

FSD Laboratory 02

Aim: Design and develop a responsive web page using Bootstrap front end framework.

Objectives:

1. To understand HTML tags
2. To learn the styling of web pages using CSS
3. To learn Bootstrap Front End Framework.

Theory:

1. Bootstrap Grid System.
2. Bootstrap .container and .container-fluid class.

Bootstrap Grid System

The Bootstrap Grid System is a powerful and flexible layout system that allows you to create responsive designs by dividing a webpage into a grid of rows and columns. Here's a breakdown of how it works:

Core Concepts:

- **Rows and Columns:**
 - The grid system uses a series of containers, rows, and columns to layout and align content.
 - A row is a horizontal group of columns. Each row is divided into 12 columns (for most screen sizes).
 - You place content inside columns, and the number of columns a piece of content occupies will determine its width.
- **Responsive Breakpoints:**
 - Bootstrap provides five grid breakpoints for different screen sizes:
 - Extra small (xs): <576px
 - Small (sm): ≥576px
 - Medium (md): ≥768px
 - Large (lg): ≥992px
 - Extra large (xl): ≥1200px
 - Extra extra large (xxl): ≥1400px
 - You can create responsive layouts by specifying different column sizes for different screen widths.

Usage Example:

```
<div class="container">
  <div class="row">
    <div class="col-12 col-md-8">Column 1 (takes 8/12 on md and up,
full width on smaller screens)</div>
    <div class="col-6 col-md-4">Column 2 (takes 4/12 on md and up,
6/12 on smaller screens)</div>
  </div>
</div>
```

Key Features:

- **Fluid and Fixed Grids:**
 - The grid system can be either fluid (100% width at all times) or fixed (centered on the page with fixed max-width).
- **Nestable:**
 - You can nest rows and columns inside other columns.
- **Offsetting Columns:**
 - Columns can be offset by a number of columns to create spacing.
- **Order Classes:**
 - You can change the order of columns by using ‘.order-*’ classes.

Bootstrap .container and .container-fluid Class

Both .container and .container-fluid are used to create a container for your content in Bootstrap, but they have different behaviors.

.container Class:

- **Fixed Width:**
 - The .container class provides a fixed-width container. The width of this container changes based on the current screen size, but it remains centered on the page.
- **Responsive Widths:**
 - The width of the .container adapts at each responsive breakpoint:
 - Extra small (xs): auto (100% width)
 - Small (sm): 540px
 - Medium (md): 720px
 - Large (lg): 960px
 - Extra large (xl): 1140px
 - Extra extra large (xxl): 1320px
- **Use Case:**
 - Ideal for creating a consistent, centered layout with fixed-width content.

```
<div class="container">  
  <!-- Content here will have a fixed width depending on screen  
  size -->  
</div>
```

.container-fluid Class:

- **Full Width:**
 - The .container-fluid class creates a container that spans the entire width of the viewport, regardless of the screen size.

- **Use Case:**

- Ideal for creating full-width layouts where the content needs to span the entire width of the page.

```
<div class="container-fluid">
  <!-- Content here will always be full-width -->
</div>
```

Key Differences:

- **Width:** .container is fixed-width and centered, whereas .container-fluid is full-width and expands to fill the viewport.
- **Layout Type:** Use .container for layouts with fixed-width content and .container-fluid for full-width layouts.

FAQ:

1. What is a responsive website?

A1) A responsive website is a website that automatically adjusts and optimizes its layout, content, and design based on the screen size and device being used to view it. This ensures a consistent and user-friendly experience across a wide range of devices, including desktops, tablets, and smartphones. The key goal is to provide an optimal viewing experience with easy reading, navigation, and minimal resizing, panning, or scrolling.

2. How Bootstrap helps to design a responsive website?

A2) Bootstrap helps design responsive websites through its built-in grid system, responsive breakpoints, and pre-designed components. Here's how:

- **Grid System:** Bootstrap's 12-column grid allows for flexible layout design that can adapt to different screen sizes. Developers can define how content is displayed on various devices, ensuring it looks good on all screens.
- **Responsive Breakpoints:** Bootstrap includes predefined classes that automatically adjust the layout based on the screen size, making it easy to create designs that work well on any device.
- **Responsive Utilities:** Bootstrap provides utility classes (e.g., .d-none, .d-sm-block) that help control the visibility and behavior of elements across different screen sizes, ensuring the website adapts fluidly to the user's device.

