

Plugin api and plugin actions interface in OWASP Hackademic Challenges

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Short description

This project aims to develop a plugin API for the OWASP Hackademic Challenges CMS. The API will allow third party developers to use Actions, Filters and Themes to customise the system.

Background

OWASP Hackademic Challenges Project¹ is an open source project that helps anyone interested in educating and testing their knowledge on web application security. It can be used to actually attack web applications in a realistic environment that is controlled.

The project has been used widely since its creation and has been used for competitions² by Appsec Europe and according to the project web site it is also used in education.

There have been requests and suggestions from the users of the Hackademic Challenges Project to allow for the development of plugins and customisable themes. This project aims to develop such a system.

¹ https://www.owasp.org/index.php/OWASP_Hackademic_Challenges_Project

² <http://thehackernews.com/2011/04/owasp-hackademic-challenges-project.html>

Project goals

The main goal of the project is to increase the momentum through adding customizability and flexibility. This will be done by designing and implementing a plugin API such that a third party developer is able to;

- create a plugin that changes some isolated behaviour of the system
- create a theme that changes the template that displays information

Requirements

There are some requirements that must be fulfilled to be able to consider the project a success.

- An administrator must be able to enable and disable plugins
- An administrator must be able to change the active theme
- Documentation must be of such good quality that it is *easy* for a developer to develop a theme/plugin
- The system must be extendable

Plan of Action

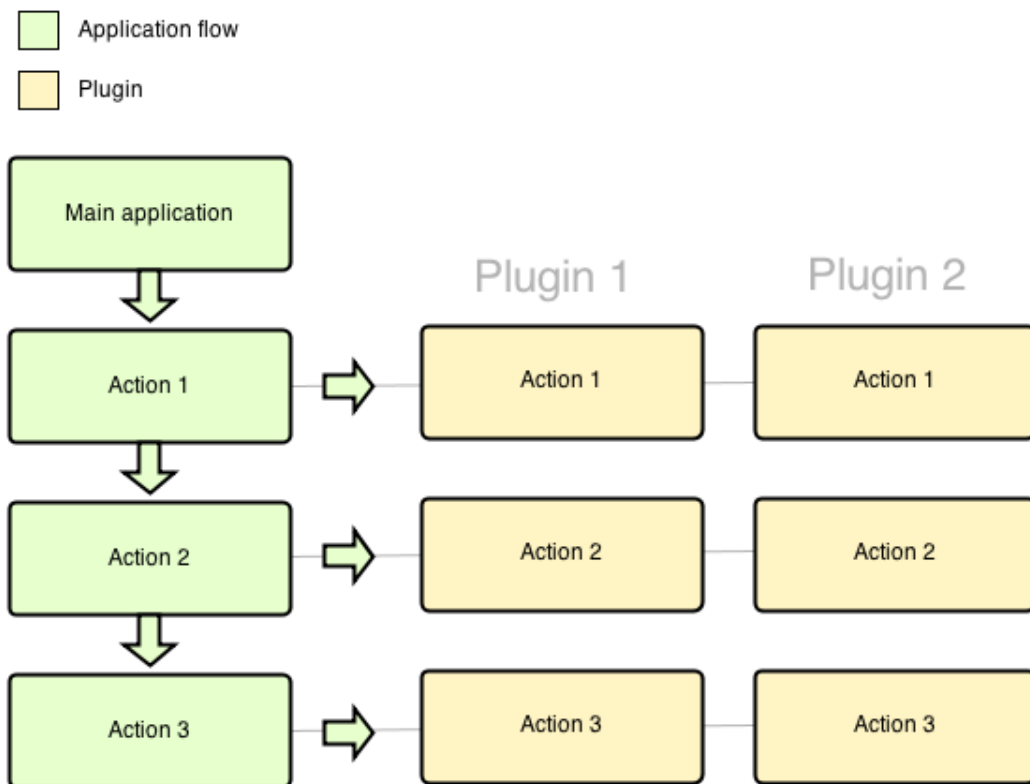
There are many ways of implementing a plugin system and a common one that is used both in Drupal³ and Wordpress⁴ is by using “hooks”, “actions” and “filters”. An action and filter based system is at the core an event driven system which allows the plugin developer to perform an action given an event or filter some data given an event.

