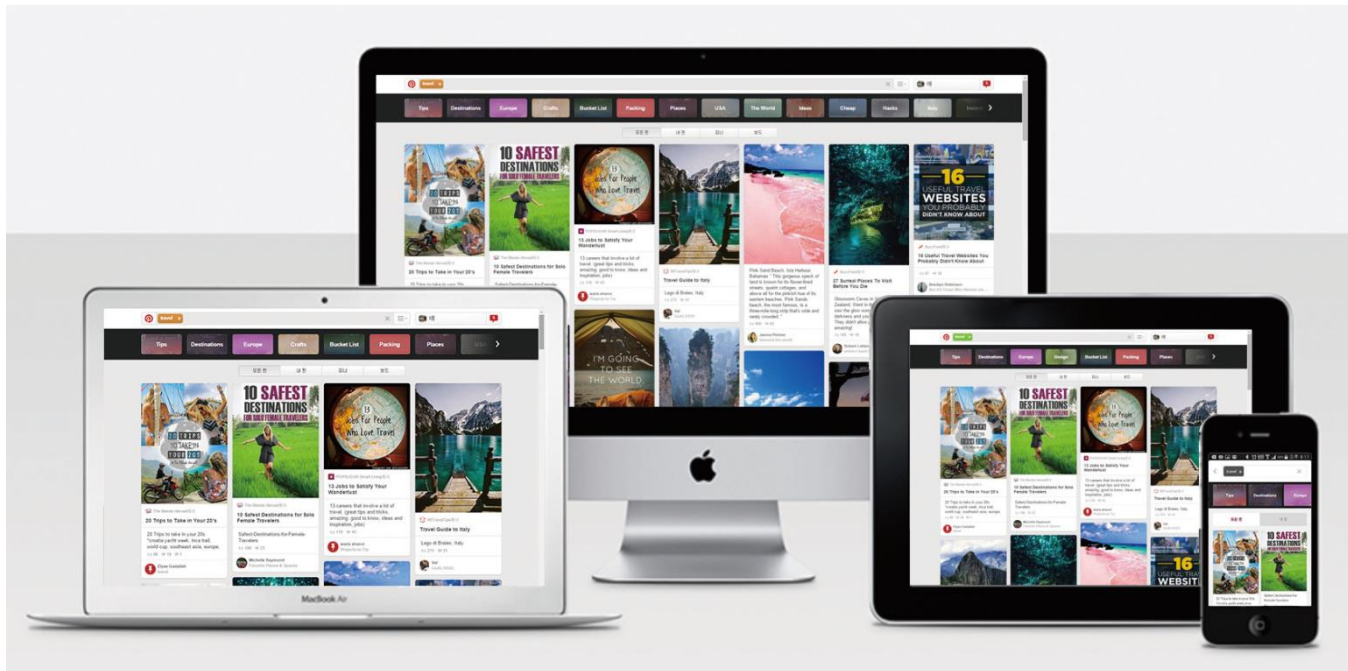


Part 5. Responsive Web Design

1. Understanding Responsive Web Design

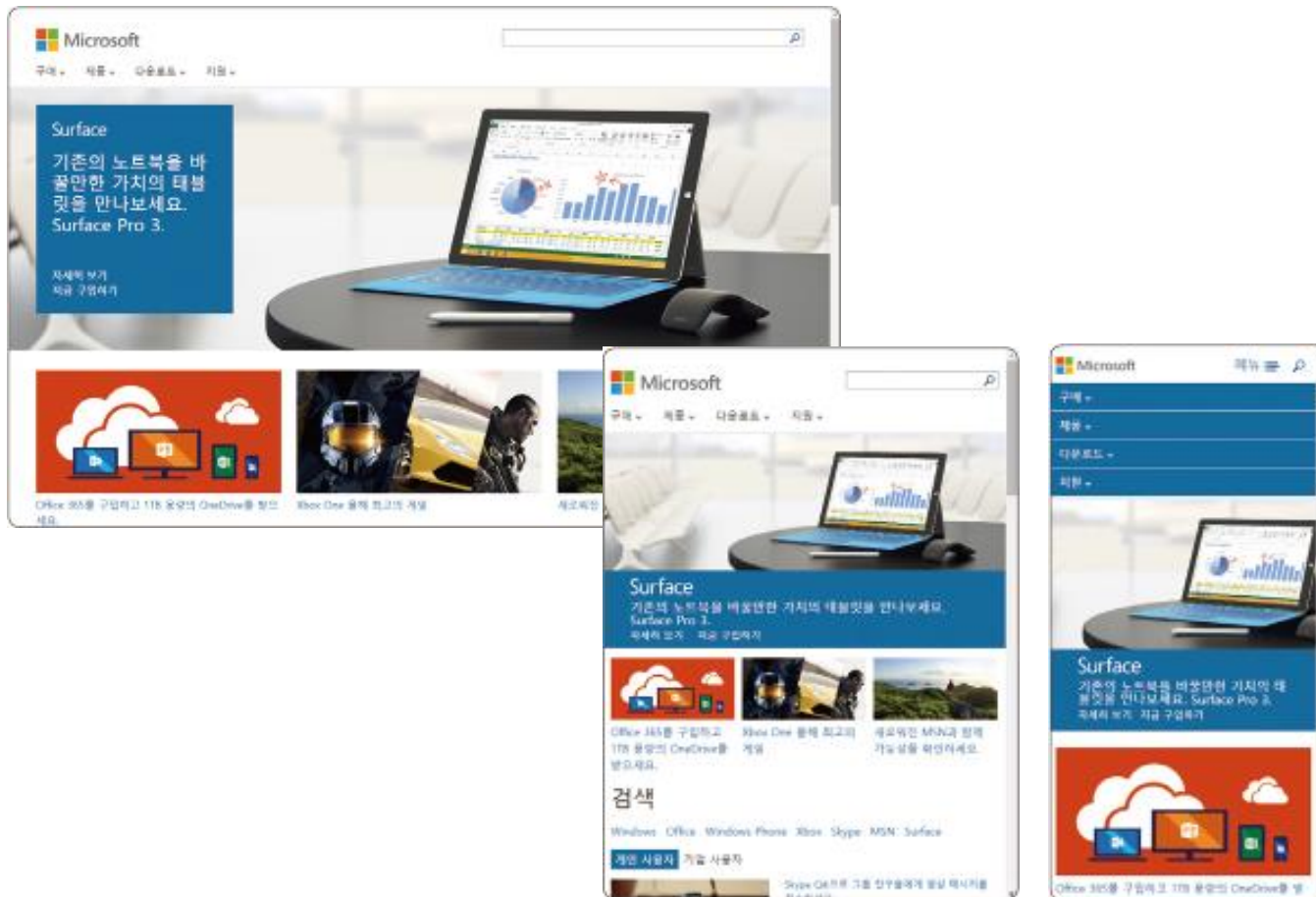
- What is responsive web design?
- Responsive web design means designing a website for devices with different resolutions.



