**Exercise 2**

Frameworks and libraries

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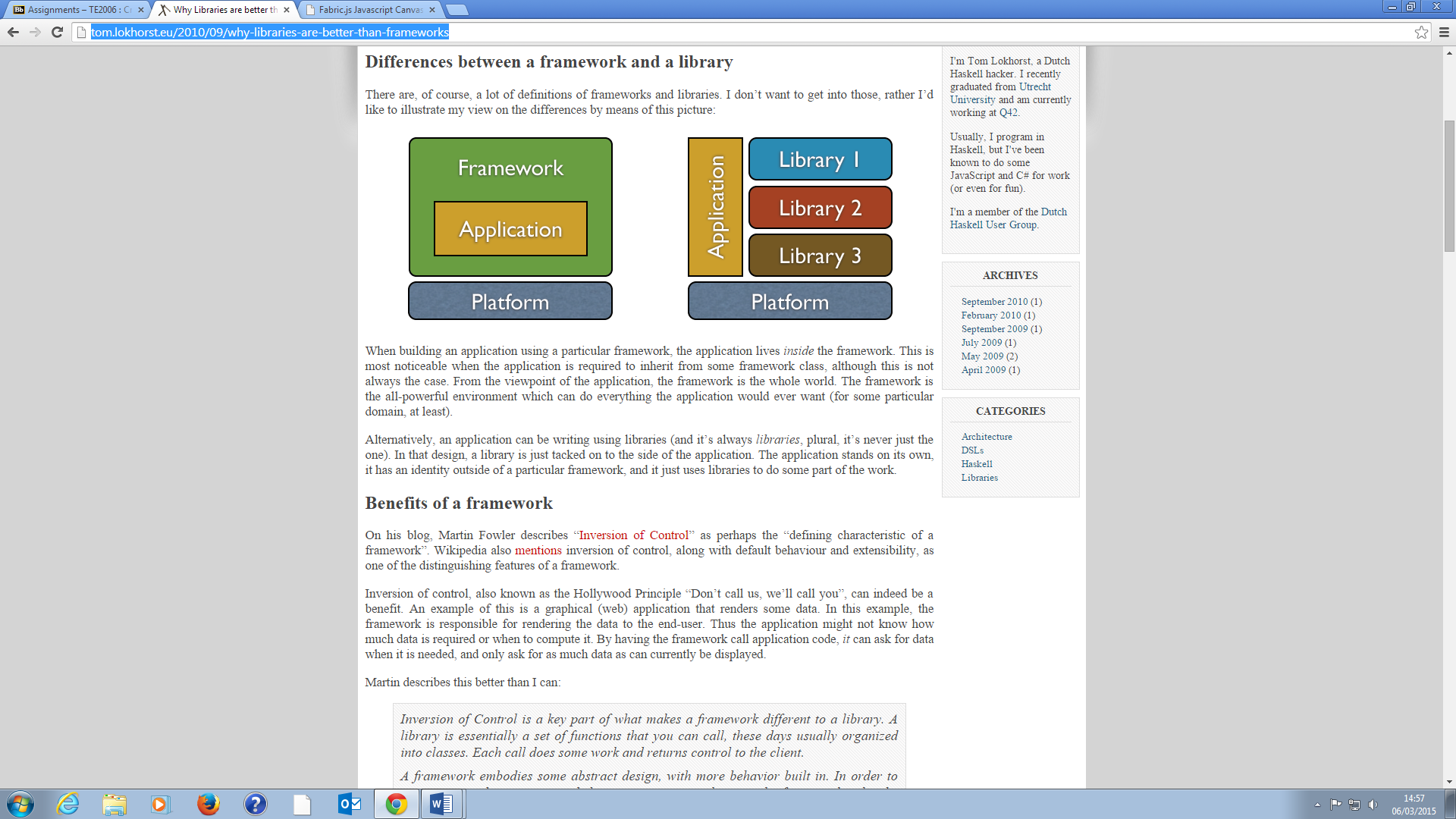
# **Introduction**

