Bachelor's thesis

Degree programme: Information Technology

Specialisation: Internet Technology

2015

Mahamad Qaium Shah

RESPONSIVE WEB DEVELOPMENT USING THE TWITTER BOOTSTRAP FRAMEWORK

TURUN AMMATTIKORKEAKOULU
TURKU UNIVERSITY OF APPLIED SCIENCES

BACHELOR´S THESIS | ABSTRACT
TURKU UNIVERSITY OF APPLIED SCIENCES

Information Technology | Internet Technology

2015| 42 pages

Instructor: Patric Granholm

Mahamad Qaium Shah

RESPONSIVE WEB DEVELOPMENT USING THE TWITTER BOOTSTRAP FRAMEWORK

With the evolving era of new technology, different computing platform like mobiles, computers and smart televisions are manufactured and flourish everyday these days. Small and large businesses around the world are shifting online where they can be easily Accessed: via the internet. Websites, also called web pages, are the medium connecting them to the internet which can be viewed through web browsers like Internet Explorer on various platforms. The layout and appearence of a webpage varies according to the devices it is displayed on and this behavior of webpage display is called Responsive website.

Twitter Bootstrap is a popular HTML, CSS and Javascript front-end framework which is designed and built to develop responsive websites. The aim of this thesis is to implement Boostrap in a dynamic website thus resulting in responsive behavior on various computing platforms.

To achieve this goal, the thesis describes the complete method of making a website named Neidofatty using HTML, CSS, PHP, JavaScript and MySQLi database where the Twitter bootstrap framework is used for its responsiveness.

KEYWORDS:

Internet Explorer, responsive website, Twitter Bootstrap, HTML, CSS, PHP, JavaScript, MySQLi database, computing platform

CONTENTS

APPENDICES

PICTURES

FIGURES

TABLES

LIST OF ABBREVIATIONS (OR) SYMBOLS

HTML	HyperText Markup Language
CSS	Cascade Style Sheet
W3C	World Wide Web Consortium
DOM	Document Object Model
PHP	PHP: Hypertext Preprocessor
MIT	Massachusetts Institute of Technology
SQL	Structured Query Language
RDBMS	Relational Database Management System
WAMP	Windows, Apache, MySQL and PHP
DBMS	Database Management System
API	Application Programming Interface
PDO	PHP Data Objects
CRUD	Create Remove Update Delete
CDN	Content Delivery Network
IE	Internet Explorer
Doctype	Document Type Declaration
SVG	Scable Vector Graphics
JSON	JavaScript Object Notation
SASS	Syntactically Awesome Stylesheets

1 INTRODUCTION

Twitter Bootstrap is a popular front-end framework that offers assistance in a faster and easier way of developing web applications. It provides HTML and CSS based design templates with interface components such as tables, forms, buttons, typography, dropdowns, navigations and many other features. Twitter Bootstrap also contains JavaScript tools as well as in-built jQuery support. It can be used by both beginner and advanced web developers or designers. The greastest advantage of using Twitter Bootstrap is that it comes together with a free set of tools for creating flexible and responsive web layouts (Tutorialrepublic.com, 2015a).

To illustrate the implementation of Bootstrap for the creation of responsive behavior, NeidoFatty, a dynamic website was designed and developed. Here, a dynamic website refers to the webpages built using server side scripts like PHP and MySQL which are controlled by an application server, a WAMP server, providing an Apache server, a MySQL database server and PHP scripting language. This website was designed to provide entertaining and humorous pictures and was developed to display a user-friendly responsive website using a set of other different tools described briefly later in this thesis.

The thesis focuses mainly on how Twitter Bootstrap can be introduced and implemented in order to build a responsive website, which acts simultaneously in its layouts and appearance according to the devices it is displayed on. Further out in the thesis, a more detailed research has been conducted on various computing platforms, their screen sizes and different web browsers. Apart from this, this thesis also compares different responsive CSS frameworks with their features on multiple devices and their compatibilities on various web browsers.

2 DEVELOPMENT TOOLS

There is a vast selection of open source developing tools available for building a dynamic website. However, for the purpose of this thesis, the tools have been narrowed down only to those necessary for the development of this project. Therefore, this section of the thesis introduces and further describes all the tools and technology implemented into the project at hand.

2.1 HTML5

HTML5 is the fifth revision of HTML (Hyper Text Markup Language) standard released in 2011 by World Wide Web Consortium (W3C). It is also supported by most of the major web browsers (Chrome, IE, Firefox, Opera, Safari) nowadays. It offers several new features which provide not only rich media support, but also enhance support for web applications that can interact with the users, their local data, and servers, more easily and effectively than was possible previously (Mozilla Developer Network, 2015a). The new markup language was developed based on the following pre-set standards:

- New features should be based on HTML, CSS, DOM and JavaScript.
- The need for external plugins (like Flash) needs to be reduced.
- Error handling should be easier than in the previous versions.
- Scripting has to be replaced by more markup.
- HTML5 should be device-independent.
- The development process should be visible to the public.
  (1stWebDesigner, 2013)

Most of the front end framework uses HTML and HTML5 Markup language. Generally, static websites can be only created using HTML5.

2.2 CSS3

CSS or Cascade Style Sheet is the key file that styles or designs all the HTML modules in a website. It allows the user to separate the website's HTML content from its style (Cssbasics.com, 2015). CSS2 was designed by W3C in 1998 and

later further improved in 2011. CSS3 is the latest version released by W3C, which is still in the process of additional development. It is separated into “modules” for easier and faster modification of individual specifications. Some new modules added to CSS3 include the following:

- Selectors
- Colors and Backgrounds
- Text effects
- Box model
- Animations
- Replaced content
- 2D/3D Transformations
- User Interface
- Multiple column Layout
- Paged Media

2.3 PHP

PHP is a recursive acronym for PHP: Hypertext Preprocessor which is widely-used as an open source server side scripting language. It was originally created by Rasmus Lerdorf in 1994 and now is being produced by The PHP Group (Php.net, 2015a). PHP is executed in the server and embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites (Tutorialspoint.com, 2015a). After the PHP code has been interpreted and executed in the server, it returns to the browser in plain HTML format, which gives no information to the client about the used PHP in the codes. It is compatible with almost all servers available on the market and runs on various computing platforms.

2.4 JavaScript

JavaScript is a popular and commonly used object-oriented dynamic scripting language for dynamic interactivity on websites which was developed by Netscape Communication Corporation in 1996 (Mozilla Developer Network,

2015b). JavaScript also has an extensive application in the creating of interactive websites since it is supported by all the browsers and works collectively with HTML. Its main features are types and operators, core objects, and methods. Its syntax originates from the Java and C languages, hence many structures from these languages also apply to JavaScript. One of the key differences is that JavaScript does not contain classes; instead, the class functionality is accomplished through object prototypes. The other main difference is that the functions are objects, thus the functions are provided with the ability to hold executable code and they can be passed around like any other object. (Mozilla Developer Network, 2015c.)

2.5 jQuery

jQuery is a cross-platform JavaScript library. It is designed to facilitate the use of JavaScript on the client-side scripting of HTML. It is a free and open-source programming language licensed under the MIT license. jQuery's syntax makes it easier to navigate a document, select DOM elements, create animations, handle events and develop Ajax applications (jquery.org, 2015). In this project, jQuery is used alongside with the JavaScript as part of the flexible user interface.

2.6 MySQLi

MySQL is an open source SQL (Structured Query Language) relational database management system (RDBMS) which is being developed, distributed and supported by Oracle Corporation. Similarly, MySQL server is the server used to manage data stored in a computer's database, thus in this project a WAMP server is used in which MySQL handles the database components. There are three MySQL major application programming interface (API) options which provide connectors to a variety of programming languages, including PHP:

- PHP's MySQL extension
- PHP's MySQLi extension
- PHP Data Objects (PDO)
  (Php.net, 2015b)

Each of these extensions has its own advantage and disadvantage. Firstly, the MySQL extension serves the purpose of developing PHP applications that interact with interface. Next, the MySQLi extension, also known as MySQL improved extension, has been developed in order to take advantage of the new features found in MySQL systems versions 4.1.3 and later (Php.net, 2015c) and it is included in PHP version 5 and later. The MySQLi extension is object-oriented; provides support for prepared statements, multiple statements and transactions; offers enhanced debugging capabilities; and possesses embedded server support. Being an object-oriented interface, the MySQLi extension also provides a procedural interface. Finally, PDO is a database abstraction layer especially created for PHP applications. Its main disadvantage is that it does not allow all the advanced features available in the latest versions of MySQL server (Php.net, 2015d). Thus, the MySQLi extension is used in this project as the API for MySQL server.

2.7 Text Editor

There are many available text editors found online which support multiple programming languages, such as PHP, C++, HTML, CSS and others. For web development, text editors such Adobe Dreamweaver, Notepad, Notepad++, Sublime text, Bluefish and many others can be used. Some of these text editors are free to use, meanwhile, others are purchasable from their official sites. In this project, Sublime text 2 editor is utilized.

