ENGR3821 Network Engineering

NETENG ASSIGNMENT 1

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Disclaimer

Introduction

This report will cover the comparison and selection of a free and open-source wiki and its dependencies to fulfil a set of criteria. It will also include a set of instructions for installing and configuring both the wiki and its dependent packages on a system running Ubuntu Linux 18.04.1.

Wiki Selection

Selection Criteria

The wiki package should adhere to as many of the following mandatory requirements as possible:

- **Free (libre) and open source**
  The source code for the wiki should be publicly available and freely modifiable.
- **Plugin support**
  The wiki should be able to load additional modules to extend or introduce new functionality.
- **Simple setup**
  Setup should be a guided process with minimal interaction with configuration files or manual installation of many dependencies.
- **Media support**
  Various media types (audio, video, images) should be able to be embedded into wiki pages.
- **Administration tools**
  Administrators should be able to manage users, page editability, and other wiki functionality without modifying configuration files.
- **Change tracking/history**
  All changes to pages should be tracked and reversible.
- **Modern appearance**
  The wiki should look clean and modern for ease of use and to prevent eyebleed.
- **Last updated within 12 months**
  The wiki should not be deprecated or unmaintained.

In addition to the above, there are a few desirable yet optional features:

- **Markdown support**
  Support for editing pages in Markdown is a nice feature and would eliminate the need to learn a different markup format.
- **Web-server agnostic**
  The wiki should be able to run on most web servers for deployment flexibility.

Candidates

Several candidates were found after a brief search for free and open-source wiki packages. Below is a table summarising the compliance of each candidate with the above criteria. A description of each candidate is provided on the page following the table.

Candidate	Licence	Plugin Support	Simple setup	Media Embeds	Admin Tools	Change Tracking	Modern Appearance	Recently Updated	Markdown	Web server agnositc	Language
TWiki	GPL	Yes	No	Yes	Yes	Yes	With skin	Yes	No	Yes	Perl
MediaWiki	GPL	Yes	No	Yes	Yes	Yes	With skin	Yes	Plugin	Yes	PHP
PmWiki	GPL	Yes	No	Yes	Yes	Yes	With skin	Yes	Plugin	Yes	PHP
XWiki	LGPL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Plugin	No	Java
Wiki.js	AGPL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	JavaScript

TWiki

TWiki is a structured, enterprise-oriented wiki with a focus around software development and project management. It supports embedded applications within wiki pages as a primary feature and is free and open source, licenced under the GPL. It fulfills the majority of the criteria, such as extensions written in Perl, embeddable multimedia, administration tools, revision history (Thoeny 2019), and is actively developed (Thoeny 2018). The setup process for TWiki is partially automated, though it requires manual creation of some configuration files (TWiki Contributors 2018). It also seems to have a dated appearance, though skins are available as extensions that may bring it up to a modern standard (Thoeny 2019). Because TWiki is written in Perl as a CGI script, it is easily portable to many web servers.

MediaWiki

MediaWiki is a popular and widely-used wiki that is well known for powering Wikipedia (MediaWiki Contributors 2019a). It is free and open source under the GPL and fulfils all of the criteria bar modern appearance (MediaWiki Contributors 2019c) and simple setup (MediaWiki Contributors 2019d). Additionally it is capable of running under a variety of web servers (MediaWiki Contributors 2019e).

PmWiki

PmWiki is a simple-yet-extensible PHP-based wiki designed as a platform for building websites with integrated collaboration tools. It is licenced under the GPL and satisfies most of the required criteria, including extensive plugin support through PHP, file attachments, fine-grained administration tools, change tracking, and active maintenance (Michaud & Petko 2015). Additionally it can provide Markdown support, embeddable media, and a modern look-and-feel through a variety of plugins (PmWiki Contributors 2016). PmWiki is written in PHP and can be run under any web server that supports it.

XWiki

XWiki provides a highly-flexible wiki-based web application platform written in Java and licenced under the LGPL. It provides extensive plugin support (XWiki SAS n.d.), simple setup and configuration, embeddable media, administration tools, change tracking, a modern appearance, and an actively-developed codebase (XWiki Contributors 2019). It supports Markdown through a third-party plugin (Massol 2019). Because XWiki provides its own web server (XWiki Contributors

2019), web traffic must be routed to it directly or via a reverse proxy.

