Session 6

JavaScript Minification

Objectives

By the end of this session, students will learn to:

- Explain what JavaScript minification is
- Explain how JavaScript minification process works
- List the benefits of JavaScript minification
- Explain the online tools available for JavaScript minification process
- Explain in detail how Google Closure Compiler tool for JavaScript minification works

JavaScript Minification

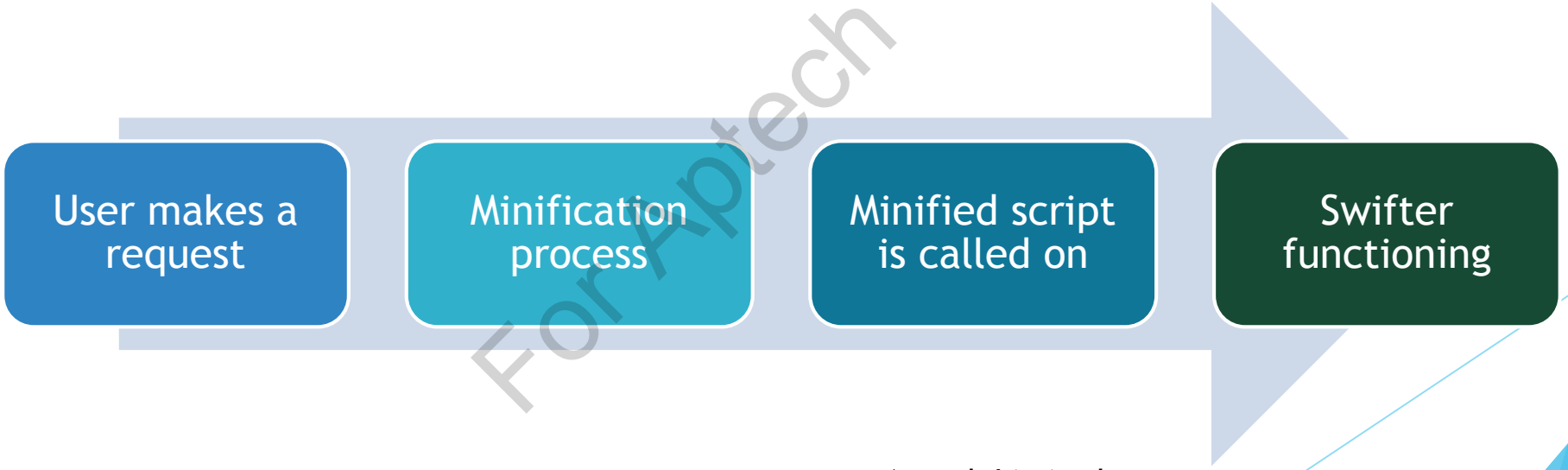
- JavaScript minification is a process to optimize the JavaScript code by removing unwanted characters, data, and blank spaces without affecting its functionality.
- The process:

How Minification Works?

- Minification is carried out through tools available on the Web.
- To minify, the tools:
  - Analyze the inputted script.
  - Remove any redundant text such as comments, blanks spaces, and lengthy variables.
  - Reduce file size.
- The minification process is done at the server side.
- CSS and other components can also be minified.

Step-by-Step Minification Process

- There are multiple techniques available to minify the code.
- The minified script is harder to read than a normal script is.
- The minification process happens at the Web server side in the steps:



Advantages of JavaScript Minification

- Reduction in file download time
- Reduction in script execution
- Bandwidth consumption of Websites reduced
- Reduction in HTTP requests to the web server and server load
- Performance of Websites enhanced
- Reduced bandwidth, which is most beneficial for large ecommerce platforms and social Websites

JavaScript Minification Tools 1-2

Many online tools are available for minifying JavaScript code.

YUI Compressor	• Is a command line tool • Minifies both JavaScript and CSS • Delivers over 20% of HTTP compression, which is 10 percent better than other minification tools
JSCompress	• Is an online compression tool • Minifies the files up to 80% of their original size • Enables to merge and compress many JavaScript files
JSMin	• Removes redundant comments and whitespaces • Enables file to be reduced to half the original size
Packer	• Creates minified version of code • Provides a minified output that can be used in Web pages

JavaScript Minification Tools 2-2

Dojo ShrinkSafe	• Uses the Rhino library to resolve the JavaScript code • Does modify public variable or API in the script • Compressed version can be directly used in the Web page
AjaxminiUI	• Minifies all the JavaScript files in a folder and nested folders • Analyzes the code productivity and displays in a productive directory
JavaScript Optimizer (JSO)	• Minify code, administer JavaScript, and CSS source • Optimize the cache and combining JavaScript files
DigitalOverload Tool	• Most commonly used tool
Gulp Tool	• Command-line minification tool that uses UglifyJS compressor • Uses API called Tree Walker for parsing • Tool efficiently performs complicated tasks

Minifying Using Google Closure Compiler

Google Closure Compiler:

- Is a robust JavaScript minification tool
- Reduces the JavaScript code
- Verifies the syntax, provides suggestion, and notifies drawbacks

Steps to Process with Closure Compiler

Step1	• Save the JavaScript code in a file
Step 2	• Upload the file in a web server
Step 3	• Compose a Post request to Closure Compiler service after substituting **js_code** parameter with a **code_url** parameter
Step 4	• The URL of the file came be obtained from the webserver. The same must be the value of **code_url**

Benefits of Closure Compiler

Productivity

- Reduced file size and faster loading of a Web page

Competent

- Enhanced performance of a Web page

Code Inspection

- Added feature of giving warnings for the use of notations from other programming languages and potential error prone operations

Maintenance

- Increased assistance in producing JavaScript code that has less errors and is easy to maintain

Closure Compiler Service API 1-2

- Closure Compiler Service UI – Closure Compiler API can be accessed from **http://closure-compiler.appspot.com**
- **Communicating with Closure Compiler Service API:**
  - Helps to employ the compiler service via a HTML form in a Web page.
  - Can be communicated using the HTTP POST method in the form.

Closure Compiler Service API 2-2

Parameter	Functions	Additional Information
js_code or code_url	Informs JavaScript what needs to be compiled	• The js_code parameter needs to be a string. • The code_url parameter needs to carry URL of a JavaScript .js file, which would be available via HTTP.
compilation_level	Three compilation levels possible to define degree of compression and optimization required	• SIMPLE_OPTIMIZATIONS • WHITESPACE_ONLY • ADVANCED_OPTIMIZATIONS
output_info	Signifies the kind of information being called	Outputs can be of four kinds: • compiled_code • warnings • errors • statistics
compiled_code	Instructs the Closure Compiler service to provide a compressed version of the JavaScript code.	
output_format	Informs the compiler about output file format.	Output formats can be of three kinds, that is, text, xml, or JSON. Default value is text.

Session Summary

- The process of eliminating all the unnecessary characters from JavaScript code is called ‘minification’.
- The minification process involves analyzing and then, rewriting the text-based aspects of the Website to shrink the file size.
- The Web server deploys the minified file as it responds to the request from the user.
- There are few tools available for minifying JavaScript.
- HTTP compression is one of the secondary strategies employed to improve the script’s performance.
- The most used tools to minify JavaScript are the Dojo compressor, JSMin, and Packer.
- Google Closure Compiler compiles JavaScript, assesses it, and eliminates the dull code. It also, modifies badly written codes and fades out the leftovers.
- When the compilation level of WHITESPACE_ONLY is put to use only the whitespaces and comments are removed. However, SIMPLE_OPTIMIZATIONS compression level is capable of achieving far better compression.