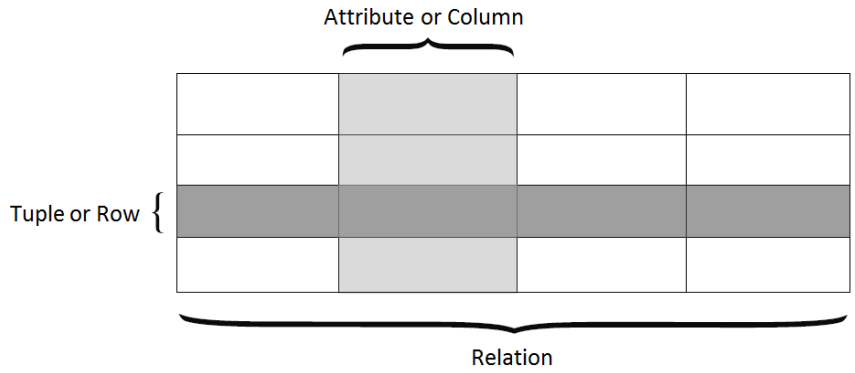
2.8 WAMP server

The WAMP server, an acronym for Windows, Apache, MySQL and PHP, is an open source application designed to install Apache, PHP and MySQL packages into Windows operating systems, which are commonly used in web server

environments. The WAMP server installation is easy and once it is installed it can start functioning right away without any additional adjustments. A WAMP server is used in this project in order to build and test the responsive website locally. In other words, the WAMP server utilizes phpMyAdmin which is a free software tool written in PHP for handling the administration of MySQL over the world wide web; an Apache server is used as the web server; MySQL is used for handling the database components; and PHP, Python or PERL (Webopedia.com, 2015) are used as the dynamic scripting languages.

3 DATABASE DESIGN

A well designed database is the key feature for a well structured dynamic web development. An organized and shared collection of data is called database (Merriam-webster.com, 2015) whereas, database design is the process of producing a detailed data model of a database (Wikipedia, 2015a). Similarly, designing a database requires a clear understanding of the project function requirements ensuring that information can be delivered consistently, eliminating data redundancy and preserving the existed data while removing unwanted data.



Picture 1. Database table with Rows and Columns

Database Management System (DBMS) is a software applications which interact with the user, other applications and the database itself to capture and analyze data (Gehani, 2006). It is classified according to the database model that determines the logical structure of the database and the manner data can be stored, organized and manipulated. The relational model is the most popular database model that uses a table-based format and can organize data into one or many tables (relations) of rows and columns (Ntu.edu.sg, 2015) as shown in Picture 1 above, providing a unique key for each row. A database based on this model is known as a relational database.

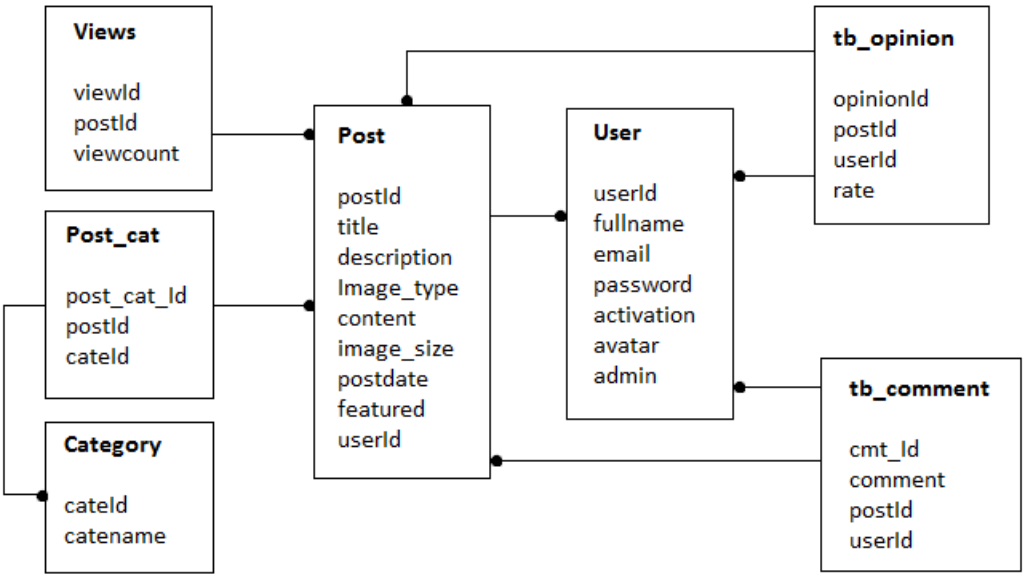
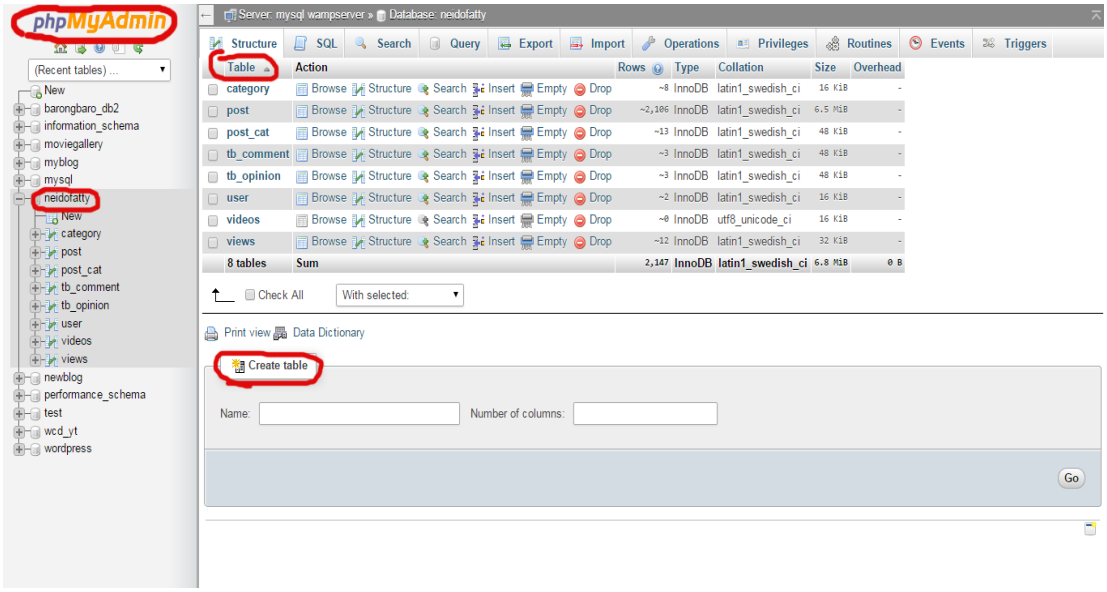


Figure 1. Relational view of Neidofatty database

The above relational database as shown in Figure 1, is used in the Neidofatty project with primary keys representing each table. Each primary key of the individual table is the foreign key of the other table, thus, resulting in a relational model for the database. For example, table *Post* has *postId* as a primary key whereas *postId* in table *Views* acts as a foreign key for the table *Views*. These tables can be modified using standard SQL statements or directly from the phpMyAdmin provided by the WAMP server. The modification process is termed as CRUD operation (Create, Read, Update, Delete) in a relational database application.

