

# Rational Design and Principle of Responsive Web Application

Nareen O.M.Salim<sup>1</sup>, Naci Genc<sup>2</sup>M.Sc. Student, Department of Electrical and Electronics Eng., Institute of Natural and Applied Science, Yüzüncü Yıl University, Van, Turkey<sup>1</sup>Associate Professor, Department of Electrical and Electronics Eng., Faculty of Engineering, Yüzüncü Yıl University, Van, Turkey<sup>2</sup>

**ABSTRACT:** The goal of this paper was to look into the responsive plan models and advancement accosts to create pages that are improved for versatile website composition. The extra objectives were to investigations the plan standards and actualize model to see if it is practical to accomplish responsive outline for a different screen determination of devices. The hypothetical section of the paper task clarifies rather points of interest of essential advancement methodologies and outline thought for making responsive website pages that work on the most recent Smartphone to desktop PCs. About of the real reason, a basic website page as a model was fabricated, tried on different screen determination devices and assessed as far as a versatile outline with the portable first standard.

**KEYWORDS:** web design, web mobile, responsive web design, screen resolution.

## I. INTRODUCTION

Throughout the previous few years, using intelligent devices has elevated remarkably, through that duration, the request on web content for such devices has been increasing evenly. The increase hardware abilities attend by developed web access, and broader web modulus support has amplified internet availability. This countenance web designers to deploy and design the web Content proper for such devices. However, the dissimilarities among these devices range from different programming languages, platform standards, operating systems. There have some physical virtues. One of them is forsooth remarkable and is of special concern for the web developers are the display screen size. The dimensions of the display influence the content imposition and have an effect on the user utilizing this kind of tool. Really, huge display tailored net content will now not carry out in addition to a smaller show independently. The continual release of smart gadgets with ranging presentations leaves unique show layout content inadequate for multi-show usage. Lately, wide web consortium (w3c) delivered a new recommendation. Give the permission to discover the display size. This in conjunction with other techniques has introduced a term called Responsive Web Design (RWD). The capital abstraction of the basal attempt of RWD with Rich Internet Applications (RIA) that is all can use the web and using the Web with everything. The nature of this thought is to accredit disposal with the web to all available media. Now days, to access the internet have many devices with variant size of screen to display the web. However, users accept same needs until searching in web irrespective of the accessory, they are handling.

## II. RELATED WORK

In this section describes the works and projects who have related to this study. There is some example about the different responsive web page that was doing in a few years ago.

Mjelde et al. (2014) worked on Performance as Design Techniques for Making Websites More Responsive: the aim of this study refers to identify natural implementation challenges within the web responsive design sample. He wanted to know how available performance optimization material can be applied to subtract these challenges, by contrast, their agents under both desktop and mobile browsing background. The procedures used the subject collection and contention of the advantages and disadvantages existent performance Optimization material, in addition, experimental research via

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experiences. The goal of testing was to see how diverse techniques task in a controlled environment in order to recognize how implement was improved.

Samoylova (2014) worked about some way of automotive testing Responsive web pages. A study's purpose is about using several methods for changing new process to testing the web of responsive to more coincidence of to them semblance. The objective of work is to improve a method for doing the testing the case generation in an occurrence the responsive design and estimated by these ways of constructing the testing instrument in order to automate the testing of constancy from responsive websites aside from the main reproduce of a page. Describe several principles and applying to compare the web pages shown at screens. Study's outcome shows ours while this method occupied to the efficient method for testing by automatic at uniformity. The thesis additionally recognizes some numbers of problems and unanswered of them that referred them in future.

Zhang (2013) worked with Responsive Website Design for First Unitarian Church and Louis Kahn: The work is about design a responsive website for the First Unitarian Church, an internet site which has three person reviews: a mobile site, tablet site, and a desktop site. The internet site target audience is design students or architecture, enthusiasts, professors. There are three aims in this dissertation: first, make website to responsive for cross-platform experiment for users; second, to provide users an actual virtual touring revel in that's immersive and vibrant to first Unitarian Church; third, and to preserve the layout course for this complete task the same as Louis Kahn's architectural design style – disciplined and easy.

### III. RESPONSIVE DESIGN TECHNICAL

Today's have so many various technologies and ways to realizing the responsive design. Specially, now HTML5 and CSS3 are the new specifications to consider the problems produced by the fact that these standards themselves are still developing.

#### -HTML5

HTML5 is one of the mark-up languages utilized for organizing and showing the substance for site pages. The fifth correction of (HTML) was institutionalizing by the group this group contained the Hypertext Web Application Technology and World Wide Web on (28 October 2014). To support the multimedia in the last version has the aims this aims is classify HTML4, DOM level 2 XHTML, for making effectively decipherable components. (Anonymous, 2016a).