Output: Screenshots of the output to be attached.

Problem Statement:

Design and develop a responsive web page (For example student registration, course enrollment, library management system, online shopping system etc.) using Bootstrap front end framework. Web pages should contain HTML5 elements (Use all possible formatting for example font, colour etc.).

Web page should include various

- images,
- links within the page,
- tables
- lists
- form elements
- paragraphs
- links to other pages for navigation,
- new tabs.

Use Cascaded Style Sheets (CSS) to style the web pages designed. Make use of

- Three types of styles (Inline, Internal and External)
- border,
- margins,
- padding,
- navigation,
- dropdown list
- tag selector
- class selector
- id selector
- exploring background image and position property etc.

Output:

Html:

```
a2 > <> website.html > html > body > nav.navbar
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>Arin's Webpage</title>
7      <link href="style.css" rel="stylesheet">
8  </head>
9  <body>
10     <nav class="navbar">
11         <div class="navbar-logo">MyWebsite</div>
12         <ul class="navbar-menu">
13             <li><a class="active" href="website.html">Home</a></li>
14             <li><a class="active" href="contact.html">Contact</a></li>
15             <li><a class="active" href="project.html">Projects</a></li>
16         </ul>
17         <!-- <div class="navbar-toggle">
18             <span class="bar"></span>
19             <span class="bar"></span>
20             <span class="bar"></span>
21         </div> -->
22     </nav>
23     <script src="scripts.js"></script>
24
25     <header><i>Arin Khopkar</i></header>
26
27     <hr>
28
29     <h2>Educational Background</h2>
30
31     <p>
32         Completed my schooling and junior college in Hiranandani Foundation School, Thane in the year 2022.
33     </p>
34
35     <p>
36         Student at MIT-WPU
37     </p>
38
39     <p>
40         B.Tech Computer Science Engineering
41     </p>
42
43 </body>
44 </html>
```

```
a2 > <> contact.html > html > body > p > a
```

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4
5     <meta charset="UTF-8">
6     <meta name="viewport" content="width=device-width, initial-scale=1.0">
7     <title>My Socials</title>
8     <link href="style.css" rel="stylesheet">
9
10 </head>
11 <body>
12
13     <nav class="navbar">
14         <div class="navbar-logo"></div>
15         <ul class="navbar-menu">
16             <li><a class="active" href="website.html">Home</a></li>
17             <li><a class="active" href="contact.html">Contact</a></li>
18             <li><a class="active" href="project.html">Projects</a></li>
19         </ul>
20         <!-- <div class="navbar-toggle">
21             <span class="bar"></span>
22             <span class="bar"></span>
23             <span class="bar"></span>
24         </div> -->
25     </nav>
26     <script src="scripts.js"></script>
27
28     <h2>
29         My Socials
30     </h2>
```

```
29         My Socials
30     </h2>
31     <p>Number: 7506675042</p>
32     <p>My GitHub: <a href="https://github.com/HaloAarin7"></a></p>
34     <p>My LinkedIn: <a href="https://www.linkedin.com/in/arín-khopkar-307550253/">Linkedin</a></p>
35 </body>
36
37 </html>
```

```
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1  <!DOCTYPE html>
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37     </p>
38
39     <p>
40         B.Tech Computer Science Engineering
41     </p>
42
43 </body>
44 </html>
```


CSS:

```
a2 > # style.css > .navbar-menu a:hover
1  body {
2      background-image: url("/images/ContactBack.jpg");
3  }
4  header {
5      font-size: 80px;
6      font-family: Arial, Helvetica, sans-serif;
7      text-align: center;
8  }
9
10 .navbar {
11     display: flex;
12     justify-content: space-between;
13     align-items: center;
14     background-color: #333;
15     padding: 10px 20px;
16     position: sticky;
17     top: 0;
18     z-index: 1000;
19 }
20
21 .navbar-logo {
22     color: #fff;
23     font-size: 24px;
24     font-weight: bold;
25     margin-right: auto;
26 }
27
28 .navbar-menu {
29     list-style: none;
30     display: flex;
```



