

# Effects of Data Compression on Static Website Load Times

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**Abstract**— Static website development involves creating a web page that is delivered to the user exactly as stored, in contrast to dynamic web pages which are generated on the fly using a CMS or database to input content into a template when the page is requested by the user. Data compression of the code and media files related to the website, along with some other best practices suggested by this paper can impact the size of the website files required to be downloaded by a viewer and hence impact perceived load time.

**Key words:** Data Compression, Static Website Load Times

## I. INTRODUCTION

The following techniques were identified in order to minimise the size of the code base and media files. A test website was created in order to test the impact of the processes.

S.No	Type	File Size	Compressed Size	% improvement
1	CSS	37,979 bytes	23,193 bytes	38.11%
2	JS	1,603 bytes	1,244 bytes	22.39%
3	Image Assets	2,61,41,109 bytes	2,04,02,728 bytes	8.08%

Fig. 1:

### A. Minification

Minification is the process of removing all unnecessary characters from source code without changing its functionality. HTML, CSS & Javascript all ignore certain text elements like white space characters, new line characters, comments, and sometimes block delimiters. While these are necessary to maintain code readability, they are not required for it to execute and can be omitted from the files served to the user.

In order to maintain code readability and maintainability, many development environments maintain a development version of the files optimised for readability, and a production version that is minified and optimised for smaller size and load times.

#### 1) CSS Minification

- Remove comments
- Remove whitespace
- Includes small static files into the minified file (base64-encoded)
- Shorten hexadecimal color codes
- Shorten zero values (e.g. -0px to 0)

#### 2) Javascript Minification

- Remove comments
- Remove whitespace
- Replace array['key'] by array.key Replace true and false by !0 and !1

### B. Image Compression

Media files are typically the largest part of any website. This can include logos, icons, photographs, etc. The formats used on the web include .jpg, .png, .gif and .svg. Image compression can be lossy or lossless, and this largely depends on the encoding and formats used.

We can, however, further compress image files by removing private EXIF metadata from digital cameras, embedded thumbnails, comments, and unnecessary color profiles. This can reduce file size by about 10% on most images, and up to 50% in some cases.

A developer may run a onetime compression algorithm on the website files to compress them before uploading to the server, or may create a toolchain that automatically minifies code and assets before deployment.

## II. CONCLUSION

Static websites can be made significantly faster with no change to the experience for the end user simply by using compression on the code and media files.

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