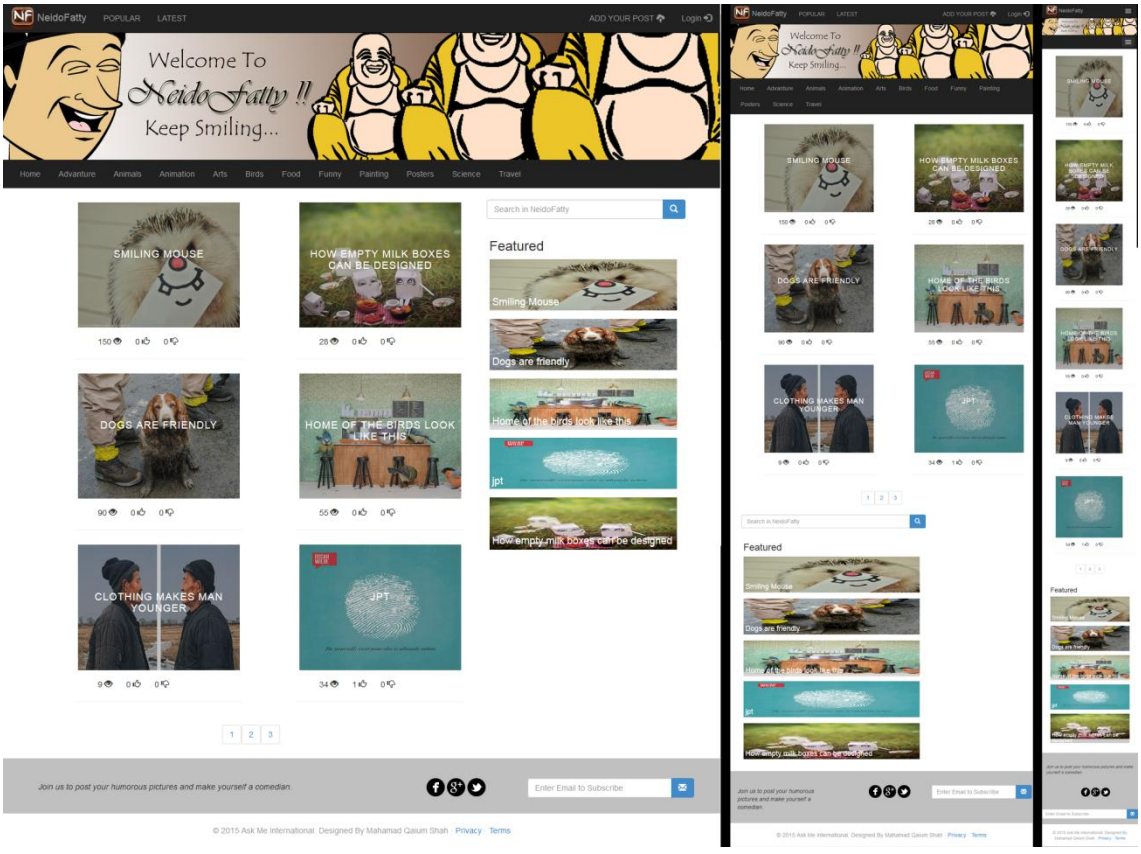


Picture 2. phpMyAdmin with multiple databases and tables

The relational database is designed, created or modified from the phpMyAdmin provided by the WAMP server (See Picture 2). After creating all the tables required for the website, the second step is to build the front end frame for the webpages. As mentioned earlier, in this project Twitter Bootstrap is used to build the website's front end providing responsive behavior.

4 TWITTER BOOTSTRAP

Twitter Bootstrap is the most popular open source front-end framework for developing responsive websites and web applications, designed by Mark Otto and Jacob Thornton at Twitter and released on GitHub in 2011 (W3schools.com, 2015) . It contains HTML and CSS-based design templates for faster and easier web development, as well as optional JavaScript extensions (Otto, 2015a). Bootstrap not only provides all basic modules like Typography, Tables, Forms, Buttons and Responsiveness, but also offers several front-end components like Dropdowns, Navigation, Modals, Typehead, etc., required to design the web project presented in this thesis. Moreover, Bootstrap is compatible with all the latest versions of the major browsers.



Picture 3. Responsive design of NeidoFatty Project

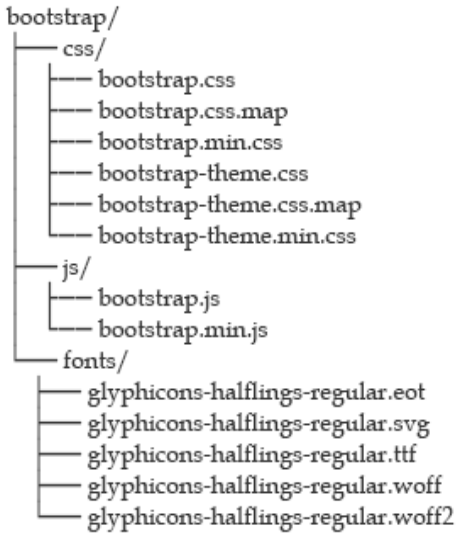
Bootstrap has released three main versions with multiple series and since version 2.0, it also supports responsiveness. Responsive web design refers to creating web sites which automatically adjust themselves to look appropriate on all devices (See Picture 3), from small phones to large desktops (W3schools.com, 2015). In addition, since version 3, Bootstrap initiated Mobile First design, emphasizing responsive behavior by default. Mobile First design states that the design of a website starts with the mobile first. Apart from the responsive design and its compatibility, Twitter Bootstrap possesses the following built-in features:

- Grid layouts
- Custom form elements
- Typography
- JavaScript plugins
- Components and many others.

4.1 Installation

Twitter Bootstrap provides an easy-to-use HTML template for commencing to design a website. Before initiating a website design, there are two ways to start using Bootstrap. Bootstrap can either be downloaded from its homepage that is getbootstrap.com, or it could be included from a CDN.

There are three downloadable source codes which can be acquired from Github or getbootstrap.com. These downloadable source codes are categorized according to the skill level of the programmers and their knowledge of the Sass or Less stylesheet language and JavaScript. Depending on their needs, the programmers can either develop websites using the minified Less and Sass codes or modify the codes. In this project, compiled and minified CSS, JavaScript, and fonts are used to show the simplicity of the Bootstrap required to achieve the responsiveness of the website. The download source contains a compressed folder. Once unzipping has been completed the following structure of Bootstrap is provided which can be implemented into the website design.

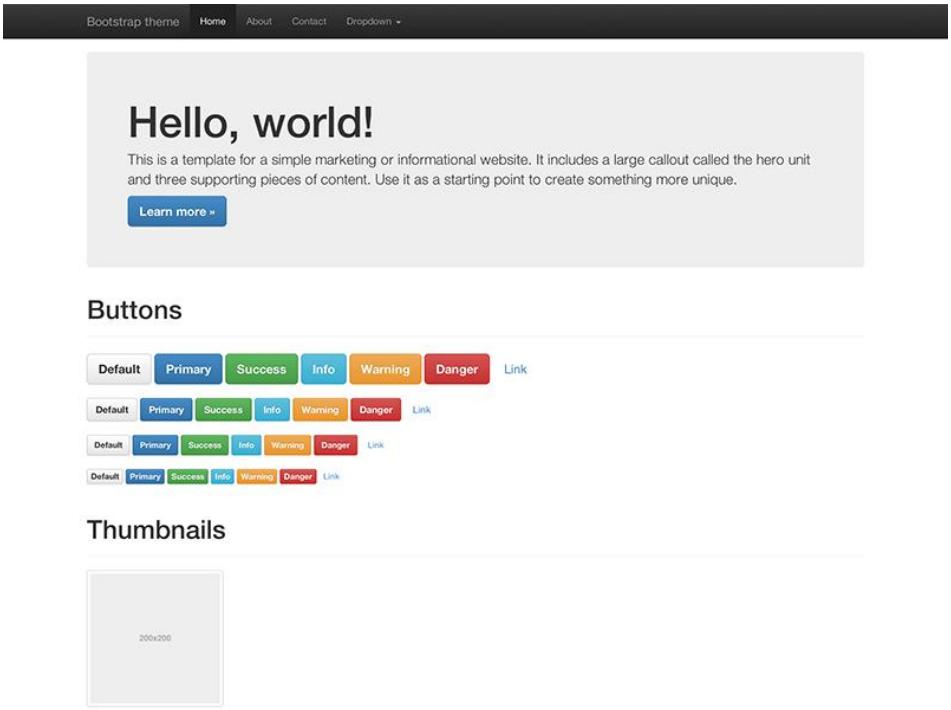


Picture 4. Compiled and minified CSS, JavaScript, and Fonts in Bootstrap (Otto, 2015b)

Similarly, Bootstrap also uses MaxCDN's global content delivery network which is public and free to remotely load CSS and JavaScript in order to lessen the web traffic. It can be also installed in the web application using Bower or NPM (a package manager for JavaScript).

4.2 Implementation

Bootstrap offers free to use template frameworks, which can be modified according the needs of each individual web project (see Figure 5). These templates are available on Bootstrap's official website, whereas other web developers have additionally provided different free templates as an open source material after having input their own modification into the codes.



Picture 5. Basic theme design from Bootstrap (Otto, 2015c)

The above shown theme is only one example of the many templates obtainable on Bootstrap's website. Other templates can be further presented in order to illustrate the many different uses of Bootstrap's components and stylesheet. These templates are freely available to designers and developers who wish to initiate their own web projects.

4.2.1 Basic HTML template

The HTML template provided by Twitter Bootstrap has been used at the initial phase of the project (see Picture 6 below). This template shows how Bootstrap can be implemented into the web after its installation. It can be saved in HTML or PHP or any other extension depending on the nature of the web, that is depending on whether it is dynamic or static. Since precompiled Bootstrap has been utilized in this project, the templates are saved in PHP extension inside the Bootstrap folder in order to construct a dynamic website. Dynamic websites are functional, easier to update and are generated in real-time as well as they can be tested using a WAMP server.