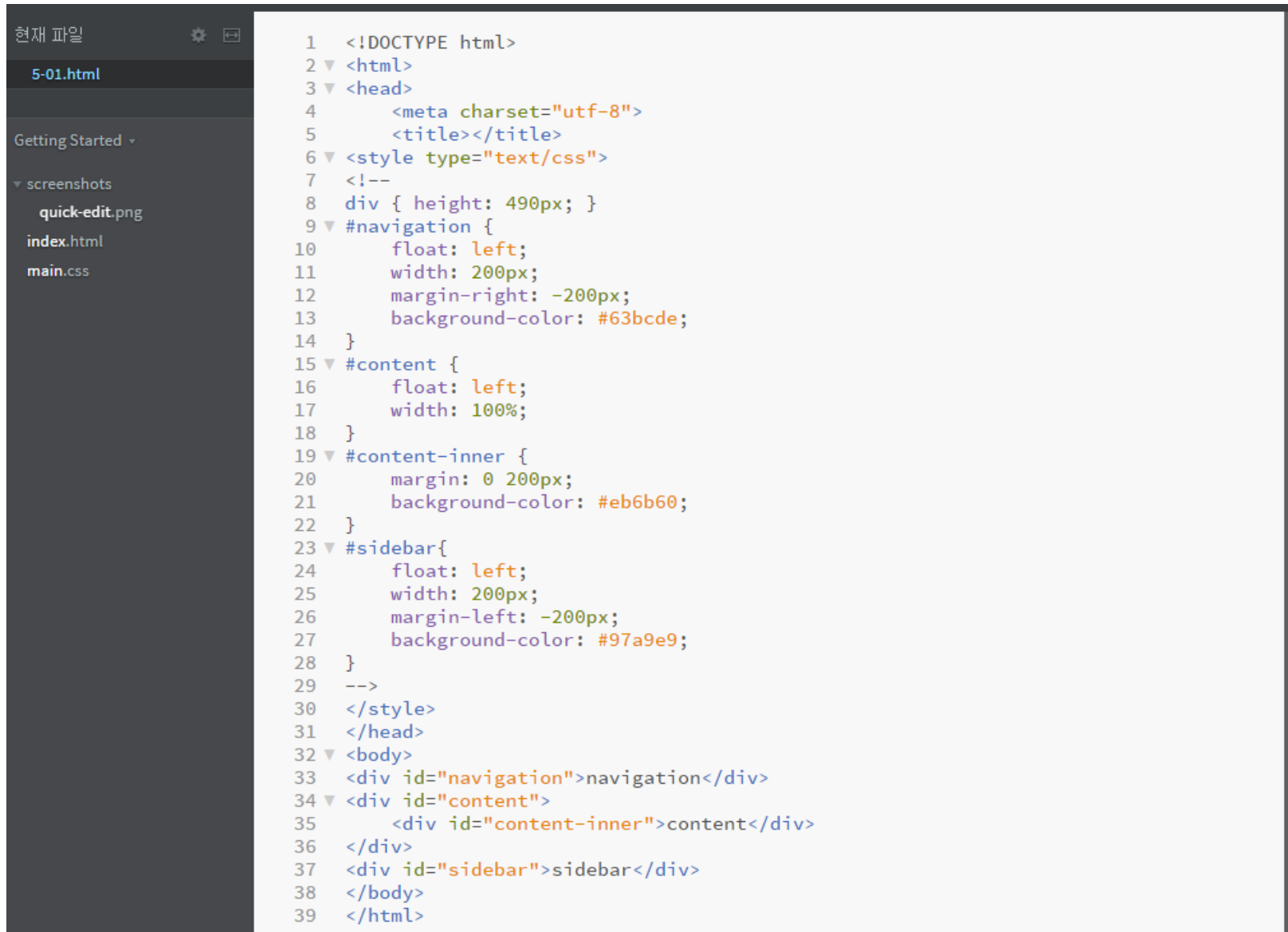
1. Understanding Responsive Web Design

- Responsive Websites

-



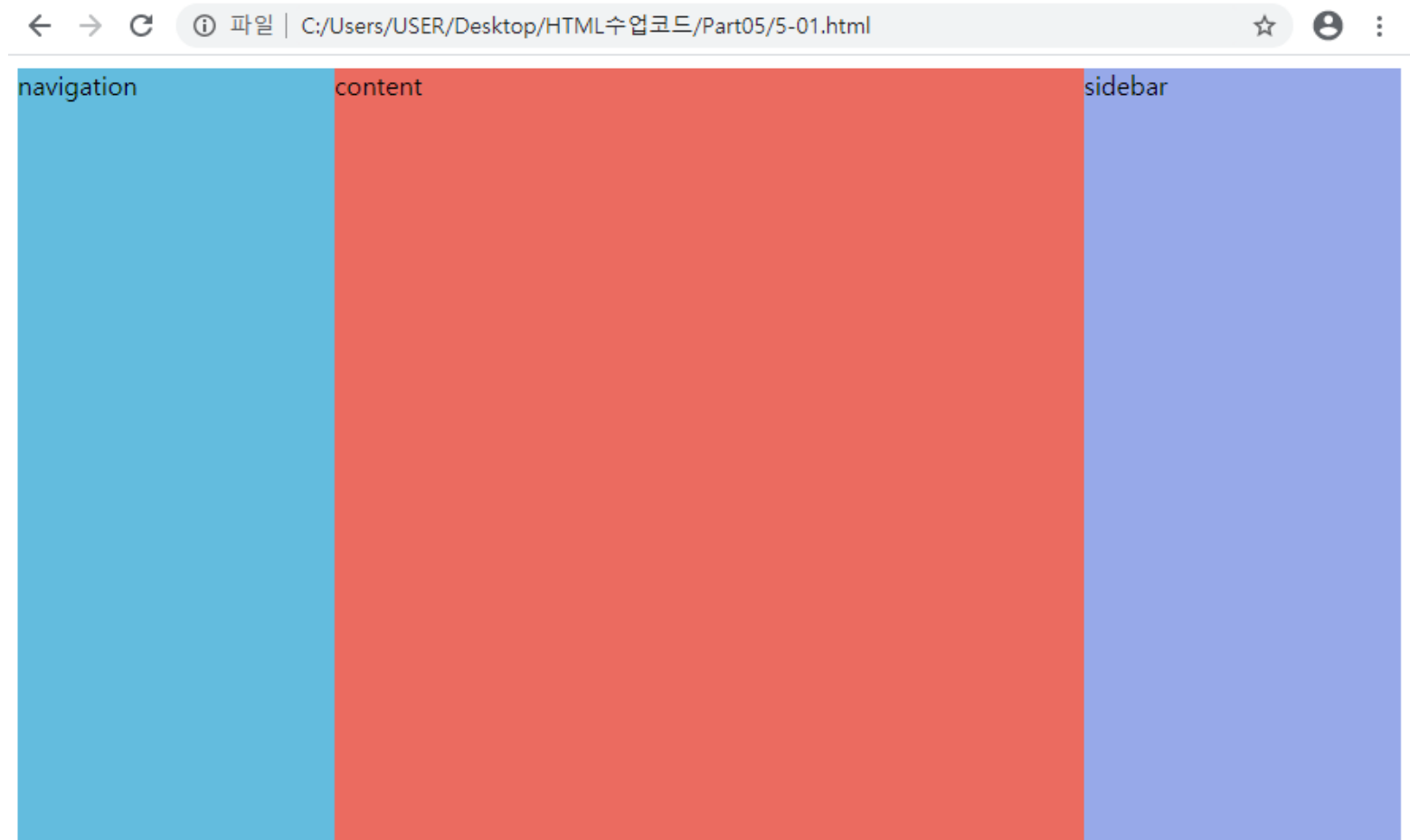
1. Understanding Responsive Web Design



The image shows a code editor interface with a dark sidebar on the left and a light main area on the right. The sidebar contains a file explorer with the following items: '현재 파일' (Current File), '5-01.html', 'Getting Started', 'screenshots', 'quick-edit.png', 'index.html', and 'main.css'. The main area displays the code for '5-01.html', which is a combination of HTML and CSS. The code is as follows:

