Title: A Simple Game of Connecting Web Technologies

Abstract describing the scope of your planned work:

We are proposing a game application utilizing various web services to implement its functionality. It will consist of a WebGL front end for rendering a simple game like tic-tac-toe or connect 4. It will use various web services to facilitate a lobby system, a chat system, and game manager. These web services will communicate to each other using standard data formats such as XML and JSON. The project should work in a desktop browser or in a browser on a mobile device.

The main functionality of the application described above pertains the current project scope. Additional features, such as the use of ontologies (semantic web) could be incorporated if it proves to be within scope. Also, other new technologies could be explored and incorporated in the project, in case they prove to be useful.

Motivation and Objectives

The motivation of this project is to create a web application using new technologies, mostly open source, in way to enhance each team member's knowledge in the area of web design and development.

The goal of this project is to as a team construct a simple web application using a small set of diverse web technologies that have emerged in recent times to facilitate learning of team members. With the constraint of time, team size and availability, the scale of the project will be kept small so that the core of the objective can be accomplished. Once the main objective is complete, further goals will be set and iterated upon to try to expand functionality and create new learning opportunities for the team. Since the project will be done following a Scrum methodology, it will be a good learning experience that will provide means of incorporating technologies on a regular basis, making increments on the project on every iteration (sprint), leading to improvements on the deliverable product over time.

Approach towards problem

This project is to be a game utilizing various web services to facilitate its function. As a general structure and initial plan, it will consist of a WebGL front end for rendering a simple game like tic-tac-toe or connect 4. It will also use various web services to facilitate a lobby system, a chat system, and game manager. These web services will communicate to each other using XML and JSON.

If the basic functionality proves to be within scope, the application will be expanded to provide simple phrase based chat that will use a mapping ontology to convert the phrases into the user's preferred language. Potentially an ontology of geo-location lookup based on connecting IP can be used to give

default options or pair players with other players in their region. This will be the section involving semantic web, and as previously said, it can be added as extra functionality.

Technologies utilized will be:

- WebGL for rending the front end of the application. Also use HTML5 and CSS.
- Java utilizing SpringBoot and Node.js for back-end services.
- Web services will be structured using RESTful architectural design.
- Chat will likely be done using WebSockets to ensure live updating.
- Collaboration in the development will be accomplished by the use of Git and GitHub Version Control Management System, to provide an easy way for all members to be involved in the process simultaneously, and to allow each iteration result to be easily improved upon.

Evaluation and Testing Methods

The primary piece of functionality and user story paths will be established after some exploratory learning of the desired technologies has occurred and the team has a rudimentary understanding of how to structure a product. The product will generally be evaluated using manual testing with some automated testing where the cost of automation is low.

In general Java code will be tested using the JUnit framework. A tool will be needed to be found for any JavaScript testing. A tool similar to Selenium may be used to test any web front end work.

Bibliography

Some general sites for reference in the development and testing phases:

http://scrummethodology.com/
http://www.w3schools.com/
http://www.json.org
https://nodejs.org/en/
https://developer.mozilla.org/en-US/docs/Web/API/WebGL_API
https://developer.mozilla.org/en-US/docs/Web/API/WebSockets_API
http://projects.spring.io/spring-boot/
http://junit.org/
https://git-scm.com/
https://github.com/