#### -CSS3

which is a collection of formatting attributes pointed to as 'rules', connected with specified tags in HTML instrument (Fugate et al., 2005).

#### - JavaScript

JavaScript Utilize for server side scripting also. Depict the substance with HTML and presenting the substance with the CSS format is deficient without gather client collaboration finished by utilizing JavaScript. (Anonymous, 2016b).

The algorithm automatically generates mask image without user interaction that contains only text regions to be inpainted.

### IV. OVERVIEW OF THE RESPONSIBLE WEB DESIGN

The phrase of "Responsive web design" (RWD) that innovated within 4 years ago, this subject is relatively modern and there are not many issues on these themes. A research of IEEE and the ACM Digital Library consultation publications render a total of 5 papers joined to responsive web design in a caption and meta-data. In order to show a current state of the technique, the latest interests that non-peer go over were used. The Web pages when using responsible web design can use only one web page layout instead of multiple webs that will run on devices ranging from TV screen to phone screen as shown in shape below. The purpose of responsive web design is to get navigation and readability on each device with resizing and minimal scrolling (Buinac et al., 2013).

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Figure1: Responsive web pages for various screen resolution devices.

The main elements in the responsive web design are (Media queries, Fluid grid, Flexible images).

## 1. Media Quires

The users, using the device that accesses the web page, was redirected to different subsists. Those subsist have a various layout but the same content and acquaintance styling Redirection request multiple detach engineering efforts, this way is optimized only for two screen mode and this does not supply a great user experiment if peoples are using significantly bigger screens or tablets. There is a want in show optimized layout gives to on the instrument the visitor is employing at the moment. Media queries one of the modules from CSS3 specification.

## 2. Fluid Grids

A fluid grid containing columns that are expressed in relative widths. The attribution is expressed in the proportions of their consists of an element. The grid resizes to match the window size. The size of a window is matching to grid resizes. The main thought for a fluid grid is to use a form for calculating the ratio in percentage:  $\langle \text{target} / \text{context} = \text{result} \rangle$ .

## 3. Fluid Images

Fluid images set their sizes accepting to their parent identity. The fluid images idea is to employ the property  $\{\text{max-width: } 100\%\}$ . Image with this property will never be bigger than its parent. If the dimensions of a picture inside bigger than the parent block, the picture inside is proportionally decreased. This rule is used to embed, images, videos, and objects.

## V. VALIDATION

For designing a simple web page and converted to a responsive, we should fine a best practical method. So in this part of study discusses how the prototype was loaded out while these steps:

- Step 1: analysing the requirement.
- Step 2: general design.
- Step 3: execution.
- Step 4: testing the result.

### 1. Analysing the requirement

In this step, the prototype of the web page requirements was analysed and summarized. The requirements of the web page are:

1. The approach of Responsive design.
2. Using the HTML5 and CSS3 technologies.
3. Taking after the design essentials.
4. Using last version of browser.

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## 2. General designs

Designing a layout of web page before execution aided to recognize and select breakpoints of responsive web design. The range of desktop browser screen is from (1024 -1200) pixels. This scope of determination works in many portable PCs and notebooks. This design purpose resolution it is suitable for every widescreen browsers. The resolution of a table is between (600-1024) Pixel. The resolution of landscape starts from 480 and in mobile start in 320.

## 3. Execution

One time design and layout of web page are entered in the project that design a main thought for display the webpage in by using different viewports. Using Notepad++ for writing a source code of web page and using Dreamweaver CS5 for designed the mobile web pages.

## VI. RESULTS

The web page was testing by using public testing and passes browser compatibility. About the web page and testing and about implementation and checked it the webpage. After checking the web page with last version of browser like Mozilla Firefox, Internet Explorer, and chrome the work is complete and flawlessly. Moreover, by dealing with extra codes in browsers when it was increased in to HTML5 language document. That is needful and in order to compatibility about the web. In the below the last outcome by using in various viewports is described.

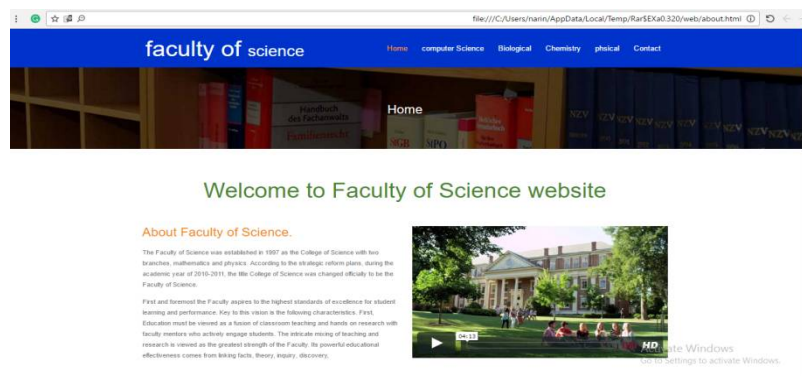


Figure 2: display the web page by using desktop browser.