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Bootstrap 101 Template</title>

    <!-- Bootstrap -->
    <link href="css/bootstrap.min.css" rel="stylesheet">

    <!-- HTML5 shim and Respond.js for IE8 support of HTML5 elements and media queries -->
    <!-- WARNING: Respond.js doesn't work if you view the page via file:// -->
    <!--[if lt IE 9]>
      <script src="https://oss.maxcdn.com/html5shiv/3.7.2/html5shiv.min.js"></script>
      <script src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></script>
    <![endif]-->
  </head>
  <body>
    <h1>Hello, world!</h1>

    <!-- jQuery (necessary for Bootstrap's JavaScript plugins) -->
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.2/jquery.min.js"></script>
    <!-- Include all compiled plugins (below), or include individual files as needed -->
    <script src="js/bootstrap.min.js"></script>
  </body>
</html>
```

Picture 6. Initial HTML Snippets

As it can be observed from Picture 6 above, Bootstrap uses HTML5 doctype. This needs to be declared at the beginning of the web document so that the Bootstrap components and CSS properties can be utilized. Similarly, the responsive property is ensured by adding the <meta> tag inside the <head> element. The screen-width of the page inside the various devices is set by the device-width, whereas, the initial zoom level is set by default to 1. Zooming can be disabled on mobile devices by adding 'user-scalable=no' in the same meta tag (Otto, 2015d). Next, jquery.js is included from the jQuery library into the above-mentioned template. Finally, JavaScripts and CSS style sheet for Bootstrap utilities, namely bootstrap.min.js and bootstrap.min.css, are included from the downloaded source.

While using this template, a simple responsive website layout can be obtained by adding contents and additional Bootstrap components. The components in question are being further discussed later in this thesis.

4.2.2 Grid Layout System

A grid is a two-dimensional (rows and columns) structure utilized for organizing and systemizing the content of a website. Its functions are to facilitate the website scanning and to reduce the amount of cognitive load onto the users. Bootstrap uses the mobile first fluid Grid layout system for managing its content. The Bootstrap grid system can scale up to 12 columns as the device or the viewport size increase (2015). It includes predefined classes for easy layout options, as well as powerful mixins for generating more semantic layouts (Tutorialspoint.com, 2015b).

Picture 7. Scaling in different devices illustrating Bootstrap Grid System

In the above Picture 7, a total of 12 content boxes are shown on different devices where the grid's replacement varies according to the device screen size. A one-column grid layout is rendered in mobile device layouts which contain 1 column and 12 rows placed above one above the other, whereas, a two-column layout is rendered in tablets containing 2 columns and 6 rows. Similarly, in medium screen-sized devices such as laptops and desktops, it is rendered as a three-column layout, which consists of 3 columns and 4 rows. Finally, a four-column grid layout is rendered in large devices and comprises of 4 columns and 3 rows respectively (Tutorialrepublic.com, 2015b).

In order to implement a grid system, Bootstrap uses a containing element to wrap website contents. For a responsive fixed width container, the predefined grid class ".container" can be used in the template, whereas ".container-fluid" can be used for a full width container. As it was mentioned

earlier, page layouts are created through organizing content into rows and columns in a grid system. For a proper alignment and padding, rows are placed inside the container and are utilized to create horizontal groups of columns. Only columns are the immediate children of rows, and contents are placed within these available 12 columns. As it is shown in Table 1 below, Bootstrap uses predefined grid classes for rows as '.row' and columns as '.col-xs-*', '.col-md-*', '.col-lg-*' depending on which devices the site has been designed for. Further, columns create gutters (gaps between column contents) via padding (2015). That padding is offset in rows for the first and last column via a negative margin on '.row' classes (Otto, 2015e).