In the diagram on the next page, the main flow of the application is shown. It also

³ <http://api.drupal.org/api/drupal/includes%21module.inc/group/hooks/7>

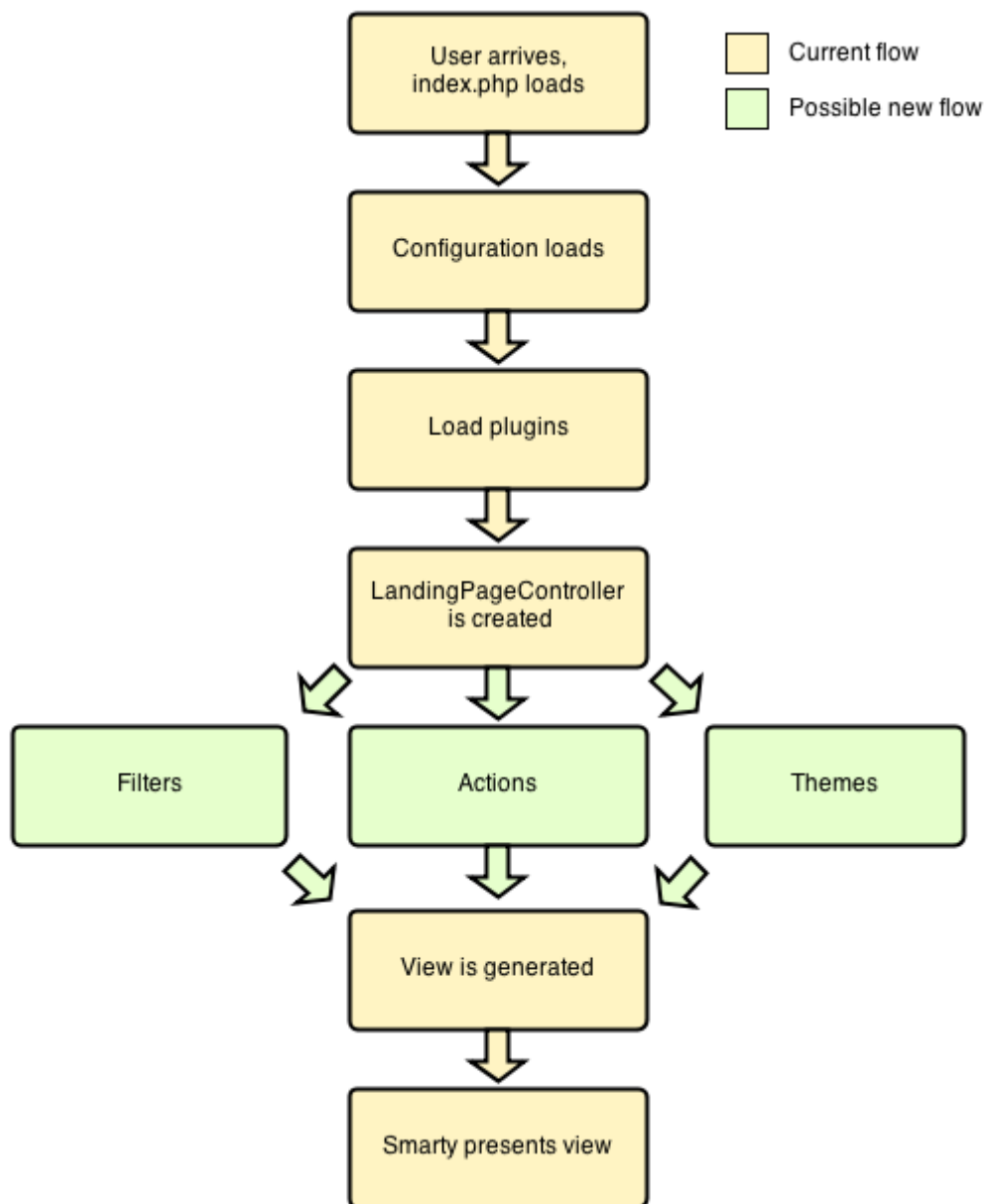
⁴ http://codex.wordpress.org/Plugin_API

shows a possibility of how the actions and filters could fit into the execution of the application on a page load.



To be able to create a plugin system and fit it into the current code base, a thorough investigation of the current source code must be performed. For the plugin system to be as powerful and flexible as possible it is critical to find the key-execution points where it is suitable to trigger the events that drives the system. To simplify future development of the system, documentation is critical. During the research phase a report should be written that provides an overview of the system and which also suggests where and when to trigger events. It should also contain a more granular plan of action for the implementation of the API.

This diagram shows an example of how the main functionality of how the application could be altered when a user is visiting the home page.



When the work has been planned and the system designed the coding can start. Depending on the conclusions of the report this phase may vary but in general the system may be implemented one action at a time starting with the most important. During development, an example plugin should also be developed to test the features of the API. Such a plugin may also serve as a good example in the documentation.

To be able to administer plugins and themes an administrator page should also be created. Although it is possible to scan folders and activate any plugin in a specific folder it is far more user friendly to allow activation and deactivation through a graphical user interface.

Timeline

I plan to spend full-time working on the project over the summer. Of course I will also be available for future development and I hope to be an active member of the community when I finish this project. Below is a basic timeline over how the project would be executed. Since documentation is critical in the development of an API, this will have focus during all phases so they are not noted.

April

Install the project and work with it, start studying the code base, get in touch with mentors and discuss ideas, write the proposal.

May-June

Dig deeper into the code, define requirements and specifications, investigate suitable places for actions and filters, design API.

June-August