HTML5 is a mark-up language that is mostly used by web developers and designers in order to structure and present content on web pages in an effective and dynamic way. It includes an element known as canvas which uses JavaScript in order to create a lot of exciting content such as animations and games. The canvas element makes it very easy for designers to convert a boring web page to something a lot more interesting. However, in the real world dynamic content is difficult to implement and there is never much time to create these functions from scratch hence, designers often use JavaScript frameworks and/or libraries to speed up the process and attain an effective and professional piece of work.

# **About Frameworks and Libraries**

JavaScript libraries and frameworks are difficult to distinguish as they are very similar to each other and perform the same job. The subtle difference is that a JavaScript library is a collection of pre written JavaScript that makes it easier to develop web applications. An example of a most commonly used JavaScript library is jQuery. It is widely used by even the biggest companies such as Google and Microsoft as it helps to get the job done with very little coding of JavaScript. Libraries uses DOM (Document Object Model) /API’s which helps to perform tasks faster and more efficiently as you can simply select the name of an object and call it with only a few lines of code.

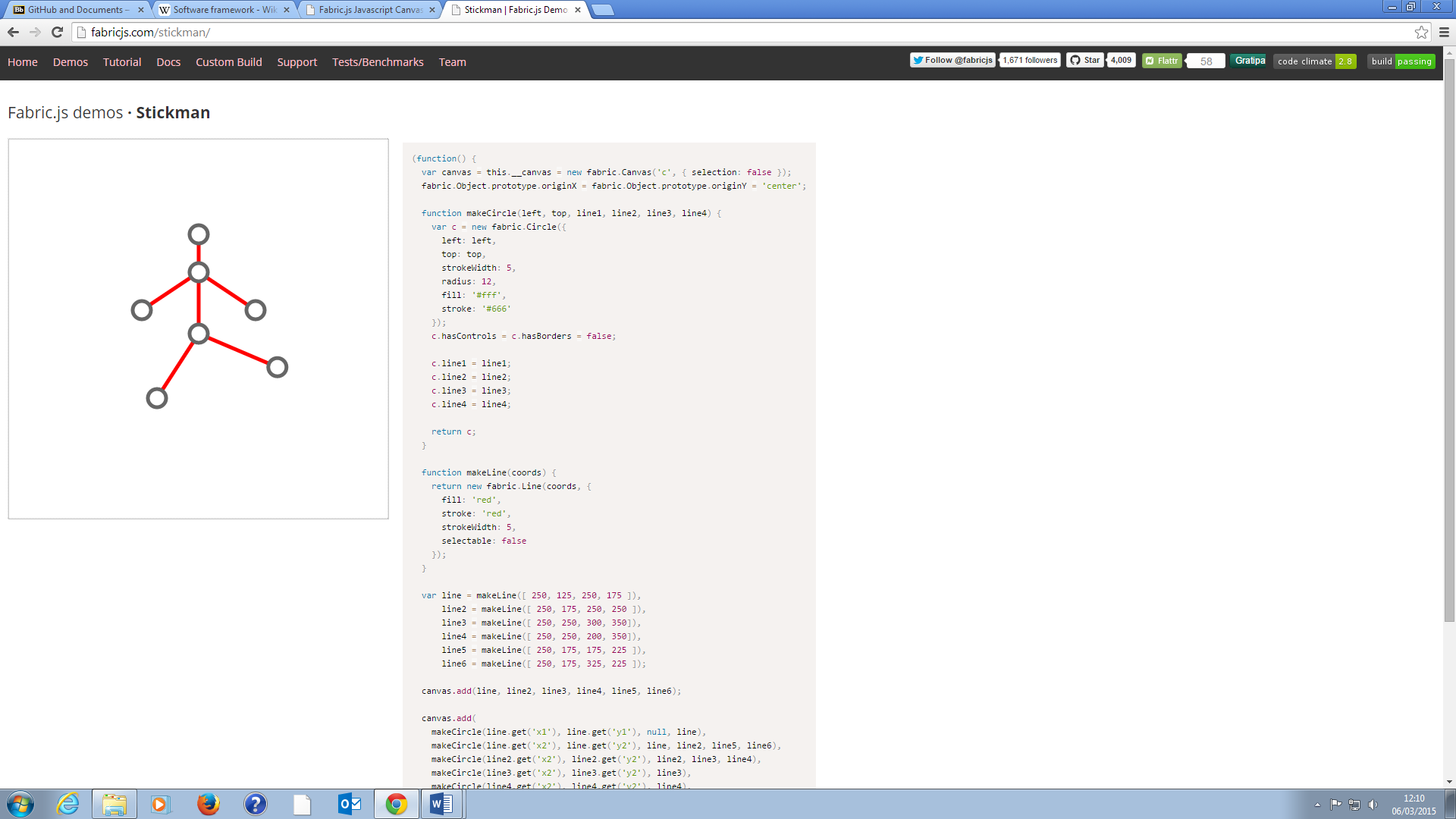
On the other hand, a framework is said to be more complex and is referred as a whole collection package which includes all the different components from tool sets to support programmes to help programmers accomplish a certain task. They provide the basic structure of a web page or application which the user may alter to fit their own functionality. Moreover, frameworks include a few key features such as inversion of control which is used to control the flow of user interaction. Also, frameworks are not always directly modifiable – they include fixed code that cannot be altered however, they may include custom stylesheets which users can use to control their own functions.