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <meta charset="utf-8">
5      <title></title>
6  <style type="text/css">
7      <!--
8      div { height: 490px; }
9  #navigation {
10     float: left;
11     width: 200px;
12     margin-right: -200px;
13     background-color: #63bcde;
14 }
15 #content {
16     float: left;
17     width: 100%;
18 }
19 #content-inner {
20     margin: 0 200px;
21     background-color: #eb6b60;
22 }
23 #sidebar{
24     float: left;
25     width: 200px;
26     margin-left: -200px;
27     background-color: #97a9e9;
28 }
29 -->
30 </style>
31 </head>
32 <body>
33 <div id="navigation">navigation</div>
34 <div id="content">
35     <div id="content-inner">content</div>
36 </div>
37 <div id="sidebar">sidebar</div>
38 </body>
39 </html>
```

1. Understand Responsive Web Design

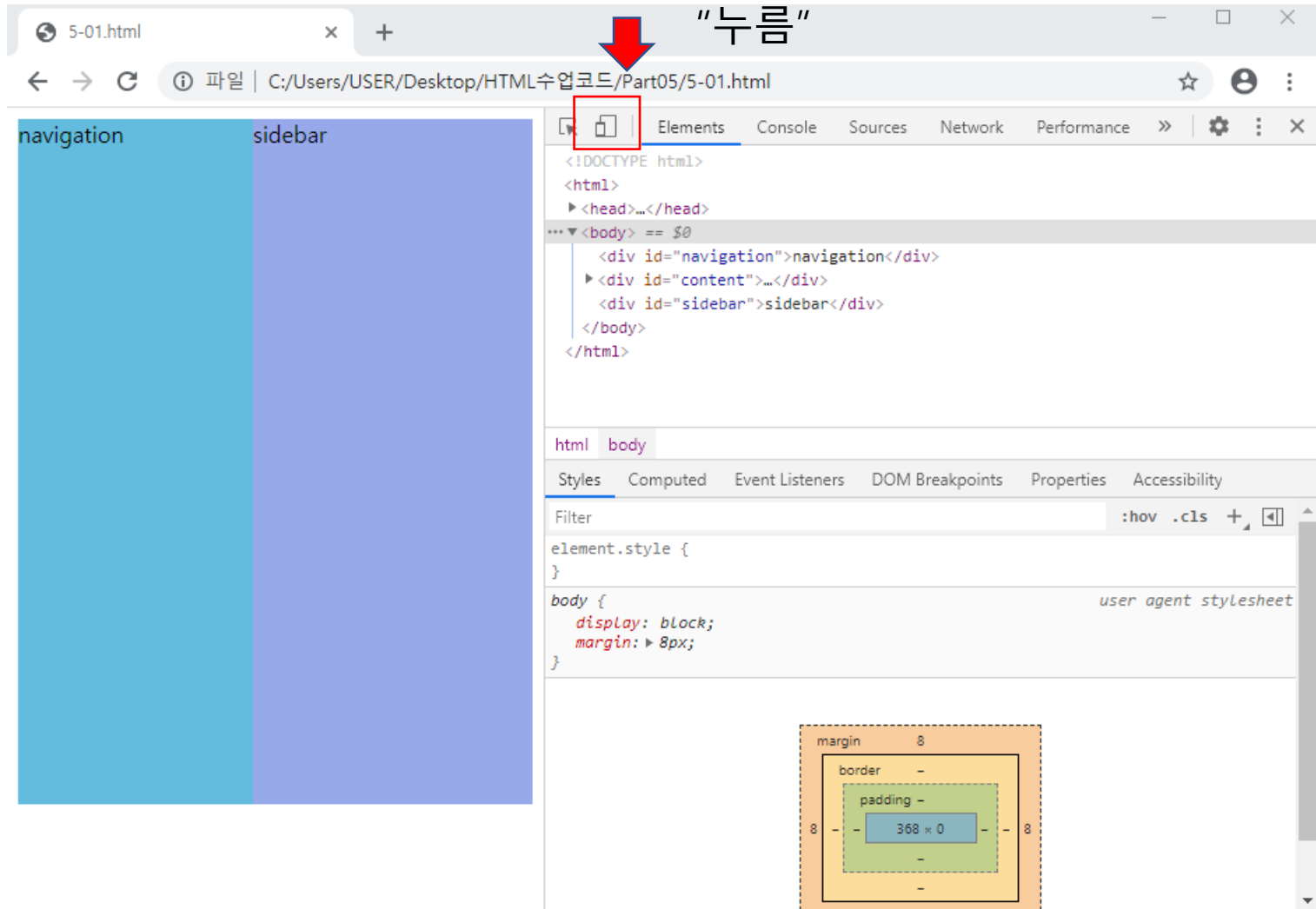


1. Understand Responsive Web Design