In figure 2 displays the last web page model by using the desktop browser. The resolution of a screen is more than 1024 pixels.



Figure 3 display the web page prototype on iPad Pro.

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In figure 3 below display the web page on the iPad Pro. The resolution of devices is between (600-1024) pixels. Now in the market many types of tablets existing. The plan is additionally versatile and responsive to execute the necessary state in the CSS media questions to this format.

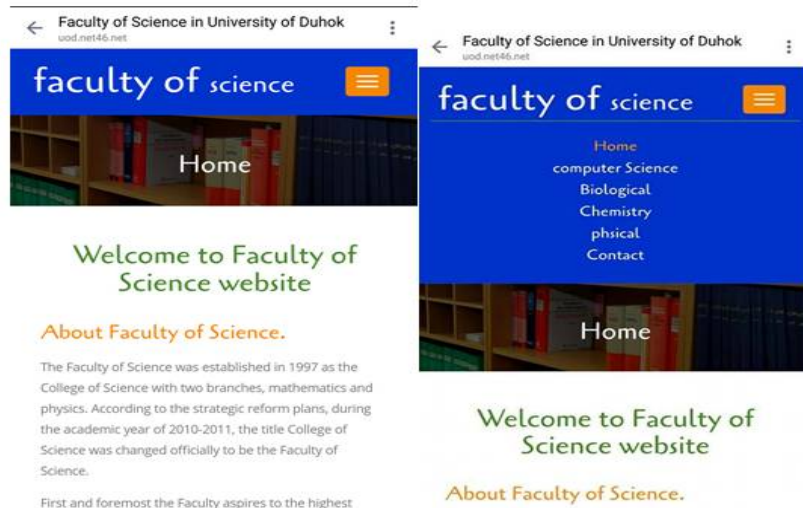


Figure 4 display web page on the mobile screen.

In figure 4 display and adaptive the web page on the mobile browser regardless of different viewports. Display the web design on the screen of mobile, because the size of mobiles screen is small if compare as the screen of desktops so the container is displayed as a single column. The menu bar at the top represented by three lines to simple aviation. By default the items that in a menu when display in mobile are hidden and extended by touched or clicked on mobile viewports.

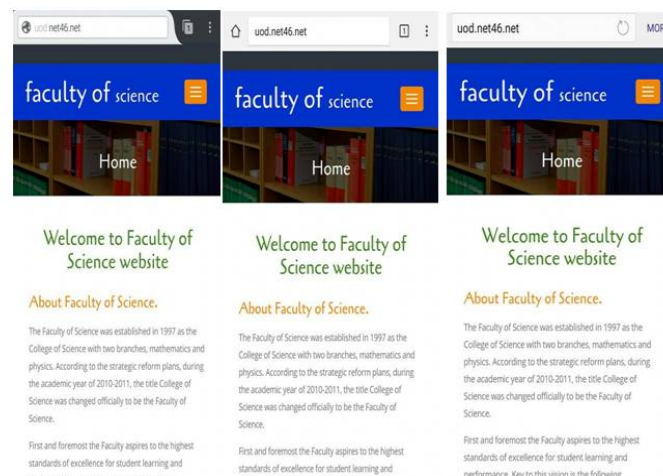


Figure 5 display web page by using last version of browser.

The properties of CSS, HTML5, and JavaScript are relying on all browsers modern. As shown in figure 5 display the web page prototype for the testing the web page using the most modern version of browsers like Google Chrome, Mozilla Firefox, and Internet Explorer.

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## VII. CONCLUSION

In the last we got the rules of responsive web design are the modern technical in the World Wide Web. Through study and working about this technical, we see many advantages and occasion stabiles for processing web page in a present day. This technical gives the adaptability to web pages to different sizes of screen; the benefit of this ability is taken low cost, easy keeping, and less workload. About the challenges in this process, it has very challenges .But make the problem for the developer during displaying the web on the screen of mobile to the different screen like desktops screen. In the first design, the web for mobile, the web pages execution in the different devices and interactivity of this various screen in the market make an effect on the user and make the poor experiment. To increase user experience, thought a reality and applying for better resolution exercise, this is a strategy of content. The requires of a survey to get the best solution about the principles of responsive web design, and rapidly increasing of rules is using a responsive web design.

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