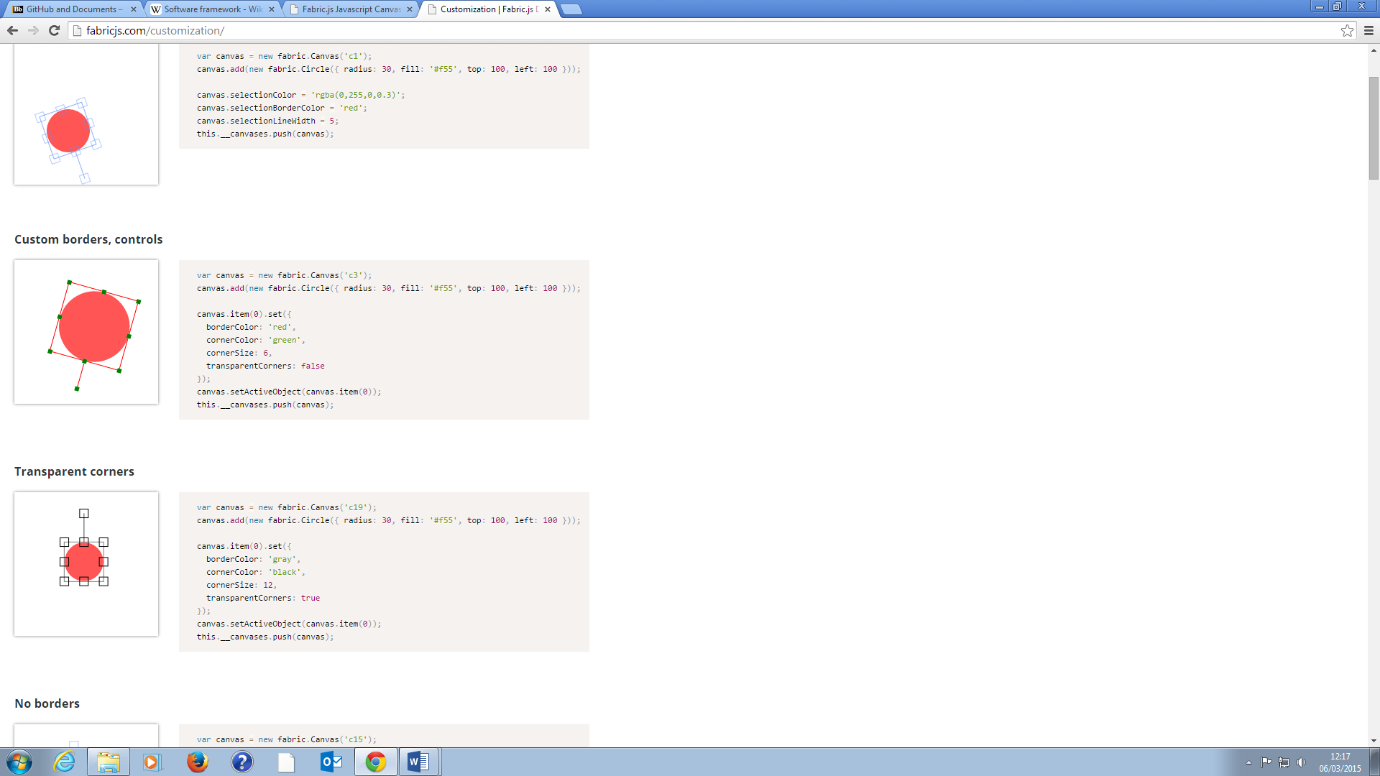


Below is an example of DOM selectors used by frameworks and libraries. These are shortcuts which help to easily call the different elements.

# **Types of Frameworks/Libraries**

As web technology is increasing, there are a range of different frameworks/libraries that are made available for developers to use to help create interesting content each time. Different framework packages may provide different controls and functions where some are more advanced than others. Here, I will be analysing frameworks and libraries that are used in HTML5 Canvas to create, design and manage graphics and other media such as audio and video.

A popular application known as Fabric.js is a powerful JavaScript library used in HTML5 Canvas to produce some powerful drawings/objects as well as complex shapes. It includes a range of different canvas elements such as animation, shadows, sketches, manipulating shapes, customization etc. Unlike some API’s Fabric provides the opportunity to work on individual objects rather than the whole canvas known as the context.

Furthermore, Fabric has been created and put together by a team of web developers in around 2008. They are passionate towards web applications and decided to take their knowledge towards JavaScript and build something fun and useful to help make working with canvas easier and more enjoyable.

They blog about Fabric and help users with bug fixes and other issues. Currently, the team is working to introduce newer and better features in the library so users can explore even more ideas.

Also, Fabric is currently being used by a number of web applications including, websites, apps and games. Few examples of such applications are:

* **Foto Cover**
* **Scroll kit**
* **Falsy Values Tetris**
* **Roll20**
* **Arcade Volleyball**

