being in a class together.

This web service will enable users (students in particular) to share course notes amongst themselves. The only real competitors include: Study Drive, Stu Docs and OneClass [2,3,4]. They all have a very similar model in which you can search up your University or College and you get a list of courses that they may or may not have available. OneClass also provided some extra study materials and way rewards to help when studying.[5] They are all good solution but aren't very intuitive. They lack a messaging or social interaction aspect as well a overload of information that can overwhelm students.

As a result, we aim to make this platform more social media based rather than a resource site. Students in similar classes will be able to interact and collaborate, making for a productive though fun learning environment. We decided on this aspect because many students today enjoy communicating in a more non-formal environments that social media platforms deliver. Thus, if students do not think of the platform as solely educational, they may be more interested in engaging regularly.

Impact of cloud computing

Cost

In terms of cost, since our team will utilize cloud servers, we will only have to pay for the amount of service we require. By using this scheme, there are no upfront costs to install or configure server hardware. Deployment time can be very quick with this criteria out of the equation.[1]

Quality

The quality of service will be very reliable for users and data. Cloud computing on a platform such as Amazon EC2 makes for scalable and available web services. No need to estimate and account for load balancing on servers. The cloud enables for reliable and consistently available service hosting for nearly any geographical location.

Additionally, a cloud hosting platform will make for easier data recovery in the event of a crash, rather than hosting the service manually.[2]

Security
By hosting the application on cloud servers, we can ensure that attacks that attempt to render the web services unavailable for users, can be greatly prevented.

Technologies and Architectural design

This web service will be made using a MERN stack which consists of MongoDB, Express, React and NodeJS. Although there are a plethora of technologies, a lot of which would be sufficient for this project. We are using the MERN stack over other stacks because of its ease of use and libraries that come with the node. It will make making this application is a very short of time very efficient and provide us with several tools to make the application more intuitive.

The architecture of the web service will be a simple MVC design pattern. It is the most interactive interface and it would give more room for scalability as the controller and the view do not need to be on the same cloud interface. In our scenario, we will be using the ReactJS framework for our front-end or our view , Node-Express as our controller and MongoDB as our model. This means we can split our application into multiple cloud instances giving us more flexibility and reducing our processing power usage on a single instance. Furthermore, decoupling the Model, View, and Controller enables the simultaneous development of the different parts.

Development Timeline and Project Distribution
Front-end development
Ebrahim Merchant will be mainly focusing on the front-end portion of the project with React.

Back-end development
The back-end work will be mostly handled by Emin using MongoDB and Node JS.

Devante and Sikandar will assist in both front-end and back-end development where needed. Additionally, much of the design and architecture work will be performed by these group members.

In terms of project deadlines, the final presentation and demo will take place on either April 2nd or 4th. Thus, our team has around a month and a half to divide the design, implementation, and testing phases.

Design is planned out to take one week. Implementation should require the bulk of the timeline, at about a month. Testing the functionalities of the web service should only take about a week's time.

[1] https://www.forbes.com/sites/louiscolumbus/2018/08/30/state-of-enterprise-cloud-computing-2018/
[2] https://www.salesforce.com/hub/technology/benefits-of-cloud/
[3] https://www.studocu.com/
[4] https://www.studydrive.net/
[5] https://oneclass.com