**Voluntr.io**

**Technology**

We will be using Ruby on Rails (RoR), a web application framework written in Ruby, to build the Voluntr.io site. The framework will greatly simplify the development process, as common tasks can often be boiled down to one Rails command. It also allows for embedded Ruby to be used directly alongside HTML and CSS, which makes including dynamic content in pages simple.

RoR uses the Model-View-Controller (MVC) architecture pattern. In very simple terms, a Rails router directs browser hits to controllers which determine how to react to the HTTP requests. The controller will interact with a model, an object which communicates with the database and represents an element of the site, to retrieve any necessary information. This information is passed to a relevant view, which will use the data in combination with HTML, CSS, and embedded Ruby to render the page and return it to the controller, which passes it back to the browser. MVC allows sites to be built in a way that is easy and familiar to developers practiced in object-oriented programming.

There are a variety of libraries available for RoR in the form of gems, which we will be managing with the RubyGems package manager. Broadly speaking, these gems will be used to speed up development and add functionality to the site without repeating work that has already been done by other developers and made freely available. Notable gems include rails, sass, pg, bootstrap-sass, and bcrypt. The CSS templates the bootstrap-sass gem includes will be used for site design if resource limits prevent the creation of custom CSS for the site. Short descriptions of all gems used in the site are available in appendix A of this document.

The group will be utilizing the Cloud9 IDE. This will avoid the often difficult task of installing and configuring Ruby on Rails and the software needed to develop with it. Cloud9 allows cloud workspaces to be created which are specifically configured for RoR development. It will also facilitate group work, as the IDE is focused on collaboration to the point that developers can communicate in its group chat while simultaneously writing code in the same file.

Version control will be accomplished with Git using a repository on GitHub. Heroku, a platform designed for Rails applications using Git version control, will be used for deployment. Since it is used by Heroku, the PostgreSQL open source database system will be used to hold user data in the deployed website while SQLite3 is used for production. While the development and deployment environments would ideally be identical, Rails allows for different gems to be used in development and deployment so this should cause no problems in the overall project.

**Object Diagram**

Object Model.png

**Appendix**

Descriptions adapted from rubygems.org and railstutorial.org

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| --- | --- |
| **Ruby Gem** | **Purpose** |
| rails | Full-stack web framework |
| puma | HTTP server for the application |
| sass-rails | Sass adapter for the Rails pipeline |
| uglifier | Compresses JavaScript files |
| coffee-rails | CoffeeScript adapter for Rails |
| jquery-rails | jQuery and jQuery-ujs driver |
| turbolinks | Adds Turbolinks 5 support |
| jbuilder | Create JSON structures |
| sqlite3 | Interface between Ruby and the SQLite3 database engine |
| byebug | Debugger |
| web-console | Debugging tool |
| listen | Create notifications for file modifications |
| spring | Speeds up console, rake, and tests |
| spring-watcher-listen | Makes spring watch files |
| rails-controller-testing | Adds testing methods |
| minitest-reporters | Extend minitest and changes appearance of reporter |
| guard | Command line tool to handle events on file system changes |
| guard-minitest | Runs tests with Minitest framework |
| pg | Interface to PostgreSQL |
| tzinfo-data | Contains time zone data |
| bootstrap-sass | Framework with CSS templates |
| bcrypt | Includes bcrypt() hash algorithm |
| faker | Assists in creating sample users |
| will\_paginate | Adds pagination capability to sections of site |
| bootstrap-will\_paginate | Configures will\_paginate to use Bootstrap styles |