```
a2 > # style.css > .navbar-menu a:hover
28 .navbar-menu {
29     list-style: none;
30     display: flex;
31     margin-left: auto;
32 }
33
34 .navbar-menu li {
35     margin-left: 20px;
36 }
37
38 .navbar-menu a {
39     color: #fff;
40     text-decoration: none;
41     font-size: 18px;
42     transition: color 0.3s;
43 }
44
45 .navbar-menu a:hover {
46     color: #ff6347; /* Tomato color on hover */
47 }
48
49 /* Responsive styles */
50
51 body {
52     font-family: 'Arial', sans-serif;
53     line-height: 1.6;
54     color: #333;
55     padding: 20px;
56     background-color: #f9f9f9;
57 }
```

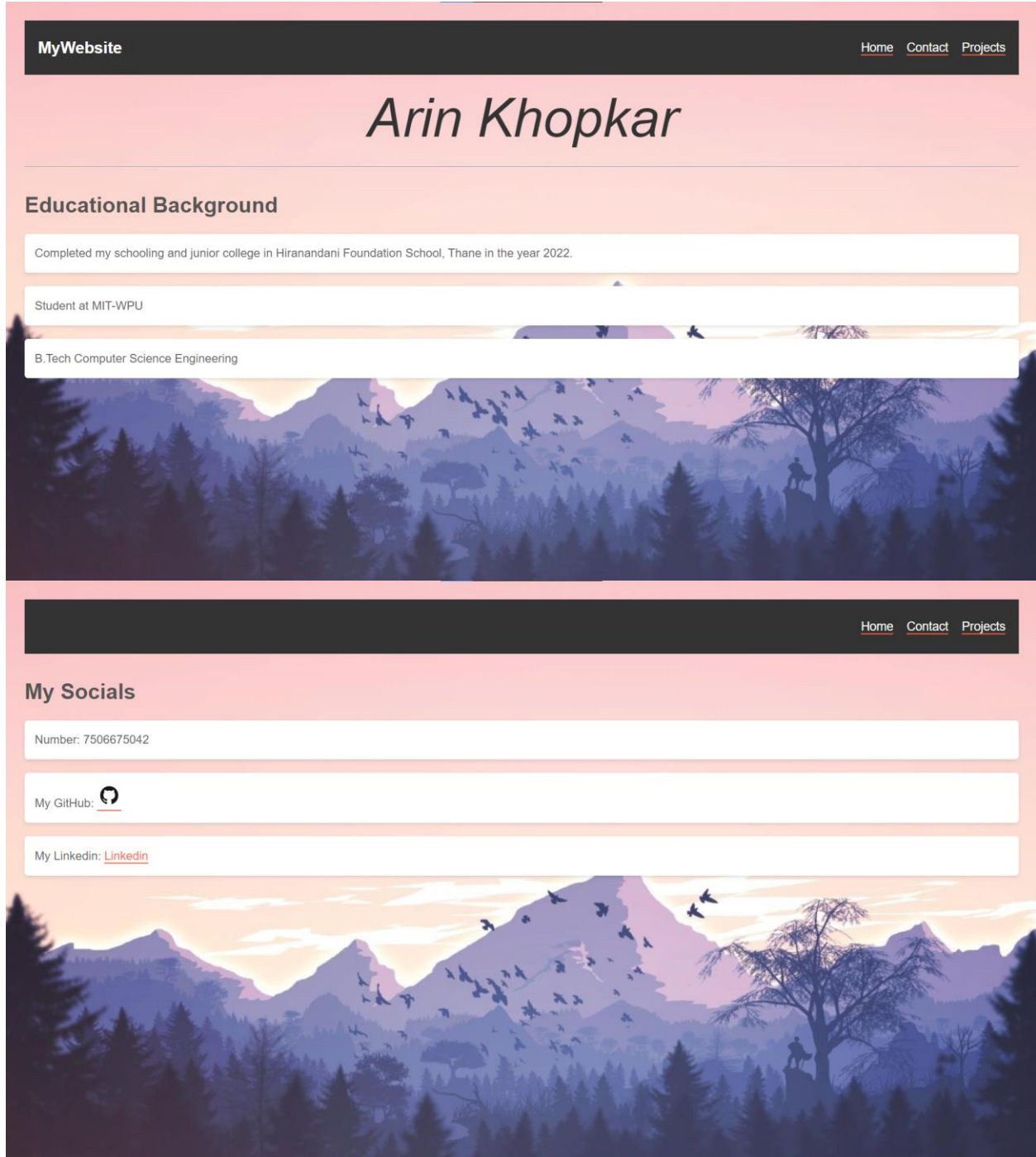
```
a2 > # style.css > .navbar-menu a:hover
59 h1 {
60     font-size: 2.5em;
