Evolution and maintenance process of a system is a very important process on software engineering including web applications. This process is characterized by their huge cost. In this process, some developers are ignoring the software plan. This makes them prone to accumulating unused methods, parts of program that are not used but still exist in the program. Removing unused methods of a system helps to make understanding and maintaining the system easier.

Static code analysis technique can be used to detect the existence of unused methods. Static analysis allows us to detect undesired behaviour of a system before it is executed or even compiled. Using the technique, call graph can be formed based on transfer control between methods.

Detection of unused methods is performed on a PHP web applications that use CodeIgniter framework. To detect unused method, source code needs to be parsed into a representation called Abstract Syntax Tree (AST). Then, a call graph is constructed based on the information that contained in the AST. Every method that is not part of call graph is categorized as an unused method. This application has been tested toward 5 application written in PHP and use CodeIgniter as Framework. The results show that the application’s average precision is 0.749 and its recall is 1. This confirms that the application is able to identify unused methods.

Keyword: Abstract Syntax Tree, Call Graph, CodeIgniter, PHP, Plugin Eclipse, Unused Method.