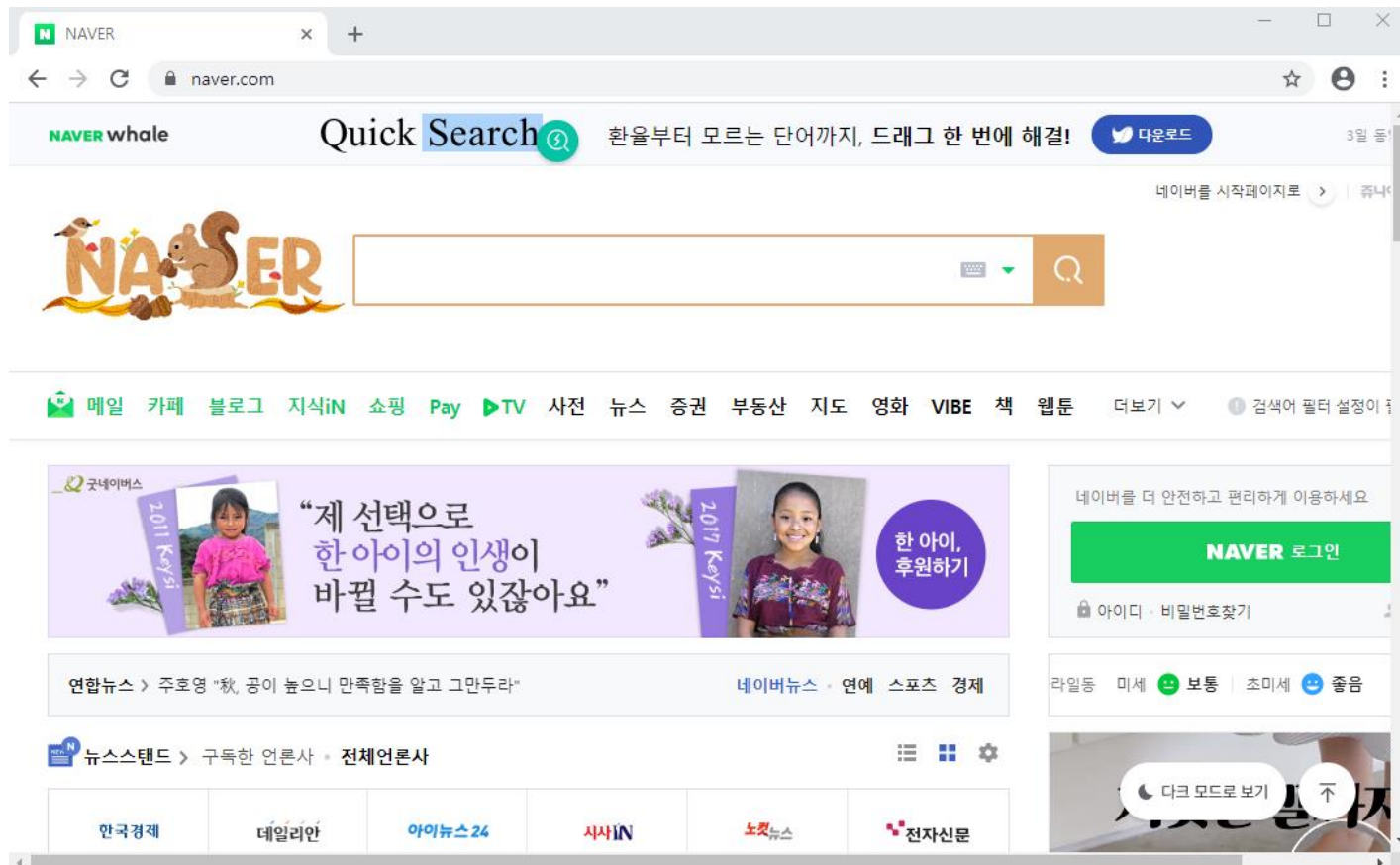
- Click F12.

1. Understand Responsive Web Design

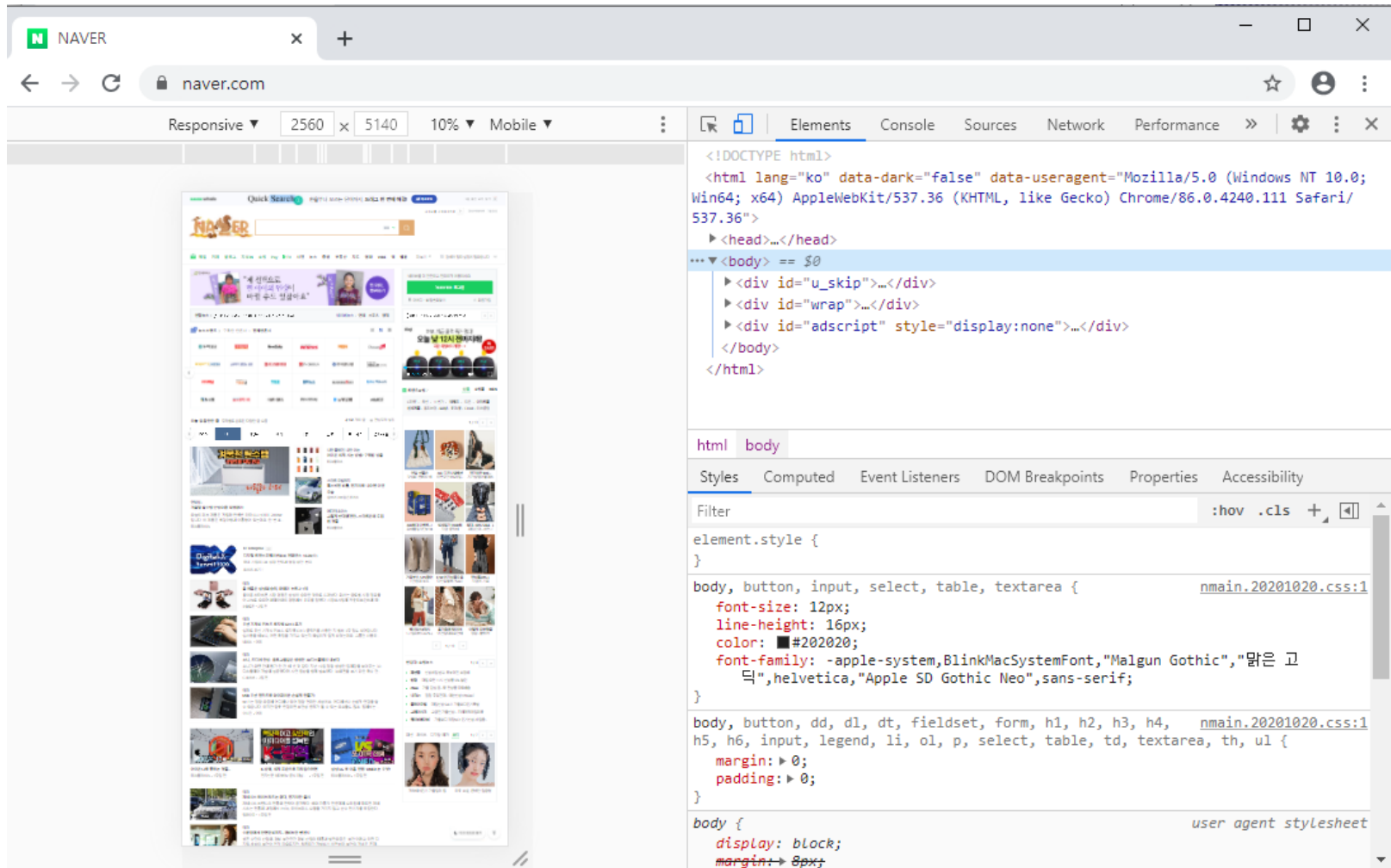


1. Understand Responsive Web Design

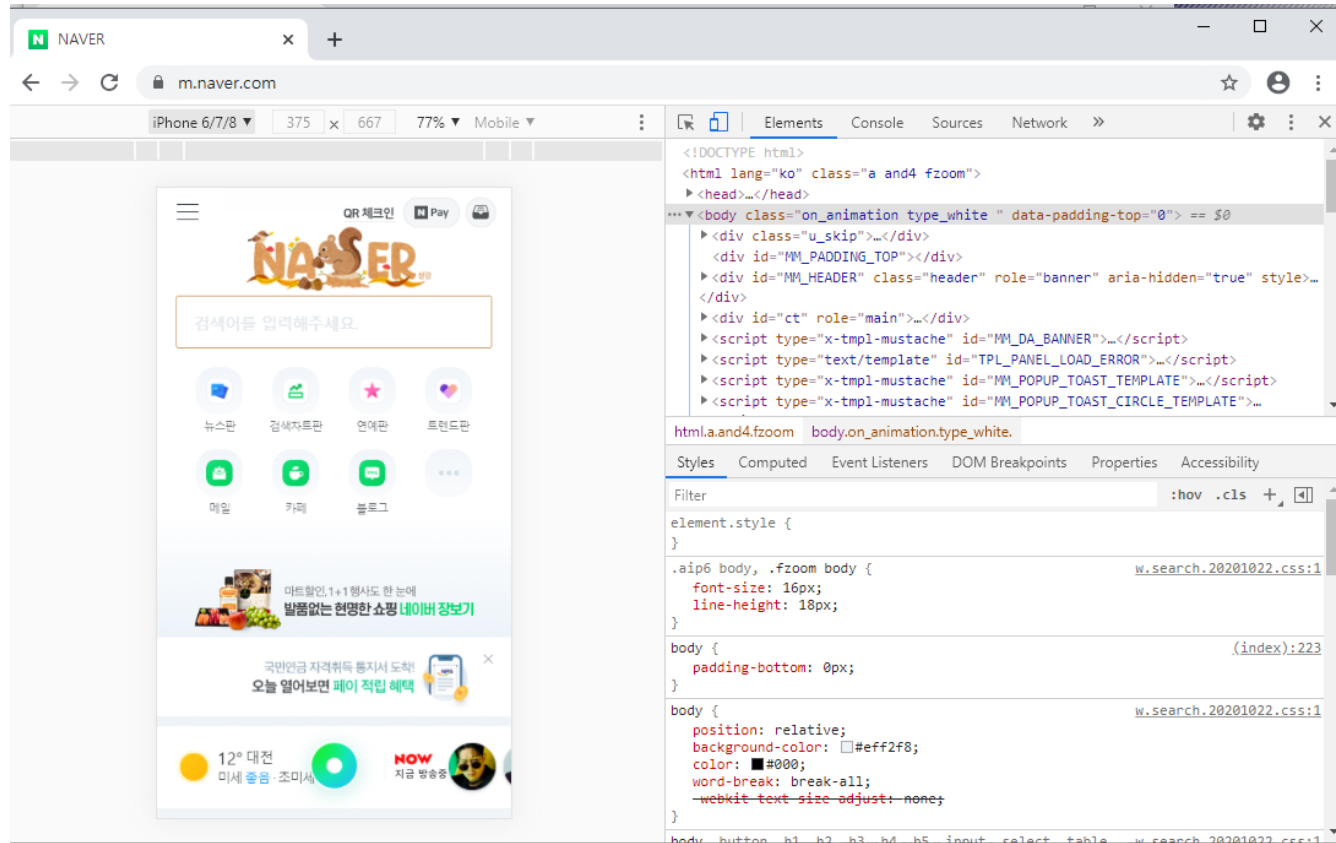
- <https://www.naver.com/>



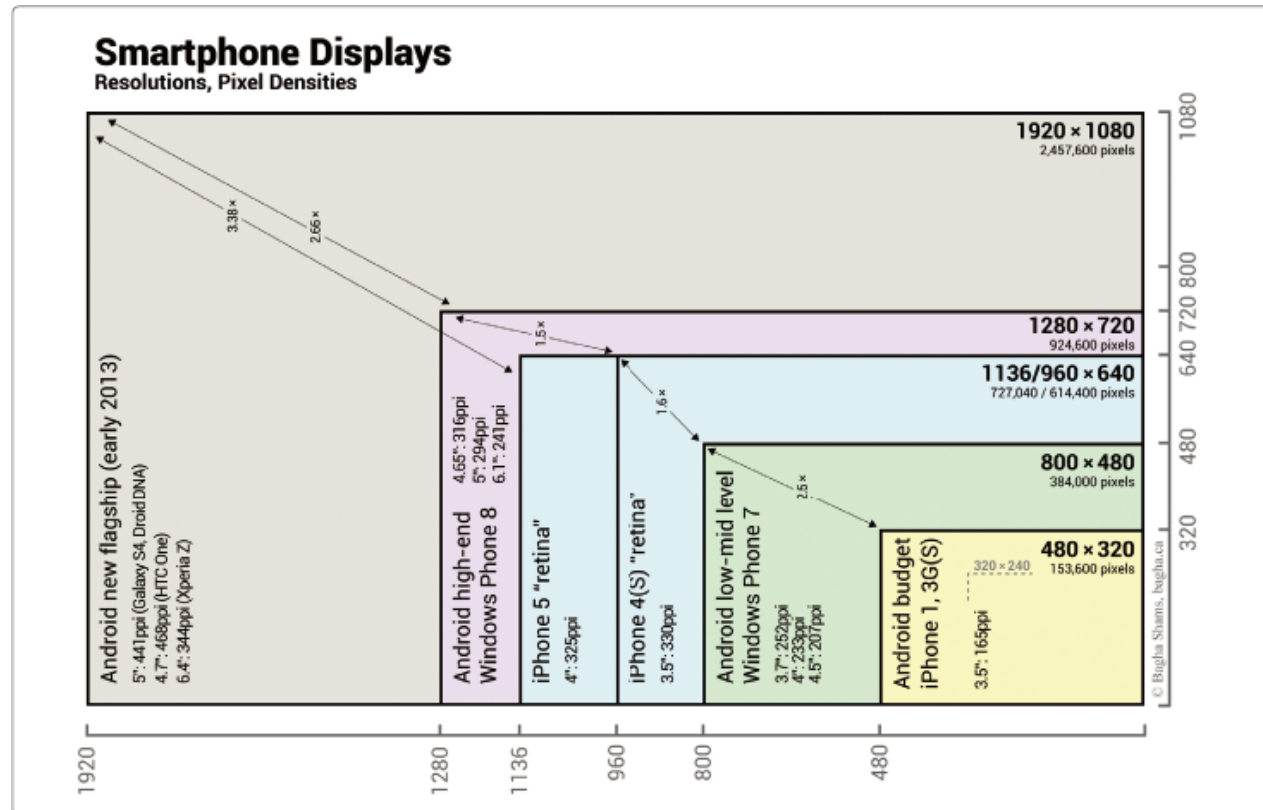
1. Understand Responsive Web Design



1. Understand Responsive Web Design

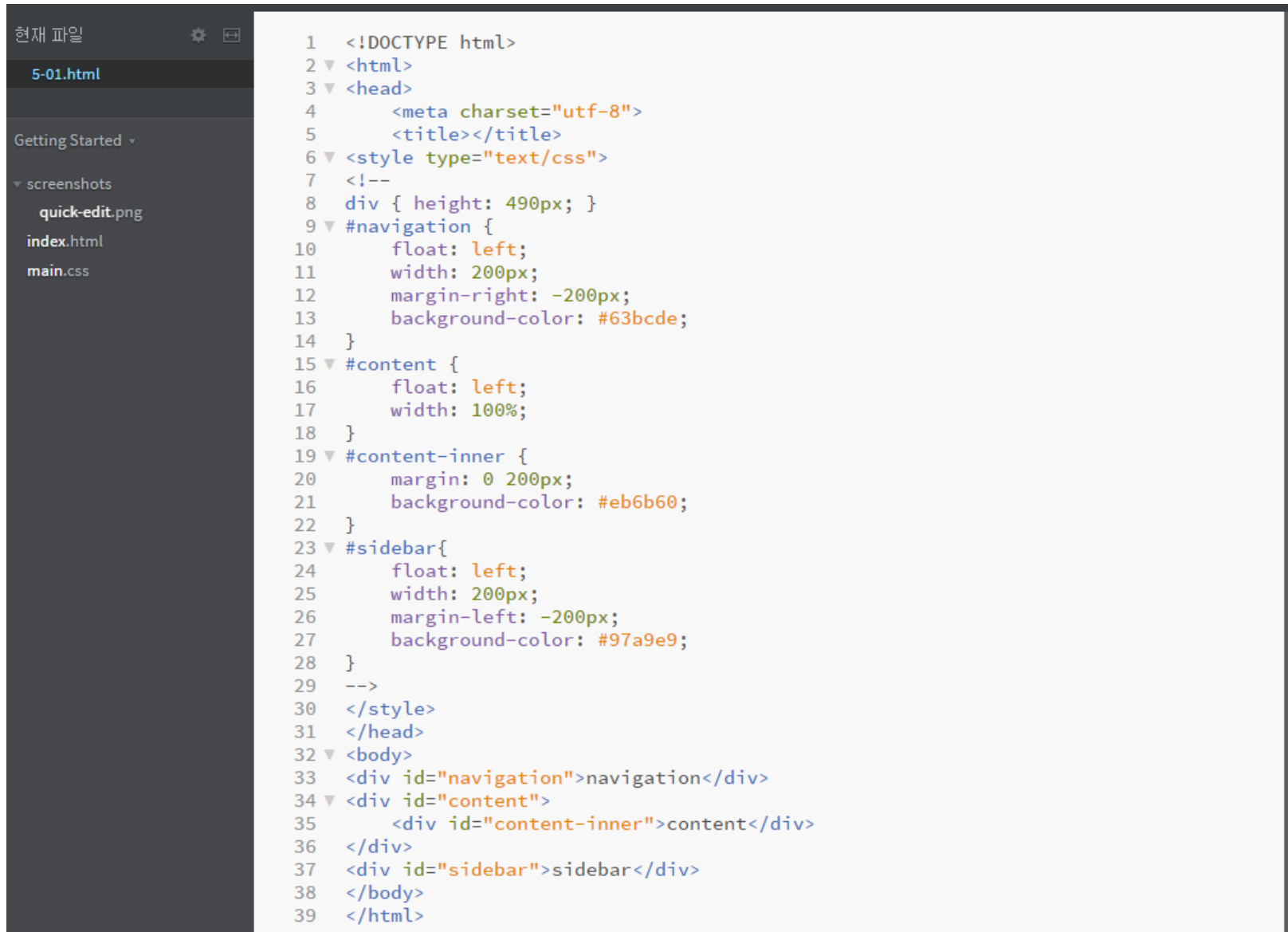


1. Understand Responsive Web Design



▲ 이미지 출처 : <http://bagha.ca/2013/08/04/update-on-smartphone-displays>

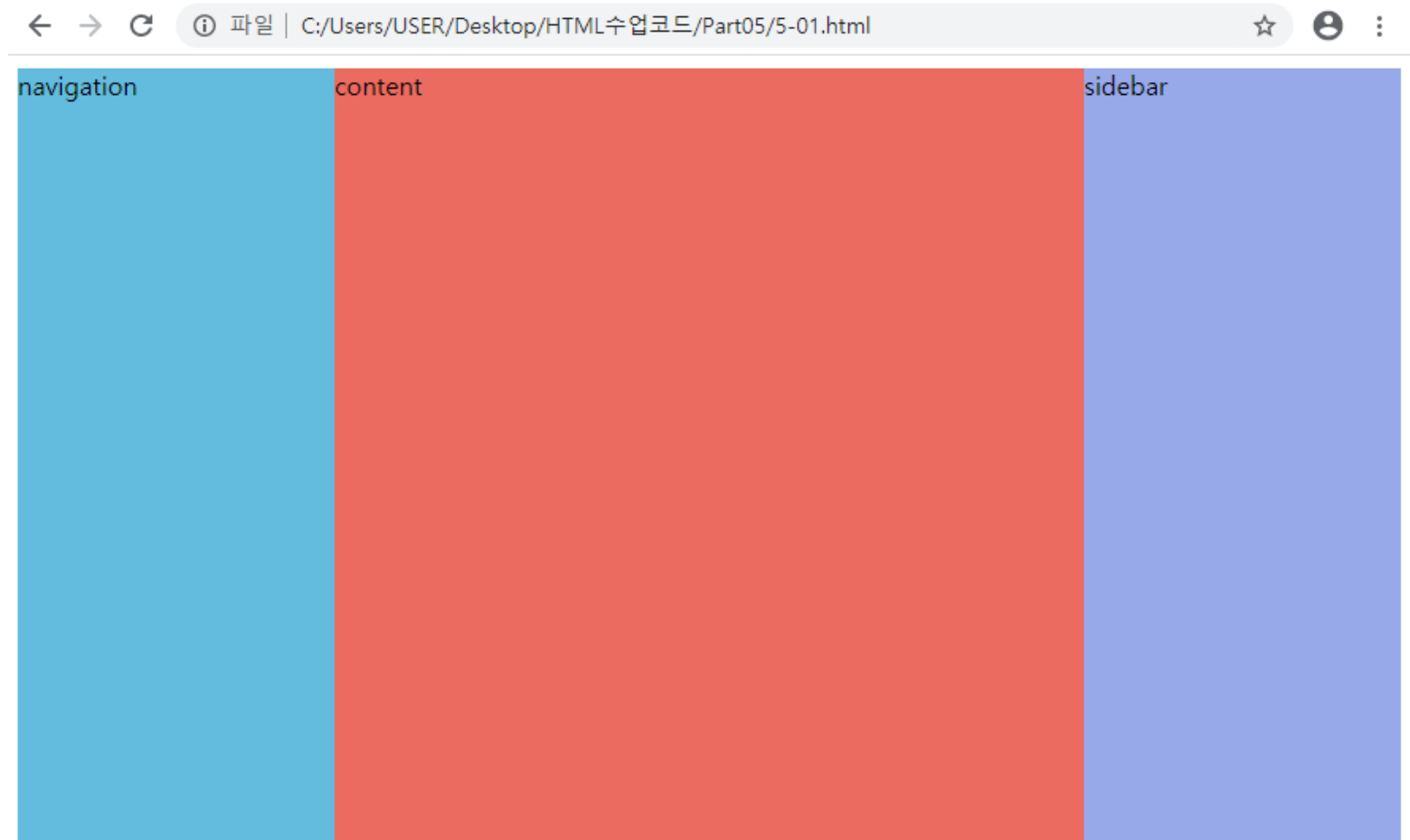
3. Create a three-stage layout with float and display



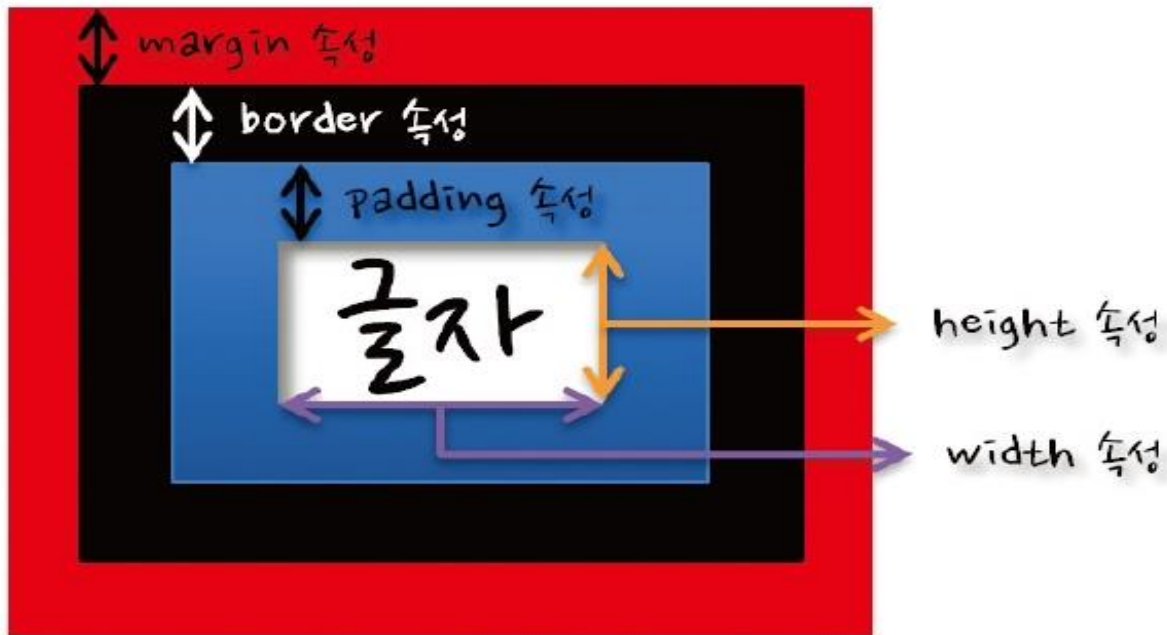
The image shows a code editor with a dark sidebar on the left and a light main area on the right. The sidebar contains a file explorer with the following items: '현재 파일' (Current File), '5-01.html', 'Getting Started', 'screenshots', 'quick-edit.png', 'index.html', and 'main.css'. The main area displays the code for '5-01.html'.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <meta charset="utf-8">
5      <title></title>
6  <style type="text/css">
7      <!--
8      div { height: 490px; }
9  #navigation {
10     float: left;
11     width: 200px;
12     margin-right: -200px;
13     background-color: #63bcde;
14 }
15 #content {
16     float: left;
17     width: 100%;
18 }
19 #content-inner {
20     margin: 0 200px;
21     background-color: #eb6b60;
22 }
23 #sidebar{
24     float: left;
25     width: 200px;
26     margin-left: -200px;
27     background-color: #97a9e9;
28 }
29 -->
30 </style>
31 </head>
32 <body>
33     <div id="navigation">navigation</div>
34     <div id="content">
35         <div id="content-inner">content</div>
36     </div>
37     <div id="sidebar">sidebar</div>
38 </body>
39 </html>
```