Wiki.js

Wiki.js is a modern JavaScript-based wiki geared towards beautiful and intuitive software documentation and licenced under the AGPL. It is built on top of Node.js so, like XWiki, it will require either direct traffic or a reverse proxy. Aside from this, it fulfils every other requirement without the need for additional plugins or extensions (Requarks.io 2019), including setup which is wrapped neatly within an installation script and completed via a web browser (Wiki.js Contributors 2019).

Selection

Wiki.js was chosen for the wiki as it satisfies the most mandatory requirements and is written in a familiar language. It does unfortunately provide its own web server which makes installation with an existing web server more difficult, though that can be partially resolved by routing web traffic through a reverse proxy such as HAProxy or Nginx.

Database Selection

Wiki.js supports several flavours of database server. Each will perform the same task as far as Wiki.js is concerned, so it comes down to operator preference. To help choose, a set of criteria were developed and are outlined here.

Selection Criteria and Candidates

The database server should adhere to as many of the following mandatory criteria as possible:

- **Linux-compatible**
  The database should be able to run in a Linux environment.
- **Simple to set up**
  The database should be easy and painless to install and configure.
- **Low maintenance**
  The database should require little maintenance effort to keep it in working order.

Candidates

Below is a table comparing the possible candidates that Wiki.js supports against the above criteria:

Candidate	Linux-compatible	Simple setup	Low maintenance
MySQL	Yes	No	No
MariaDB	Yes	No	No
MS SQl Server	No	No	No
PostgreSQL	Yes	No	No
SQLite	Yes	Yes	Yes

Selection

SQLite covers each of the required criteria and so it is the prime choice for the wiki database. As a side note, SQLite is totally self-contained, making databases easily portable and complete setup on a local system viable.

Setup

Disclaimer: The following setup instructions are tailored for Ubuntu Linux 18.04.1, Wiki.js 2.0.0, and SQLite 3.22. Your mileage may vary, especially on other distributions. Proceed at your own risk.

What you will need

- A web browser
- A text editor
- Web, file, and shell access to where you will be installing Wiki.js
- A few packages available through apt:
  - Node.js 10.12 or greater (`sudo apt install nodejs`)
  - SQLite 3.9 or greater (`sudo apt install sqlite3`)

NOTE-1: Wiki.js uses a local web interface as its configuration wizard. Accessing this may be challenging on remote servers where only shell access is available. If this is the case, consider setting up Wiki.js locally and copying the installation directory to the server when complete.

NOTE-2: The latest Node.js version available in Ubuntu 18.04's official repositories is 8.10, however Wiki.js requires 10.12. Use the following snippet to install the NodeSource repository:
`curl -sL https://deb.nodesource.com/setup_11.x | sudo -E bash -`
And then install Node: `sudo apt install nodejs`

Installation and Configuration

Wiki.js

1. Create a new directory for Wiki.js to be installed in (e.g. `mkdir wikijs`)
2. Download Wiki.js with: `wget https://github.com/Requarks/wiki/releases/download/2.0.0-beta.208/wiki-js.tar.gz`
3. Extract the archive with: `tar xzf wiki-js.tar.gz -C ./wikijs`, replacing `wikijs` with the directory you created in step 1
4. `cd` into the new directory
5. Create a new configuration file from the template with: `mv config.sample.yml config.yml`
6. Open config.yml with a text editor and make the following changes:
   a. *(Optional)* Change the port from 3000 to something else
   b. Under the 'db' section

    i. Set ‘type’ to ‘sqlite’
    ii. Set ‘storage’ to ‘db.sqlite’
7. Run `npm install` to install the Node dependencies
   Wiki.js is now installed, but not yet configured
8. Start the server with: `node server`
9. Open your browser and navigate to ‘localhost:<port>’, where <port> is the port you set in step 6a
   You should see the configuration wizard for Wiki.js. If not, check to see if there are any errors in the terminal. You may need to try steps 3-6 again.
10. Click ‘Start’
11. Enter the email and password you wish to use for the administrator account and click ‘Continue’
12. Wait for the installation to finalise and click ‘Continue’
13. Log in with the credentials you just set up in step 10
   Wiki.js is now installed, configured, and running. Hooray!

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