61     color: #444;
62     margin-bottom: 20px;
63     text-align: center;
64 }
65
66 h2 {
67     font-size: 2em;
68     color: #555;
69     margin-bottom: 15px;
70     margin-top: 30px;
71 }
72
73 p {
74     font-size: 1.1em;
75     margin-bottom: 20px;
76     text-align: justify;
77     color: #666;
78     background-color: #fff;
79     padding: 15px;
80     border-radius: 5px;
81     box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
82 }
83
84 a {
85     color: #ff6347; /* Tomato color for links */
86     text-decoration: none;
87     border-bottom: 2px solid #ff6347;
88     transition: color 0.3s, border-bottom 0.3s;
```

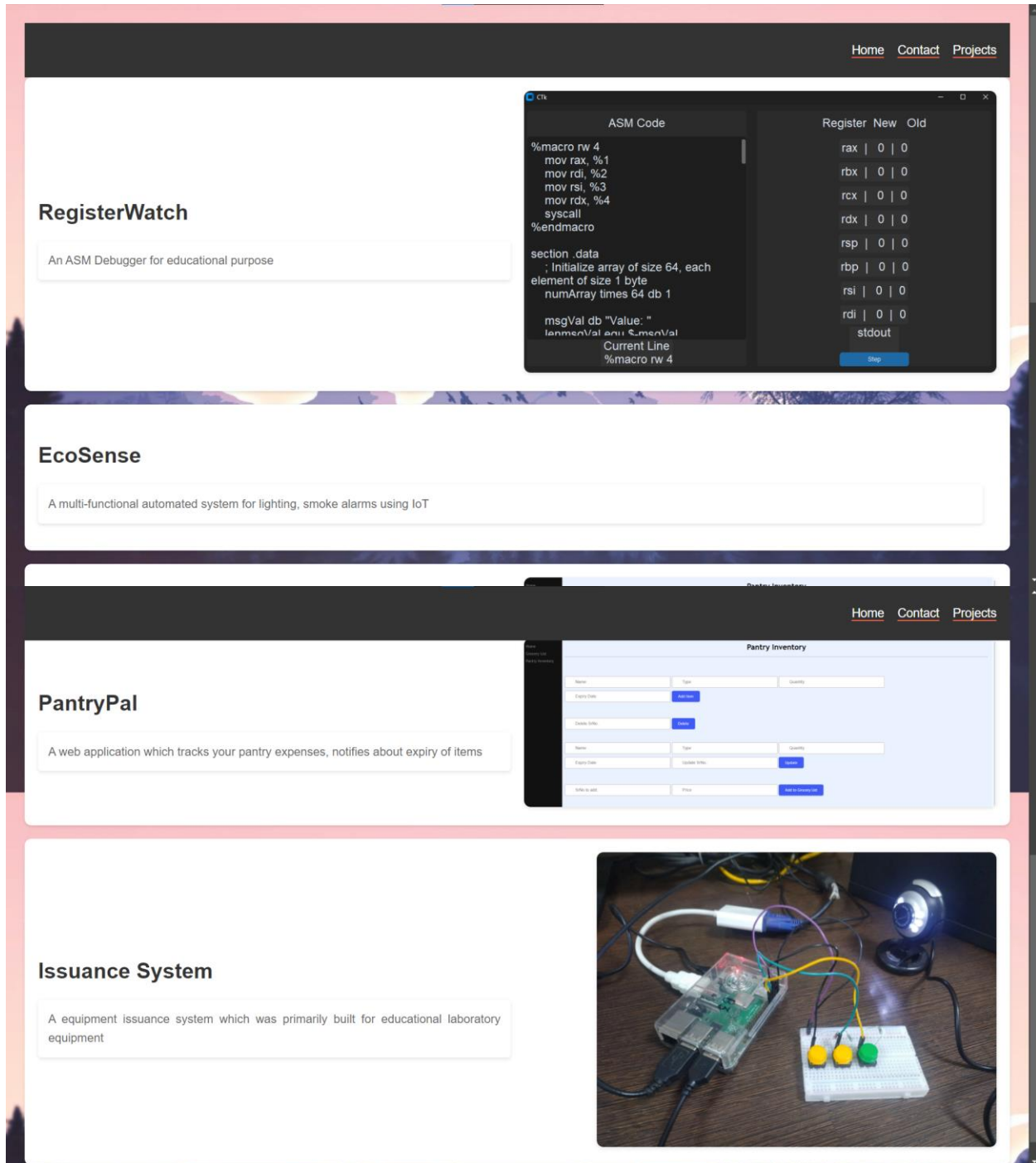
```
a2 > # style.css > .navbar-menu a:hover
84   a {
85     text-decoration: none;
86     border-bottom: 2px solid #ff6347;
87     transition: color 0.3s, border-bottom 0.3s;
88     align-items: center;
89   }
90
91
92   a:hover {
93     color: #e55335; /* Darker shade of tomato */
94     border-bottom: 2px solid #e55335;
95   }
96
97   /* Additional styles for project sections */
98   .project-section {
99     display: flex;
100    align-items: center;
101    background-color: #fff;
102    padding: 20px;
103    border-radius: 10px;
104    box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
105    margin-bottom: 20px;
106  }
107
108  .project-info {
109    flex: 1;
110    padding-right: 20px;
111  }
112
113  .project-info h2 {
114    font-size: 2em;
```