3. Create a three-stage layout with float and display



- The most important when configuring the layout of a web page



margin 속성	테두리와 다른 태그 사이의 테두리 바깥쪽 여백
border 속성	테두리
padding 속성	테두리와 글자 사이의 테두리 안쪽 여백, 배경색은 padding 영역까지만 적용
width 속성	글자를 감싸는 영역의 가로 크기
height 속성	글자를 감싸는 영역의 세로 크기

■ Box size and margins

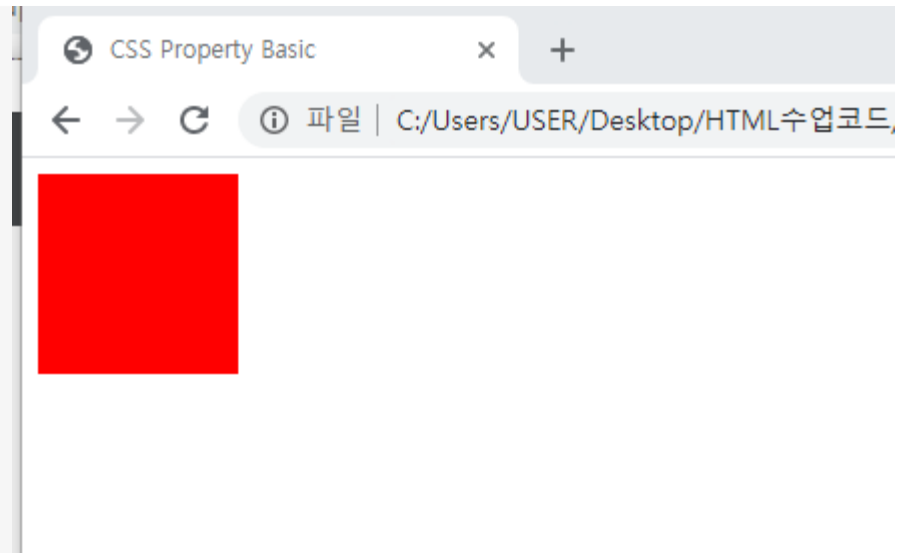
- width and height properties: specify the size of the area that wraps around the letters
- border property: specify border thickness
- margin: specifies the spacing of borders and other tags
- padding: specify the border and outer margin

■ Adjust box size and padding

- 1. Applying the width and height properties

| box_widthHeight.html

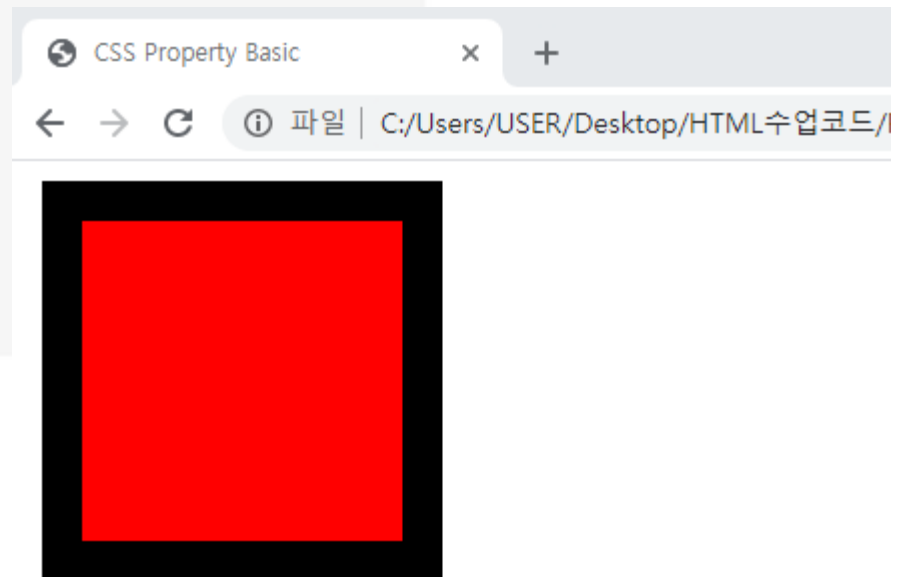
```
<!DOCTYPE html>
<html>
<head>
  <title>CSS Property Basic</title>
  <style>
    div {
      width: 100px; height: 100px;
      background-color: red;
    }
  </style>
</head>
<body>
  <div></div>
```



- Adjust box size and padding
 - 2. margin과 padding 속성 적용하기

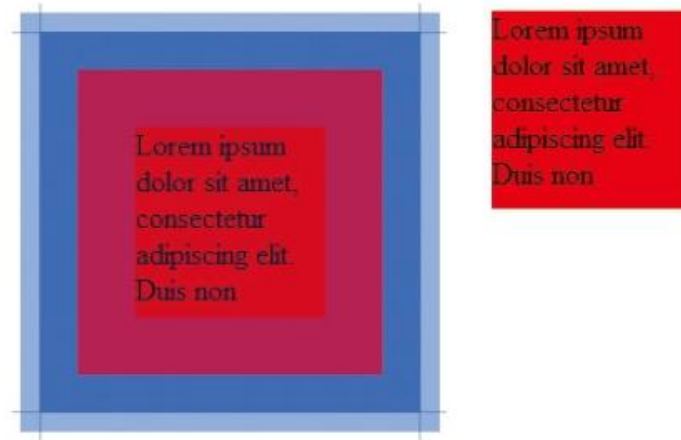
box_marginPadding.html

```
<style>
  div {
    width: 100px; height: 100px;
    background-color: red;
    border: 20px solid black;
    margin: 10px; padding: 30px;
  }
</style>
```



■ Adjust box size and padding

- Analyzing Code with Inspection in a Web Browser



width와 height 속성의 적용 범위

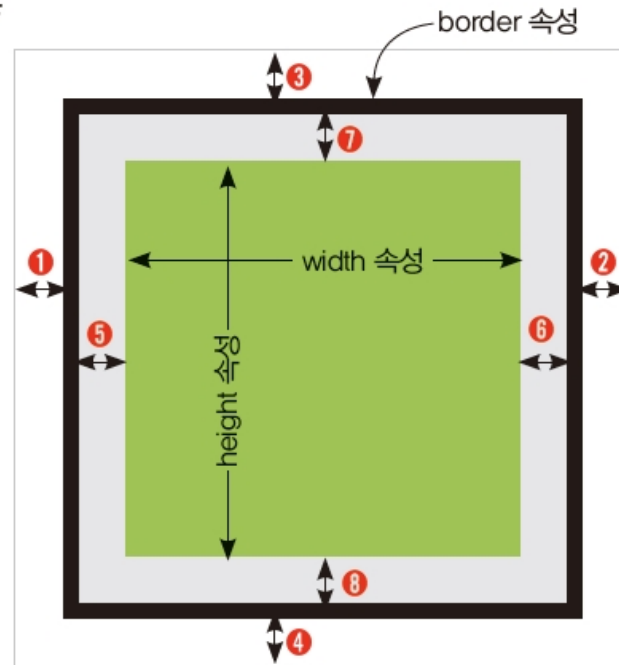
- Get the size of the entire tag
 - The margin, border, and padding properties are located on both sides, so multiply by 2
 - Full width = width + 2 × (margin + border + padding)
 - Height = height + 2 × (margin + border + padding)

■ Adjust the box margin part

- The margin property and the padding attribute can be specified in two ways, each up and down, left and right.