Develop the API one action at a time, get regular feedback from mentors, update API design as needed.

August-September

Refine the code base, test the system for functionality and security, start final phase of documentation.

About me⁵

I am a 31 years old BSc Computer Science student that will begin studying for an MSc in Computer Systems & Networks this fall. I live in Gothenburg Sweden with my fiancée. Before I began my studies I worked as a web developer for 3 years. I continued my work as I began my studies and I also run my own company where I undertake web- and android-development projects during my spare time.

Currently I'm working on my bachelor's project which aims to develop a concept communication system for infotainment and mobile devices in the automotive industry. There are solutions available today but they are all proprietary, we hope to be able to find an open-source solution.

OWASP has a local chapter here in Gothenburg which I've been a member of for almost three years and I have a great interest in security. I've attended almost every session that's been held and it's given me much in terms of experience, knowledge and community.

My main focus as a web developer has been on developing custom Content Management Systems and later I've been working with Drupal and Wordpress a lot. I'm experienced in frontend and backend development in PHP, Java and Python. During my CS studies I've gained a perspective on software development which I was lacking as a self-learned web developer. For a more detailed overview of my knowledge about programming languages, see LinkedIn⁶.

I am the right person for this project because I have worked with CMS' for many years and I've developed many plugins and themes for both Wordpress and Drupal which use the same plugin architecture that I wish to use for this project. I

⁵ <http://danielkvist.net>

⁶ <http://se.linkedin.com/pub/daniel-kvist/17/822/67a/>

also have the experience of working alone as I run my own company and I've never missed a deadline. I am comfortable in PHP since I've been using it for almost six years for different tasks. My interest in the OWASP community with our local chapter here in Gothenburg is also very beneficial as I can discuss ideas and thoughts with its members away from the keyboard.

During the development of this project I hope to learn more about the OWASP community outside our local chapter. I also hope to learn more about system design and architecture as it is applied in a real world project.

Contact

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