Fabric is highly praised for its ability to allow manipulating objects, performing flexible animations and using free drawing tools. Those who have experience working with such libraries will not take too long to adapt with Fabric but even those who have never used Fabric before would not take too long to learn it as it provides useful tutorials and demos on how to use it and what to do with it.

I feel that in order to use Fabric to aid a client project, it would take quite some time as the library provides a vast number of features and functions – offering so many different ideas and methods to create interesting interactive content. Therefore, it could be difficult to choose which one suits best towards the project you are working on and in order to decide that you would have to try out and test all the features it has to offer which would take quite some time.

Also, as stated above due to its complex/advanced functions it would take developers a little longer to understand and implement certain features and the fact that they will not be using every element will mean that they will have unnecessary large code files. Although Fabric provides a range of different elements, there are some features is still does not support such as sprite animation and 3D objects.

To conclude, there are not major differences between frameworks and libraries and programmers often refer to them as the same thing. They are becoming more and more popular and are known to be the building blocks of web applications with each having its own advantages and disadvantages.

As already stated above, large companies including Google and Microsoft uses frameworks/libraries to help create an easy and simple experience for users as well as the company itself as they save time on development. Also as part of a living, a lot of people build such libraries and/or frameworks from scratch to be used by other programmers to ease their web development process.

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