표 6-1 margin 속성과 padding 속성의 방향 적용

속성	설명
① margin-left	왼쪽 여백
② margin-right	오른쪽 여백
③ margin-top	위쪽 여백
④ margin-bottom	아래쪽 여백
⑤ padding-left	왼쪽 패딩
⑥ padding-right	오른쪽 패딩
⑦ padding-top	위쪽 패딩
⑧ padding-bottom	아래쪽 패딩



■ Adjust the box margin part

- 1. Specify four-way attributes: Stand out in order in units of magnitude

box_marginPaddingEachFour.html

```
<style>
  div {
    width: 100px; height: 100px;
    background-color: red;

    /* margin: 위쪽 오른쪽 아래쪽 왼쪽 */
    /* padding: 위쪽 오른쪽 아래쪽 왼쪽 */
    margin: 0 30px 0 30px;
    padding: 0 30px 0 30px;
  }
</style>
```



- **Adjust the box margin part**

- 2. Assign attributes in two directions: Assign four directions in two groups

box_marginPaddingEachTwo.html

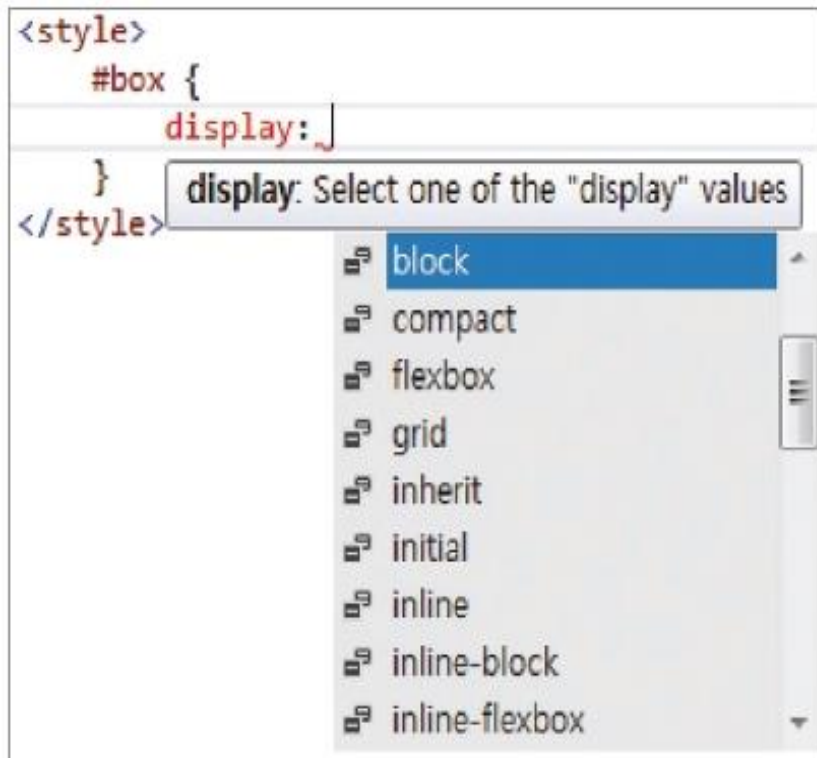
```
<style>
  div {
    width: 100px; height: 100px;
    background-color: red;

    /* margin: <위아래> <왼쪽오른쪽> */
    /* padding: <위아래> <왼쪽오른쪽> */
    margin: 0 30px;
    padding: 0 30px;
  }
</style>
```



■ Visible properties

- Specifies how the tag appears on the screen
- display attribute



display 속성과 주로 사용하는 키워드

키워드	설명
none	화면에 보이지 않음
block	블록 박스 형식으로 지정
inline	인라인 박스 형식으로 지정
inline-block	블록과 인라인의 중간 형태로 지정

■ [Basic Example 6-4] Display property

[코드 데모](#)

- 1. Apply the none keyword
- Tags are not visible on the screen

display_none.html

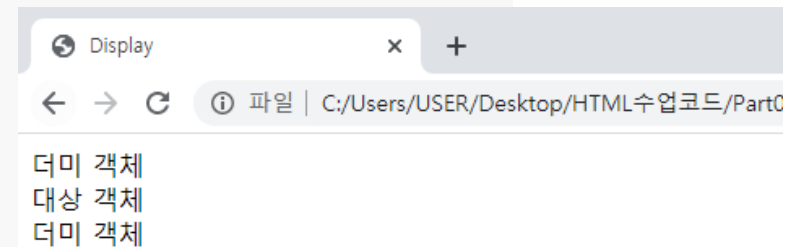
```
<!DOCTYPE html>
<html>
<head>
  <title>Display</title>
  <style>
    #box {
      display: none;
    }
  </style>
</head>
<body>
  <span>더미 객체</span>
  <div id="box">대상 객체</div>
  <span>더미 객체</span>
</body>
</html>
```

더미 객체 더미 객체

■ display attribute

- 2. Apply the block keyword
 - Replace the display attribute of the #box tag with the block keyword

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Display</title>
5      <style>
6          #box {
7              display: block;
8          }
9      </style>
10 </head>
11 <body>
12     <span>더미 객체</span>
13     <div id="box">대상 객체</div>
14     <span>더미 객체</span>
15 </body>
16 </html>
```



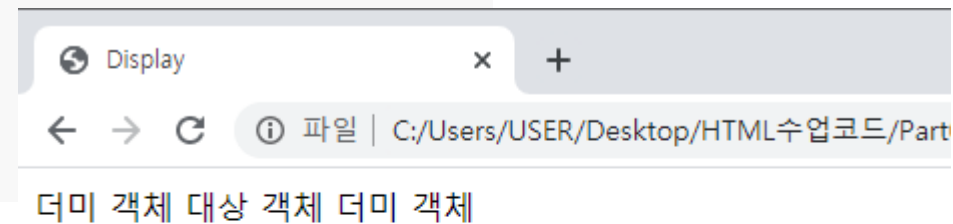
■ display attribute

[코드 데모](#)

- 3. Comparing the inline and inline-block keywords

코드 6-10 display_inline.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Display</title>
5      <style>
6          #box {
7              display: inline;
8          }
9      </style>
10 </head>
11 <body>
12     <span>더미 객체</span>
13     <div id="box">대상 객체</div>
14     <span>더미 객체</span>
15 </body>
16 </html>
```



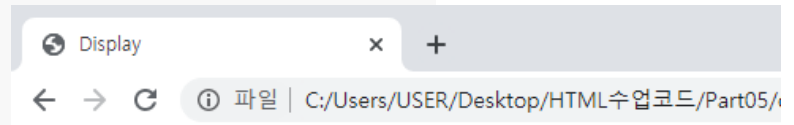
display attribute

[코드 데모](#)

- 3. Comparing the inline and inline-block keywords

코드 6-11 display_inline-block.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Display</title>
5  <style>
6      #box {
7          display: inline-block;
8      }
9  </style>
10 </head>
11 <body>
12     <span>더미 객체</span>
13     <div id="box">대상 객체</div>
14     <span>더미 객체</span>
15 </body>
16 </html>
```



더미 객체 대상 객체 더미 객체

■ Apply the inline and inline-block keywords

- block format, inline-block format
 - margin attribute, padding attribute can be specified in four directions, up and down, left and right
- inline format
 - margin attribute, padding property can only be specified left and right

코드 6-12 display_inlineWithMargin.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Display</title>
5  </head>
6  <body>
7      <div id="box">
8          <div>
9              <div>
10                 의미 없는 더미 객체
11             </div>
12             <div>
13                 더미 객체
14             </div>
15             <div id="box">
16                 대상 객체
17             </div>
18             <div>
19                 더미 객체
20             </div>
21             <div>
22                 의미 없는 더미 객체
23             </div>
24         </div>
25     </div>
26 </body>
27 </html>
```

의미 없는 더미 객체		
더미 객체	대상 객체	더미 객체
의미 없는 더미 객체		

■ float default property

[코드 데모](#)

- 1.HTML Create a page

코드 6-43 float_basic.html

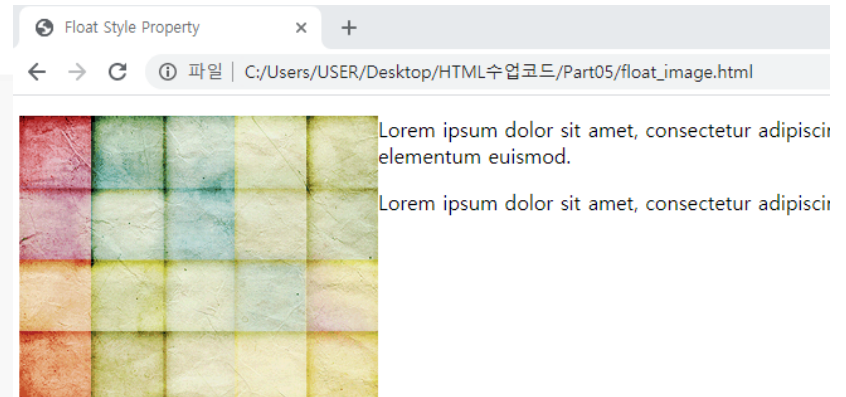
```
1  <!DOCTYPE html>
2  ▼ <html>
3  ▼ <head>
4      <title>Float Style Property</title>
5  ▼      <style>
6
7      </style>
8  </head>
9  ▼ <body>
10      <img src=./images/3-12-01.gif>
11      <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. </p>
12      <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec facilisis
        enim vitae est elementum euismod. Duis lobortis euismod nunc a dapibus. </p>
13  </body>
14  </html>
15
```