```
<div class="container">
    <div class="row">
      <div class="col-xs-12 col-sm-6 col-md-8">.col-xs-12 .col-sm-6 .col-md-8</div>
      <div class="col-xs-6 col-md-4">.col-xs-6 .col-md-4</div>
    </div>
    <div class="row">
      <div class="col-xs-6 col-sm-4">.col-xs-6 .col-sm-4</div>
      <div class="col-xs-6 col-sm-4">.col-xs-6 .col-sm-4</div>
      <!-- Optional: clear the XS cols if their content doesn't match in height -->
      <div class="clearfix visible-xs-block"></div>
      <div class="col-xs-6 col-sm-4">.col-xs-6 .col-sm-4</div>
    </div>
</div>
```

Picture 8. Example of grid layout system provided by Bootstrap (Otto, 2015f)

In addition, the following Table 1 illustrates the Grid layout system in brief, comparing different sized devices, such as mobiles, tablets, and medium- and large-sized desktops with predefined classes and other features. These features can be utilized in a web project while making it responsible in behavior.

Table 1. Comparison of features available from Grid system (Otto, 2015g).

Features	Extra Small Devices **Phones (<768px)**	Small Devices **Tablets (≥768px)**	Medium Devices **Desktops (≥992px)**	Large Devices **Desktops (≥1200px)**
Grid behavior	Horizontal at all times	Collapsed to start, horizontal above breakpoints	Collapsed to start, horizontal above breakpoints	Collapse to start, horizontal above breakpoints
Max container width	None (auto)	750px	970px	1170px
Class prefix	.col-xs-	.col-sm-	.col-md-	.col-lg-
Number of columns	12	12	12	12
Max column width	Auto	60px	78px	95px
Gutter Width	30px (15px on each side of a column)	30px (15px on each side of a column)	30px (15px on each side of a column)	30px (15px on each side of a column)
Nestable	Yes	Yes	Yes	Yes
Offsets	Yes	Yes	Yes	Yes
Column ordering	Yes	Yes	Yes	Yes

4.2.3 Responsive Utilities

Since Bootstrap is applied for a faster mobile-friendly development, contents designed for medium and large desktops can be displayed or hidden by the device. This can be achieved via media query by using the extra utility classes provided. These classes should be utilized on a limited basis only in order to avoid creating entirely different versions of the same site. Rather, they can be utilized to complement each device's presentation (Otto, 2015h). The available classes for toggling content across viewport breakpoints are shown in the following table 2:

Table 2. Classes for toggling contents in different devices (Otto, 2015i).

Classes	Extra small devices Phones (<768px)	Small devices Tablets(≥768px)	Medium devices Desktops (≥992px)	Large devices Deskops (≥1200px)
.visible-xs-*	Visible	Hidden	Hidden	Hidden
.visible-sm-*	Hidden	Visible	Hidden	Hidden
.visible-md-*	Hidden	Hidden	Visible	Hidden
.visible-lg-*	Hidden	Hidden	Hidden	Visible
.hidden-xs	Hidden	Visible	Visible	Visible
.hidden-sm	Visible	Hidden	Visible	Visible
.hidden-md	Visible	Visible	Hidden	Visible
.hidden-lg	Visible	Visible	Visible	Hidden

Furthermore, the ".visible-*-* " classes come in three varisation for each one of the CSS display properties (block, inline and inline-block) as of version 3.2.0. Similarly, the following print classes can be used for toggling content for print:

Table 3. Print classes used for toggling content (Otto, 2015j).

Classes	Print
.visible-print	Yes visible to print
.hidden-print	Visible only to browser not to print

4.2.4 The CSS

Bootstrap contains a set of stylesheets which provide basic style definitions for all key HTML components. These components represent a uniform, modern appearance for formatting text, tables and form elements. (Wrapbootstrap.com, 2015.) The CSS settings and HTML elements are further enhanced with extensible classes and therefore contribute to a better, faster and more secure web development.

4.2.5 Layout Components

Bootstrap also offers over a dozen reusable components built to supply iconography, dropdowns, input groups, navigations, alerts, etc. necessary for the development of a website (Otto, 2015k). These components can be used to structure the site via JavaScript plugins provided by Bootstrap, and can be customized according to user's needs. The list of components Bootstrap provides are:

- Glyphicons
- Buttons
- Navigation bars
- Breadcrumbs
- Pagination
- Labels
- Alerts
- Progress bars
- Page header
- Media objects
- Badges
- Jumbotron
- Thumbnails
- List group
- Panels
- Wells and many more.

These components are implemented as CSS classes, which should be applied to certain HTML elements (Wikipedia, 2015b) in the page.

4.2.6 JavaScript Plugins

Bootstrap comes with a variety of JavaScript components in the form of custom jQuery plugins. These plugins can extend the features of the website by adding more interaction into it. Most of the plugins can be triggered without writing a single line of code (Tutorialspoint.com, 2015c) by utilizing Bootstrap Data API.

Bootstrap plugins can be included by using Bootstrap's individual *.js files or by using Bootstrap.js or the minified Bootstrap.min.js all at once (2015). Since, both Bootstrap.js and Bootstrap.min.js contain all plugins in a single file (Tutorialspoint.com, 2015d), only one extension should be included in the template. Similarly, jQuery must be included before the plugin files since

all plugins depend on it. These plugins can also be turned off or simply disabled by unbinding all events on the document namespaced with data-api. Alternatively, to target a specific plugin, the plugin's name as a namespace must be included along with the data-api namespace (Otto, 2015l).

Bootstrap does not officially support third-party JavaScript libraries such as prototype or jQuery User Interface (Otto, 2015m) as they might create compatibility problems which the users need to resolve themselves. The plugins which Bootstrap provides are as follows:

- Transitions
- Modal
- Dropdown
- Scrollspy
- Tab
- Tooltip
- Popover
- Alert
- Button
- Collapse
- Carousel
- Affix

(Otto, 2015n)

5 COMPARISON BETWEEN DIFFERENT PLATFORMS

In this section of the thesis, multiple comparisons are graphed based on data acquired from StatCounter Global Stats for the period between the years 2010 and 2015. The graphs presented below are based on 15 billion page views per month and illustrate a comparison between the usages of desktop, mobile, tablet and other consoles as well as a comparison between the adoptability of the top 14 desktop, mobile and tablet screen resolutions and a comparison between the usage of the top nine browsers.

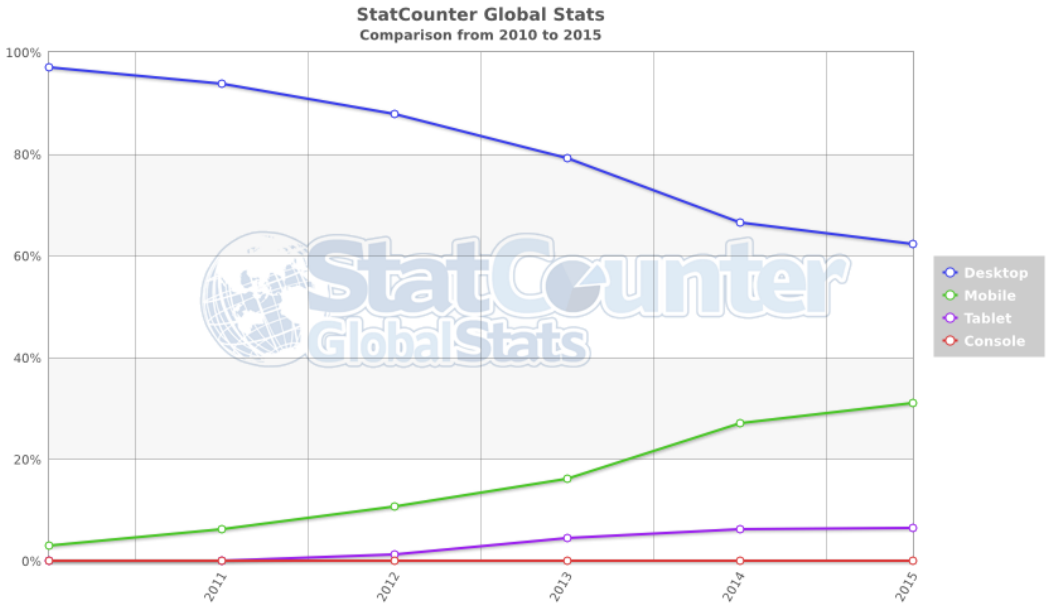


Figure 2. Comparison between Desktop, mobile, tablets and other consoles from 2010 to 2015 (Gs.statcounter.com, 2015).

According to Figure 2, in the last 5 years the usage of desktop computers is gradually declining compared to other devices, whereas mobile phones and tablets are steadily increasing their significance as a replacement for desktop computers. The usage of other consoles remains insignificant and unchanged throughout the whole time period.

A similar tendency can be observed in Figure 3, which compares the usage of the top 14 desktop, mobile, and tablet screen resolutions. The majority of the screen resolutions with higher adoptability are small resolution screens used

mostly in mobiles and tablets in last 5 years. It becomes apparent that the 1366*768 screen resolution is the most widely used screen compared to the other screen resolutions.

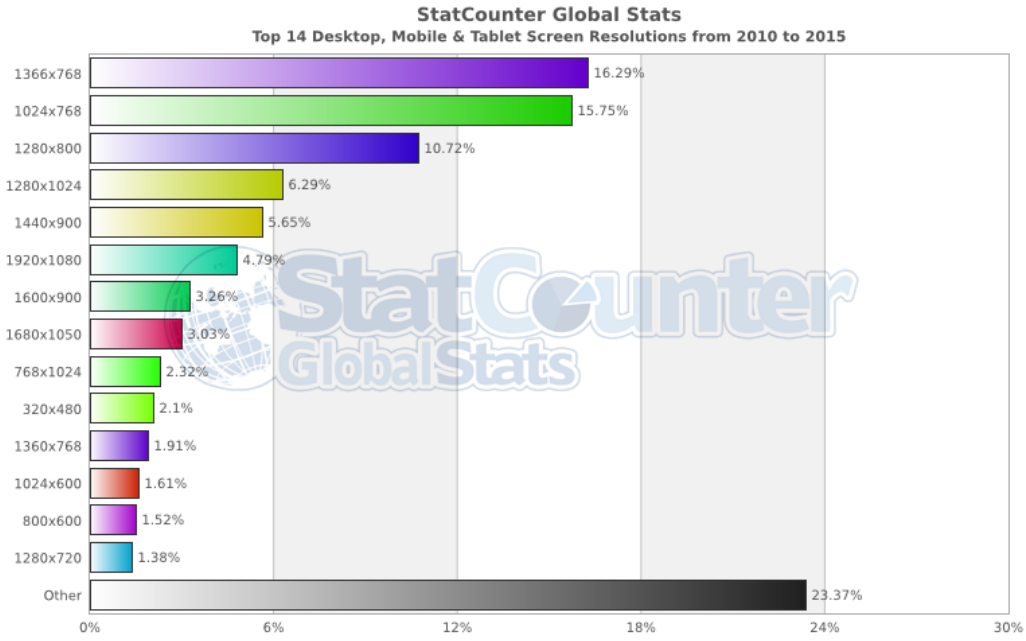


Figure 3. Comparison between top 14 desktop, mobile and tablet screen resolution from 2010 to 2015 (Gs.statcounter.com, 2015).

Finally, according to Figure 4, Google Chrome is the most widely used browser in desktops, mobiles and tablets in the period from 2010 to 2015 whereas, statistics show that Internet Explorer and Mozilla Firefox are losing their adoptability into the public. Instead, other new browsers demonstrate a slight increase in their otherwise moderate usage.

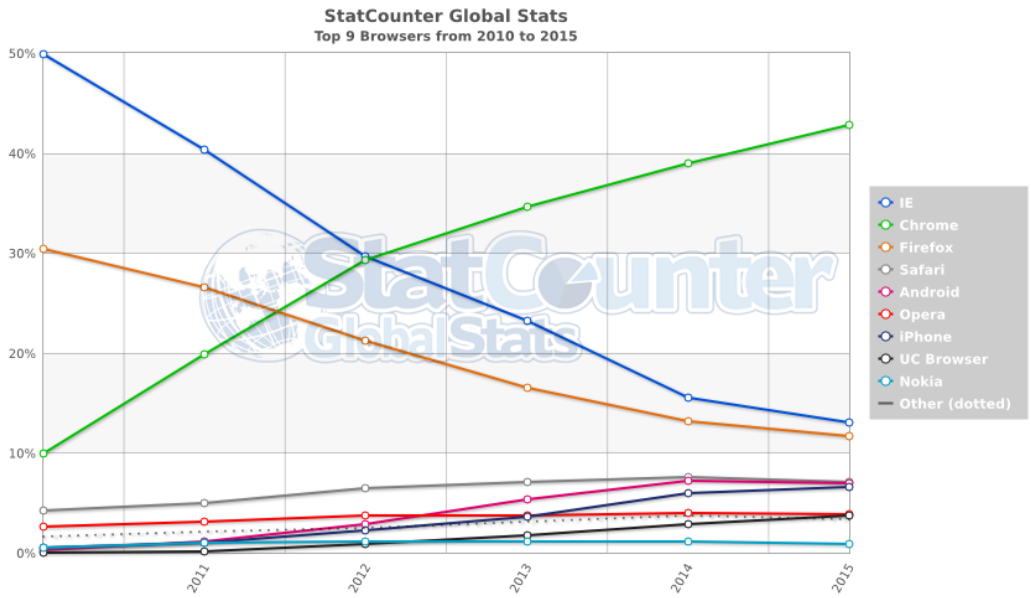


Figure 4. Comparison between Top 9 browsers from 2010 to 2015 (Gs.statcounter.com, 2015).

These above statistics shows that the mobile phones and tablets are more widely used currently where different screen sizes and mobile browsers are vividly used. This proves that a Twitter Bootstrap implementation is a better solution for webpage to display in multiple platforms with different screen sizes and browsers.

6 RESPONSIVE CSS FRAMEWORK COMPARISON

After the release of Bootstrap, many other frameworks similar to it have emerged. Currently, a great variety of CSS frameworks for creating responsive webpage behavior are available on the market. Among these, Table 4 compares 10 different frameworks with their own features, listed according to, supportive browsers, their founders and the date when they were launched.

Table 4. Comparison between Responsive CSS Frameworks.

Framework	Features	Browser Support	Founder	Start Date
Twitter Bootstrap	• Responsive utility classes and embeds • Copy Docs Snippets • CSS, components and JavaScript • Code modification • Open Source, MIT License • Also available in LESS and SASS stylesheet. • Mobile-first styling	• Chrome • Safari • Firefox • Opera • IE8+	Mark Otto, Jacob	Aug 2011
Foundation	• Responsive embeds • Em based CSS sizes • Vanilla CSS, components and JavaScript • Open source, MIT Licensed • Also available in SASS Stylesheet • Pricing table inbuilt	• Chrome • Safari • Firefox • Opera • IE9+	ZURB	Sep 2011
Skeleton	• Mobile-first styling • Vanilla CSS and components • Open-source, MIT License • Limited user interface tools • Also available in LESS and SASS stylesheet	• Chrome • Safari • Firefox • Opera • IE9+	Dave Gamache	May 2011
HTML5 Boilerplate	• HTML5 ready • Progressive enhancement • Open source, MIT License • jQuery via CDN, CSS and components • Optimized Google Analytics Snappet	• Chrome • Safari • Firefox • Opera • IE8+	Paul Irish and Divya Manian	Apr 2010
Montagejs	• HTML template • CSS, components and JavaScript • BSD License • Serialized component object model • Resources	• Chrome • Safari • Firefox • IE10	Multiple	Jul 2012

Table 4. Comparison between Responsive CSS Frameworks

Framework	Features	Browser Support	Founder	Start Date
HTML kickstart	• Open source, MIT License • HTML5, CSS and jQuery files, layouts and elements • Responsive Menu	• Chrome • Safari • Firefox • IE9+	Joshua Gatcke	Feb 2013
YAML 4	• Responsive embeds • Optimized typography • For HTML5 and CSS3 • Build on SASS • CC-BY 2.0 License • Rapid prototyping • Slim framework core	• Chrome • Safari • Firefox • Opera • IE6+	Dirk Jesse	Oct 2005
Gumby	• Powered by SASS • Open source, MIT License • Responsive embeds • CSS, JavaScript and components available	• Chrome • Firefox • Opera • IE8+	Multiple at Digital Surgeons	May 2013
Kube	• Open Source, MIT License • Minified CSS and JavaScript included • Less styling option • UI components • can be modified and redistributed	• Chrome • Safari • Firefox • Opera • IE9+	Alex and Art	Jan 2014
Less Framework	• Responsive enhancement • CSS and Retina media query included • Requires HTML • Grid layout system • Open source, MIT License	• Chrome • Safari • Firefox • Opera • IE9+	Joni Korpi	Jun 2011

All of these 10 frameworks provide responsiveness to a webpage in different programming languages such as minified CSS, JavaScript. Most of these frameworks are freely provided open source whereas, very few of them must be purchased. Table 4-4 above clarifies that Twitter bootstrap provides a simple and easy way to handle CSS components and utilities for the developers providing copy snippets and various options to choose. In comparison with Bootstrap framework, other frameworks are built under either minified CSS or Less or Sass and JavaScript. Therefore, mobile-friendly Twitter bootstrap is unique in its features.

7 CONCLUSION

Twitter Bootstrap framework has provided all the necessary HTML5 components for developing an easier and faster responsive and interactive website design with CSS stylings and JavaScript queries required in it. Since the majority of the modern web browsers supports HTML5 and CSS3 stylesheet, Bootstrap possesses a significant an advantage to its competitors in terms of implementation and testing.

As it was indicated in the research, currently the usage of mobile phones and tablets is on the rise compared to the usage of more traditional desktop computers. As a result, different screen sizes for these modern devices are required, hence they are becoming more widely available on the market. Another major advantage of Bootstrap is that it supports the mobile first grid layout system, which guarantees website responsiveness on the device screen it is being displayed on.

Furthermore, Bootstrap is easy to install and implement into a web design. Bootstrap can be additionally modified as it uses CSS3 stylesheet. Bootstrap also provides multiple templates for a quick website launch, while the implementation methods of the components and jQuery codes can be copied from the official webpage documentation's copy panel.

In conclusion, Bootstrap supports various platforms and web browsers compared to the other responsive CSS frameworks. This gives Twitter Bootstrap an additional advantage over different other frameworks. For this reason, it is becoming more popular and well recognized among the web designers and developers.

REFERENCES

1stWebDesigner. (2013). *HTML5 Introduction - What is HTML5 Capable of, Features, and Resources*. [online] Helping Web Designers Get Clients. Available at: http://www.1stwebdesigner.com/html5-introduction/ [Accessed: 28 May 2015].

99lime.com, (2015*). HTML KickStart - Ultra–Lean HTML Building Blocks for Rapid Website Production - KickStart your Website Production.* [online] Available at: http://www.99lime.com/ [Accessed: 25 March 2015].

Awwwards.com, (2015). *What are Frameworks? 22 Best Responsive CSS Frameworks for Web Design.* [online] Available at: http://www.awwwards.com/what-are-frameworks-22-best-responsive-css-frameworks-for-web-design.html [Accessed: 25 March 2015].

Cssbasics.com, (2015). *Chapter 1 : Introduction to CSS « CSS Basics*. [online] Available at: http://www.cssbasics.com/introduction-to-css/ [Accessed: 28 May 2015].

Gehani, N. (2006). *The Database Book: Principles and practice using MySQL. 1st ed.*, Summit, NJ.: Silicon Press

Getskeleton.com, (2015). *Skeleton: Responsive CSS Boilerplate*. [online] Available at: http://getskeleton.com/ [Accessed: 25 March 2015].

GitHub, (2011). *jonikorpi/Less-Framework*. [online] Available at: https://github.com/jonikorpi/Less-Framework [Accessed: 29 May 2015].

GitHub, (2014). *yamlcss/yaml*. [online] Available at: https://github.com/yamlcss/yaml [Accessed: 25 March 2015].

GitHub, (2015). *imperavi/kube*. [online] Available at: https://github.com/imperavi/kube [Accessed: 25 March 2015].

GitHub, (2015). *joshuagatcke/HTML-KickStart.* [online] Available at: https://github.com/joshuagatcke/HTML-KickStart [Accessed: 25 March 2015].

GitHub, (2015). *montagejs/montage*. [online] Available at: https://github.com/montagejs/montage [Accessed: 25 March 2015].

Gs.statcounter.com, (2015). *StatCounter Global Stats - Browser, OS, Search Engine including Mobile Usage Share.* [online] Available at: http://gs.statcounter.com/ [Accessed: 25 March 2015].

Gube, J. (2015). *10 Best Responsive HTML5 Frameworks*. [online] Designinstruct.com. Available at: http://designinstruct.com/roundups/html5-frameworks/ [Accessed: 25 March 2015].

Html5boilerplate.com, (2015). *HTML5 Boilerplate: The web's most popular front-end template*. [online] Available at: https://html5boilerplate.com/ [Accessed: 25 March 2015].

jquery.org, j. (2015). *jQuery*. [online] Jquery.com. Available at: https://jquery.com/ [Accessed: 22 May 2015].

Lessframework.com, (2015*). Less Framework*. [online] Available at: http://lessframework.com/ [Accessed: 25 March 2015].

Merriam-webster.com, (2015). *database | a collection of pieces of information that is organized and used on a computer*. [online] Available at: http://www.merriam-webster.com/dictionary/database [Accessed: 22 May 2015].

Montagestudio.com, (2015). *MontageJS - HTML5 Framework.* [online] Available at: http://montagestudio.com/montagejs/ [Accessed: 25 March 2015].

Mozilla Developer Network, (2015a). *Introduction to HTML5.* [online] Available at: https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/HTML5/Introduction_to_HTML5 [Accessed: 25 March 2015].

Mozilla Developer Network, (2015b). *A re-introduction to JavaScript (JS tutorial).* [online] Available at: https://developer.mozilla.org/en-US/docs/Web/JavaScript/A_re-introduction_to_JavaScript [Accessed: 28 May 2015].

Mozilla Developer Network, (2015c). *JavaScript.* [online] Available at: https://developer.mozilla.org/en-US/docs/Web/JavaScript [Accessed: 25 March 2015].

Ntu.edu.sg, (2015). *Relational Database Design.* [online] Available at: http://www.ntu.edu.sg/home/ehchua/programming/sql/Relational_Database_Design.html [Accessed: 29 May 2015].

Otto, M. (2015a). *Getting started • Bootstrap.* [online] Getbootstrap.com. Available at: http://getbootstrap.com/getting-started [Accessed: 29 May 2015].

Otto, M. (2015b). *Getting started • Bootstrap.* [online] Getbootstrap.com. Available at: http://getbootstrap.com/getting-started/#whats-included-precompiled [Accessed: 29 May 2015].

Otto, M. (2015c). *Getting started • Bootstrap.* [online] Getbootstrap.com. Available at: http://getbootstrap.com/getting-started [Accessed: 29 May 2015].

Otto, M. (2015d). *CSS • Bootstrap.* [online] Getbootstrap.com. Available at: http://getBootstrap.com/css/ [Accessed: 29 May 2015].

Otto, M. (2015e). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#grid [Accessed: 25 March 2015].

Otto, M. (2015f). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#grid-example-mixed-complete [Accessed: 25 March 2015].

Otto, M. (2015g). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#grid-options [Accessed: 25 March 2015].

Otto, M. (2015h). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#responsive-utilities [Accessed: 25 March 2015].

Otto, M. (2015i). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#responsive-utilities [Accessed: 25 March 2015].

Otto, M. (2015j). *CSS • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/css/#responsive-utilities [Accessed: 25 March 2015].

Otto, M. (2015k). *Components • Bootstrap*. [online] Getbootstrap.com. Available at: http://getbootstrap.com/components/ [Accessed: 29 May 2015].

Otto, M. (2015l). *JavaScript • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/JavaScript/ [Accessed: 25 March 2015].

Otto, M. (2015m). *JavaScript • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/JavaScript/#callout-third-party-libs [Accessed: 25 March 2015].

Otto, M. (2015n). *JavaScript • Bootstrap*. [online] GetBootstrap.com. Available at: http://getBootstrap.com/JavaScript/ [Accessed: 25 March 2015].

Php.net, (2015a). *PHP: History of PHP - Manual*. [online] Available at: http://php.net/manual/en/history.php.php [Accessed: 25 March 2015].

Php.net, (2015b). *PHP: Overview - Manual.* [online] Available at: http://php.net/manual/en/mysqli.overview.php [Accessed: 25 March 2015].

Php.net, (2015c). *PHP: Overview - Manual.* [online] Available at: http://php.net/manual/en/mysqli.overview.php [Accessed: 25 March 2015].

Php.net, (2015d). *PHP: Overview - Manual.* [online] Available at: http://php.net/manual/en/mysqli.overview.php [Accessed: 25 March 2015].

Responsive.vermilion.com, (2015). *Responsive CSS Framework Comparison: Bootstrap, Foundation, Skeleton*. [online] Available at: http://responsive.vermilion.com/compare.php [Accessed: 25 March 2015].

SitePoint, (2013). *An Introduction to HTML5 Boilerplate*. [online] Available at: http://www.sitepoint.com/introduction-html5-boilerplate/ [Accessed: 25 March 2015].

Tutorialrepublic.com, (2015a). *What is Bootstrap 3 - A Brief Introduction.* [online] Available at: http://www.tutorialrepublic.com/twitter-Bootstrap-tutorial/Bootstrap-introduction.php [Accessed: 25 March 2015].

Tutorialrepublic.com, (2015b). *Understanding the Bootstrap 3 Grid System - Tutorial Republic*. [online] Available at: http://www.tutorialrepublic.com/twitter-Bootstrap-tutorial/Bootstrap-grid-system.php [Accessed: 25 March 2015].

Tutorialspoint.com, (2015a). *PHP Introduction.* [online] Available at: http://www.tutorialspoint.com/php/php_introduction.htm [Accessed: 25 March 2015].

Tutorialspoint.com, (2015b). *Bootstrap Quick Guide*. [online] Available at: http://www.tutorialspoint.com/bootstrap/bootstrap_quick_guide.htm [Accessed: 29 May 2015].

Tutorialspoint.com, (2015c). *Bootstrap Quick Guide*. [online] Available at: http://www.tutorialspoint.com/bootstrap/bootstrap_quick_guide.htm [Accessed: 29 May 2015].

Tutorialspoint.com, (2015d). *Bootstrap Quick Guide*. [online] Available at: http://www.tutorialspoint.com/bootstrap/bootstrap_quick_guide.htm [Accessed: 29 May 2015].

Usablica.github.io, (2015). *Front-end CSS Frameworks*. [online] Available at: http://usablica.github.io/front-end-frameworks/compare.html [Accessed: 25 March 2015].

W3schools.com, (2015). *Bootstrap Get Started*. [online] Available at: http://www.w3schools.com/Bootstrap/Bootstrap_get_started.asp [Accessed: 25 March 2015].

Webopedia.com, (2015). *What is WAMP? Webopedia*. [online] Available at: http://www.webopedia.com/TERM/W/WAMP.html [Accessed: 28 May 2015].

Wrapbootstrap.com, (2015). *LeadGen Responsive HTML5 Landing Page | Landing Pages | WrapBootstrap - Bootstrap Themes & Templates.* [online] Available at: https://wrapbootstrap.com/theme/leadgen-responsive-html5-landing-page-WB079424M [Accessed: 22 May 2015].

Wikipedia, (2015a). *Database design.* [online] Available at: http://en.wikipedia.org/wiki/Database_design [Accessed: 25 March 2015].

Wikipedia, (2015b). *Bootstrap (front-end framework).* [online] Available at: https://en.wikipedia.org/wiki/Bootstrap_(front-end_framework)#cite_note-9 [Accessed: 25 March 2015].

APPENDICES

Appendix 1.0 Source code for Header file (header.php)

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">

<!-- Initialising mobile viewport -->
<meta name="viewport" content="width=device-width, initial-scale=1">

<!-- title of the Web Project -->
<title>NeidoFatty</title>

<!-- Linking icon of the web project Neidofatty -->
<link rel="shortcut icon" href="images/icon.png" type="image/x-icon" />

<!-- Bootstrap style sheet and style.css style sheet -->
<link href="css/bootstrap.min.css" rel="stylesheet">
<link href="style.css" rel="stylesheet" type="text/css">

 <!-- Necessary javascript for bootstrap  -->

<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js">      </script>
 <script src="js/bootstrap.min.js"></script>

</head>
<body>
  <!-- Navigation bar -->
  <nav class="navbar navbar-inverse navbar-fixed-top " role="navigation">
       <div class="container-fluid">
         <div class="navbar-header">
           <button type="button" class="navbar-toggle" data-toggle="collapse" data-
                    target="#navbar-                    collapse-1">
             <span class="sr-only sr-only-focusable">Toggle navigation</span>
             <span class="icon-bar"></span>
             <span class="icon-bar"></span>
             <span class="icon-bar"></span>
           </button>
           <a href="index.php" class="navbar-brand header-fix"> <img src="images/icon.png"
                    class="header-img" height="40" width="40" alt="Brand"/> NeidoFatty</a>
         </div>
         <div class="collapse navbar-collapse" id="navbar-collapse-1">
           <ul class="nav navbar-nav">
             <li><a href="popular.php">POPULAR</a></li>
             <li><a href="latest.php">LATEST</a></li>
          </ul>
          <ul class=" nav navbar-nav navbar-right">
             <li><a href="register.php"> ADD YOUR POST <span class="glyphicon glyphicon-
                    cloud-upload"></span></a></li>
             <li><a href="login.php" class="navbar-link">Login <span class="glyphicon glyphicon-
                    log-in"></span></a></li>
          </ul>
        </div>
      </div>
```

```
</nav>
<!-- End of navigation bar -->

<!-- Header image-->
<div class="after_nav_image">
  <img src="images/header-image.png" style="opacity:50%;"/>
</div>
<!-- End of header image-->

<!-- Navigation menu bar -->
<nav class="nav navbar-inverse" role="navigation">
  <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#category-
                collapse-1">
    <span class="sr-only sr-only-focusable">Toggle navigation</span>
    <span class="icon-bar"></span>
    <span class="icon-bar"></span>
    <span class="icon-bar"></span>
  </button>
  <div class="collapse navbar-collapse category_list_1" id="category-collapse-1">
    <ul class="nav nav-pills">
      <li role="presentation"><a href="index.php">Home</a></li>
    <?php
      $category = $cate->getCategories();
      foreach($category as $row){ ?>
        <li role="presentation"><a href="show_categories.php?id=<?php echo
                $row['cateId'];?>"><?php echo $row['catename']; ?></a></li>
      <?php } ?>
    </ul>
  </div>
</nav>
<!-- End of navigation menu bar -->
```