```
a2 > # style.css > .navbar-menu a:hover
113 .project-info h2 {
115     color: #333;
116     margin-bottom: 10px;
117 }
118
119 .project-info p {
120     font-size: 1.1em;
121     color: #666;
122 }
123
124 .project-image {
125     flex: 1;
126     text-align: right;
127 }
128
129 .project-image img {
130     max-width: 100%;
131     border-radius: 10px;
132     box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
133 }
134
135 /* Responsive styles */
136 @media (max-width: 768px) {
137     .project-section {
138         flex-direction: column;
139         text-align: center;
140     }
141
142     .project-info {
143         padding-right: 0;
```

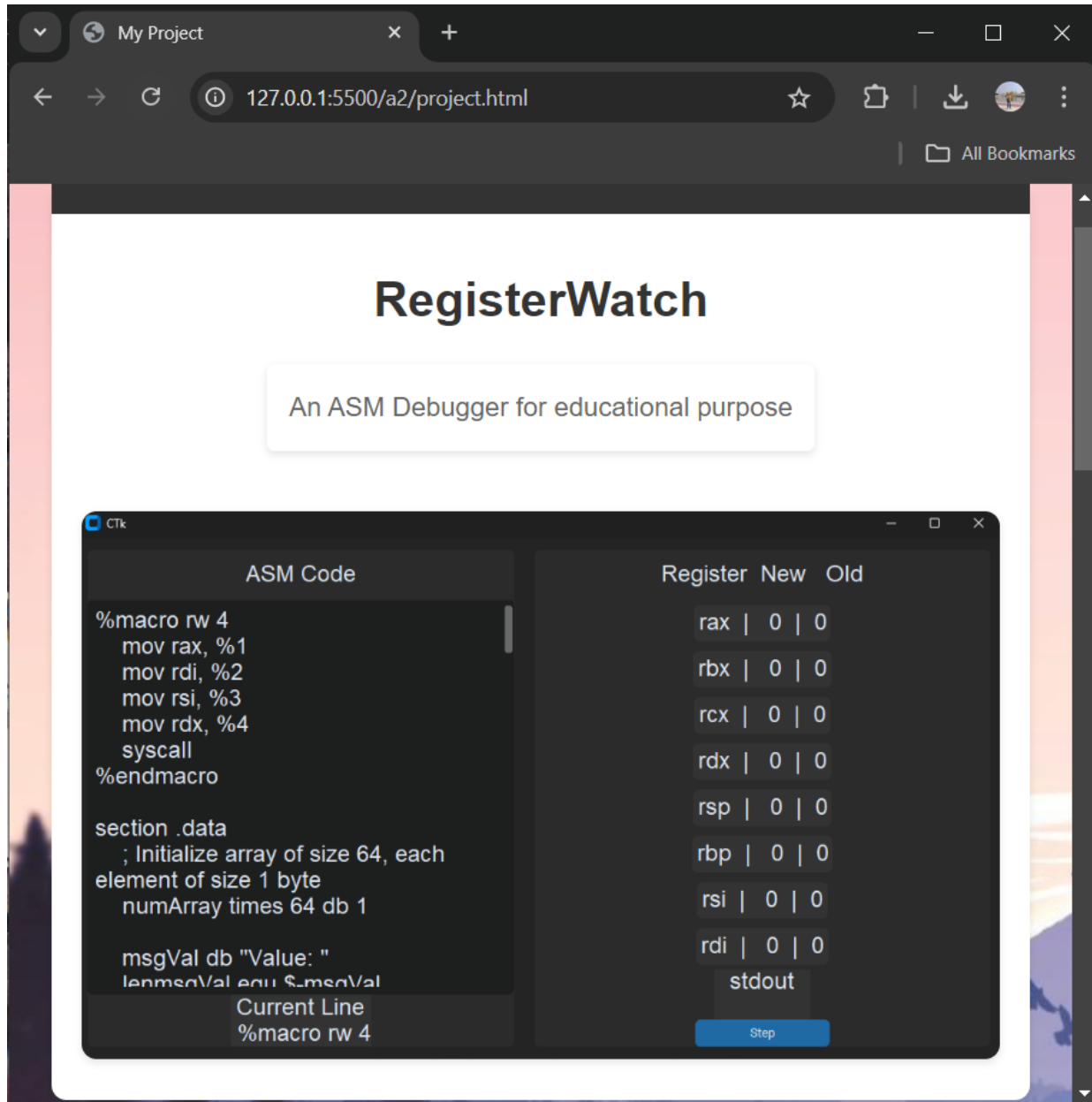
```
a2 > # style.css > .navbar-menu a:hover
134
135     /* Responsive styles */
136     @media (max-width: 768px) {
137         .project-section {
138             flex-direction: column;
139             text-align: center;
140         }
141
142         .project-info {
143             padding-right: 0;
144             padding-bottom: 20px;
145         }
146
147         .project-image {
148             text-align: center;
149         }
150
151         .navbar-menu {
152             position: absolute;
153             top: 60px;
154             left: -100%;
155             height: calc(100vh - 60px);
156             background-color: #333;
157             flex-direction: column;
158             align-items: center;
159             transition: left 0.3s;
160             margin-left: 0;
161         }
162     }
```

Portfolio Website:





Website after resizing window



RegisterWatch

An ASM Debugger for educational purpose

ASM Code

```
%macro rw 4
    mov rax, %1
    mov rdi, %2
    mov rsi, %3
    mov rdx, %4
    syscall
%endmacro

section .data
; Initialize array of size 64, each
element of size 1 byte
numArray times 64 db 1

msgVal db "Value: "
lenmsgVal equ $-msgVal

Current Line
%macro rw 4
```

Register **New** **Old**

rax	0	0
rbx	0	0
rcx	0	0
rdx	0	0
rsp	0	0
rbp	0	0
rsi	0	0
rdi	0	0
stdout		

Step