Appendix 2.0 Source code for Content file (index.php)

```
<!-- Required functions file attactment -->
<?php require_once('resources/nfsite_config.php');
/* End of attaching required functions file */

/* User login check */
if($useract->check_Login() == true){
    $nfsite->RedirectToURL('admin_index.php?page=1');
}
/* End of user login check */

/* Including the header file */
include('header.php');?>
<!-- End of including header file -->

<!-- Main content of Neidofatty project -->

<!--Grid layout system with container and rows-->
<div class="container" style="margin-top:20px;">
  <div class="row">
    <div class="col-xs-12 col-sm-12">
      <div class="row">
        <div class= "col-xs-12 col-sm-12 col-md-8">
          <div class="row">
                <?php $post = $postcon->getPosts();
                foreach($post as $row){ ?>
                    <div class="clearfix visible-xs"></div>
                    <div class="col-xs-11 col-xs-offset-1 col-sm-5 col-md-5">

                      <!-- Posts -->
                      <section id="grid" class="post_grid clearfix">
                        <a href="postDetail.php?post_id=<?php echo $row['postId'];?>" data-path-
                                hover="m 0,0 0,47.7775 c 24.580441,3.12569 55.897012,-
                                8.199417 90,-8.199417 34.10299,0 65.41956,11.325107
                                90,8.199417 L 180,0 z">
                          <figure>
                            <img src=" <?php echo
                                base64_encode($row['content']);?> ">
                                 <svg viewBox="0 0 180 320"
                                            preserveAspectRatio="none"><path d="m 0,0
                                            0,171.14385 c 24.580441,15.47138
                                            55.897012,24.75772 90,24.75772 34.10299,0
                                            65.41956,-9.28634 90,-24.75772 L 180,0 0,0
                                            z"/></svg>
                             <figcaption>
                               <h4><?php echo $row['title']; ?></h4>
                               <button>View</button>
                             </figcaption>
                           </figure>
                         </a>
                       </section>
                       <!-- End of posts-->
                       <!-- user opinion on the posts -->
                       <div class="opinion_counting">
                         <ul>
                           <?php $viewcount = $postcon-> viewCountPost($row['postId']); ?>
```

```
                    <li><?php echo $viewcount['viewcount']; ?> <span class="glyphicon
                        glyphicon-eye-open"></span></li>
                    <?php $likecount = $postcon -> totalLikeOpinion($row['postId']); ?>
                    <li><?php echo $likecount['like_rate']; ?> <span class="glyphicon
                        glyphicon-thumbs-up"></span></li>
                    <?php $unlikecount = $postcon-> totalUnlikeOpinion($row['postId']); ?>
                    <li><?php echo $unlikecount['unlike_rate']; ?> <span class="glyphicon
                        glyphicon-thumbs-down"></span></li>
                  </ul>
                  <hr>
                 </div>
                 <!-- End of the user opinion on the posts-->
               </div>
             <?php } ?>
    </div>

    <!-- Page pagination -->
    <div class="text-center">
      <ul class="pagination">
        <li><?php $totalPages= $postcon->postNumber();
                  for ($i=1; $i<=$totalPages; $i++) {
                  echo "<a href='index.php?page=".$i."'>".$i."</a> ";
                  } ?>
         </li>
       </ul>
     </div>
     <!--End of the pagination-->

   </div>
   <!-- Including siderbar for the project seperately-->
   <?php include('sidebar.php'); ?>
   <!--End of the including sidebar-->
        </div>
    </div>
  </div>
</div>
<!-- End of the grid layout system with container and rows -->
<div class="between-index">
        <!-- responsive fix width container -->
        <div class="container">
        <!-- predefined grid class row -->
        <div class="row">
          <!-- predefined grid class for small and medium screen size-->
          <div class="col-sm-4 col-md-6">
            <p style="margin-top:40px;"><i>Join us to post your humorous pictures and
                        make yourself a comedian.</i></p>
          </div>
          <!-- End of predefined grid class for small and medium screen size -->
          <!-- predefined grid class for small and medium screen size-->
          <div class="col-sm-4 col-md-3">
            <div class="socialIcon clearfix">
              <ul>
                <li><a href="#"><img src="images/facebook-32.png"></a></li>
                <li><a href="#"><img src="images/googleplus-32.png"></a></li>
                <li><a href="#"><img src="images/twitter-32.png"></a></li>
             </ul>
            </div>
           </div>
```

```
                    <!-- End of predefined grid class for small and medium screen size -->

                    <!-- predefined grid class for small and medium screen size-->
                    <div clas="col-sm-4 col-md-3">
                      <form class="subscribe" action="subscribe.php" role="search"
                                method="GET">
                        <input type="hidden" name="submitted" id="submitted">
                        <div class="input-group">
                          <input type="text" class="form-control" id= "subscribe" name="subscribe"
                                placeholder="Enter Email to Subscribe">
                          <div class="input-group-btn">
                            <button type="submit" class="btn btn-primary">
                                <span class="glyphicon glyphicon-envelope"></span>
                            </button>
                          </div>
                          </div>
                      </form>
                    </div>
                <!-- End of predefined grid class for small and medium screen size -->
              </div>
             <!-- End of predefined grid class row -->
          </div>
     <!-- End of responsive fix width container -->
</div>

<!-- End of the main page of Neidofatty -->

<!-- Including the footer file -->
<?php include('footer.php');?>
<!-- End of including footer file -->

<!-- Javascript code for the post mouse hover effect -->
<script>
  (function() {
    function init() {
                var speed = 330,
                easing = mina.backout;
                [].slice.call ( document.querySelectorAll( '#grid > a' ) ).forEach( function( el ) {
                var s = Snap( el.querySelector( 'svg' ) ), path = s.select( 'path' ),
                                pathConfig = {
                                from : path.attr( 'd' ),
                                to : el.getAttribute( 'data-path-hover' )
                                };

                el.addEventListener( 'mouseenter', function() {
                                path.animate( { 'path' : pathConfig.to }, speed, easing );
                } );

                el.addEventListener( 'mouseleave', function() {
                                path.animate( { 'path' : pathConfig.from }, speed, easing );
                } );
      } );
    }
    init();
  })();
</script>
<!-- End of javascript code for the post mouse hover effect -->
```

Appendix 3.0 Source code for Sidebar file (sidebar.php)

```
<!-- Sidebar of the page -->
<div class = "col-md-4">
  <div class="row">
    <div class="col-sm-8 col-md-12">

     <!--Search panel for logged in users -->
      <?php $post = $postcon->getFeaturedPost();
            if(isset($_SESSION['loggedIn']) && $_SESSION['loggedIn'] == 'true'){ ?>

                <form class="search_panel" action="admin_search.php" role="search"
                            method="GET">
                  <input type="hidden" name="searchType" id="searchType" value="All">
                  <div class="input-group">
                    <input type="text" class="form-control" id= "search" name="search"
                            placeholder="Search in NeidoFatty">
                    <div class="input-group-btn">
                      <button type="submit" class="btn btn-primary">
                        <span class="glyphicon glyphicon-search"></span>
                      </button>
                    </div>
                  </div>
                </form>

        <?php }
        <!--End of search panel for logged in users -->

        <!-- Search panel for webpage visiters -->
          else{ ?>
            <form class="search_panel" action="search.php" role="search" method="GET">
               <input type="hidden" name="searchType" id="searchType" value="All">
                 <div class="input-group">
                       <input type="text" class="form-control" id= "search" name="search"
                            placeholder="Search in NeidoFatty">
                       <div class="input-group-btn">
                         <button type="submit" class="btn btn-primary">
                           <span class="glyphicon glyphicon-search"></span>
                         </button>
                        </div>
                 </div>
            </form>
         <?php } ?>
         <!-- End of search panel for webpage visiters -->

        <!-- Featured posts →
         <div class="panel-body">
            <h3>Featured</h3>
            <?php foreach ($post as $row) {?>
            <div class="sidebar_post">
               <figure>
                    <?php if(isset($_SESSION['loggedIn']) && $_SESSION['loggedIn'] == 'true'){ ?>

                    <a href="admin_postDetail.php?post_id=<?php echo $row['postId'];?>" >
                      <img src=" <?php echo
                            base64_encode($row['content']);?> " width="100%" height="90">
                    </a>
```

```
                    <?php }
                       else{ ?>

                    <a href="postDetail.php?post_id=<?php echo $row['postId'];?>">
                      <img src=" <?php echo
                                base64_encode($row['content']);?> " width="100%" height="90">
                     </a>
                     <?php }?>

                     <div class="sidebar_Ptitle">
                     <h4><?php echo $row['title']; ?></h4>
                     </div>
                  </figure>
               </div>
               <?php } ?>
         </div>
         <!-- End of featured posts→
    </div>
  </div>
</div>
<!-- End of the sidebar -->
```

Appendix 4.0 Source code for Footer file (footer.php)

```
<!-- Footer-->
   <div id="footer" >
     <div class="container">
       <p class="text-muted text-center ">&copy; 2014 Ask Me International. Designed By
                Mahamad  Qaium Shah &middot; <a href="#">Privacy</a> &middot; <a
                href="#">Terms</a></p>
      </div>
    </div>
<!-- End of Footer -->

<!-- jQuery (necessary for Bootstrap's JavaScript plugins) -->
   <script>
      $(function(){

         $('.like-btn').click(function(){
            $('.dislike-btn').removeClass('dislike-h');
            $(this).addClass('like-h');
            $.ajax({
               type:"POST",
               url:"ajax.php",
               data:'act=like&pageID='+$('.like-btn').attr('postId'),
               dataType: 'json',
               success: function(data){
                  $('#likecount-'+$('.like-btn').attr('postId')).html(data.like_count);
                  $('#dislikecount-'+$('.like-btn').attr('postId')).html(data.dislike_count);
               }
            });
         });
         $('.dislike-btn').click(function(){
            $('.like-btn').removeClass('like-h');
            $(this).addClass('dislike-h');
            $.ajax({
               type:"POST",
               url:"ajax.php",
               data:'act=dislike&pageID='+$('.dislike-btn').attr('postId'),
               dataType: 'json',
               success: function(data){
                  $('#likecount-'+$('.like-btn').attr('postId')).html(data.like_count);
                  $('#dislikecount-'+$('.like-btn').attr('postId')).html(data.dislike_count);
               }
            });
         });
         $('.share-btn').click(function(){
            $('.share-cnt').toggle();
         });
      });
   </script>
   <!-- End of jQuery (necessary for Bootstrap's JavaScript plugins) -->

   <!-- SVG minified javascript -->
   <script src="js/snap.svg-min.js"></script>
   <!-- End of SVG minified javascript-->
</body>
</html>
```