■ float default property

- 2. Applying the float attribute
 - Output in a combination of images and text

코드 6-44 float_image.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Float Style Property</title>
5  </head>
6  <body>
7      <img src=../images/3-12-01.gif>
8      <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec facilisis
9      enim vitae est elementum euismod. </p>
10     <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. </p>
11 </body>
12 </html>
```



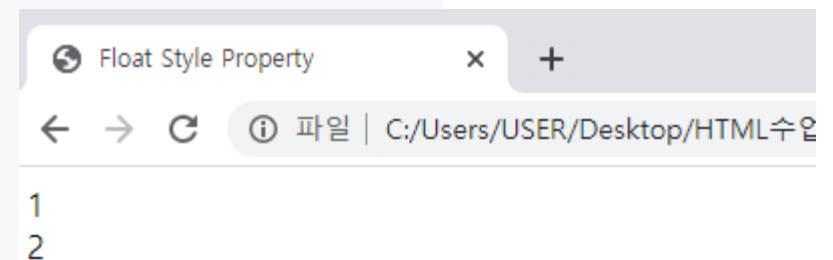
■ Horizontal alignment

[코드 데모](#)

- 1. Create a target to apply the float attribute to

코드 6-45 float_boxBasic.html

```
1  |<!DOCTYPE html>
2  ▼ <html>
3  ▼ <head>
4      <title>Float Style Property</title>
5  ▼   <style>
6
7      </style>
8  </head>
9  ▼ <body>
10     <div class="box">1</div>
11     <div class="box">2</div>
12 </body>
13 </html>
14
```



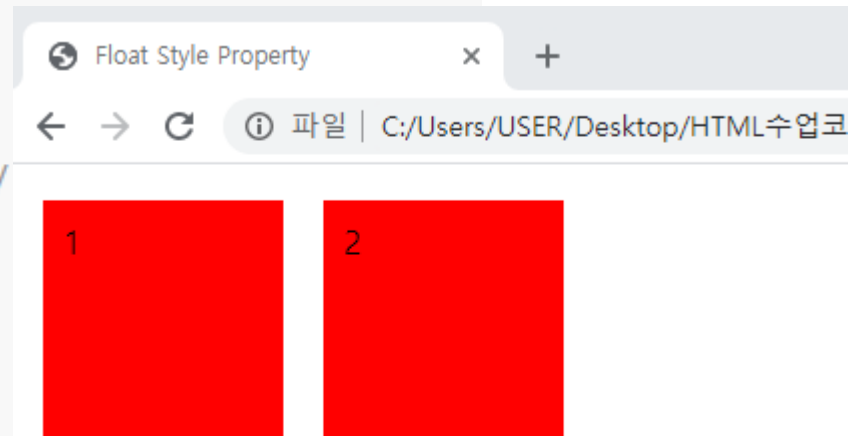
■ Horizontal alignment

- 2. Apply the left keyword

[코드 데모](#)

코드 6-46 float_boxLeft.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Float Style Property</title>
5  <style>
6      .box {
7          width: 100px;
8          height: 100px;
9          background-color: red;
10         margin: 10px;
11         padding: 10px;
12         /* 태그를 왼쪽으로 붙입니다. */
13         float: left;
14     }
15 </style>
16 </head>
17 <body>
18     <div class="box">1</div>
19     <div class="box">2</div>
20 </body>
21 </html>
```



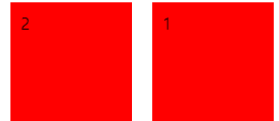
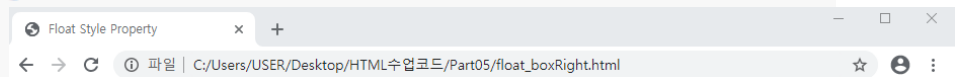
■ Horizontal alignment

[코드 데모](#)

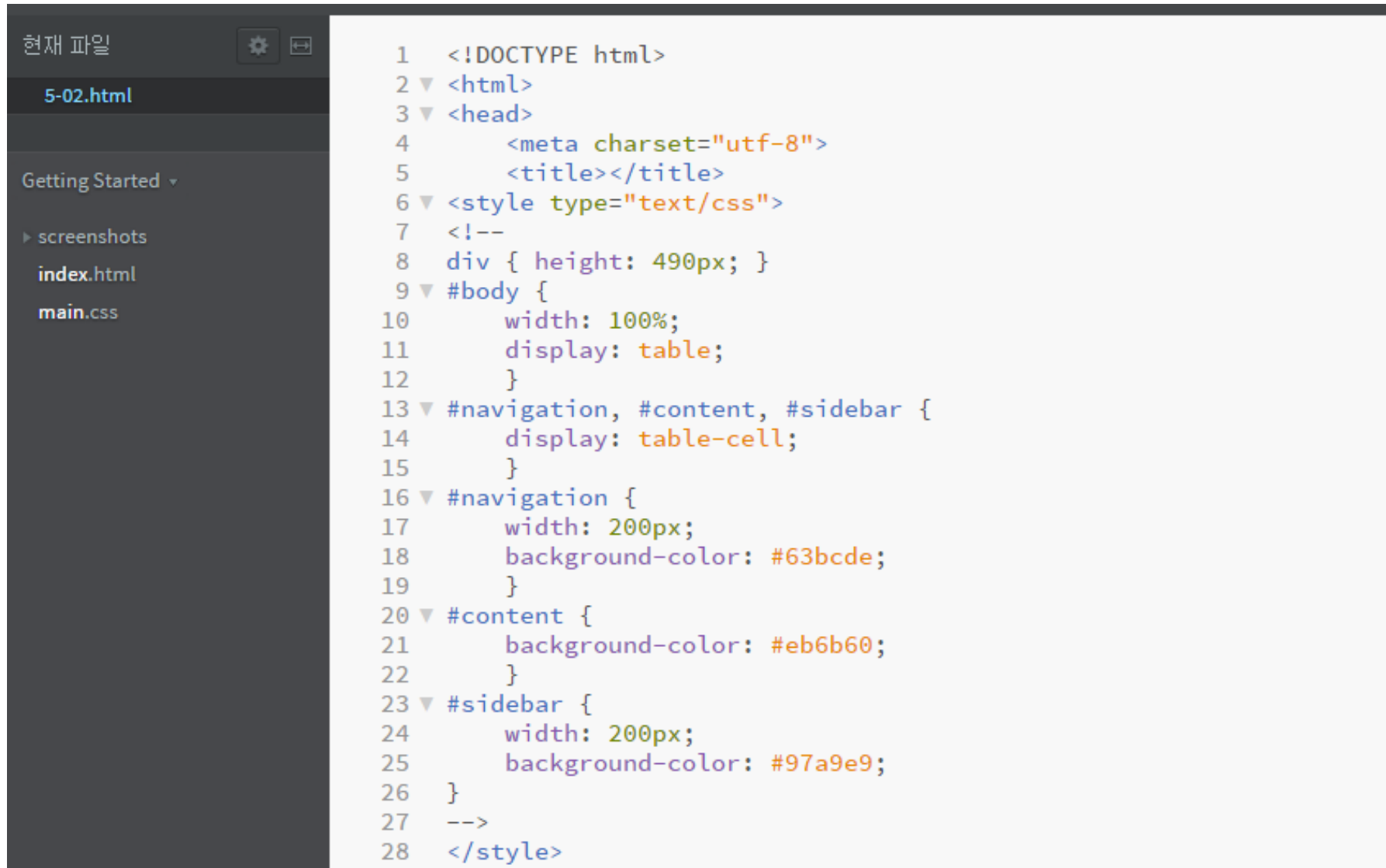
- 3. Check when the float attribute is the right keyword

코드 6-47 float_boxRight.html

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Float Style Property</title>
5  </head>
6  <body>
7      <div class="box">1</div>
8      <div class="box">2</div>
9  </body>
10 </html>
```



3. Create a three-stage layout with float and display



The image shows a code editor with a dark sidebar on the left and a light main area on the right. The sidebar contains a file explorer with the following items: '현재 파일' (Current File), '5-02.html', 'Getting Started', 'screenshots', 'index.html', and 'main.css'. The main area displays the code for '5-02.html'.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <meta charset="utf-8">
5      <title></title>
6  <style type="text/css">
7      <!--
8      div { height: 490px; }
9  #body {
10     width: 100%;
11     display: table;
12 }
13 #navigation, #content, #sidebar {
14     display: table-cell;
15 }
16 #navigation {
17     width: 200px;
18     background-color: #63bcde;
19 }
20 #content {
21     background-color: #eb6b60;
22 }
23 #sidebar {
24     width: 200px;
25     background-color: #97a9e9;
26 }
27 -->
28 </style>
```

3. Create a three-stage layout with float and display

```
26     }
27     -->
28     </style>
29     </head>
30     ▼ <body>
31     ▼ <div id="body">
32         <div id="navigation">navigation</div>
33         <div id="content">content</div>
34         <div id="sidebar">sidebar</div>
35     </div>
36 </body>
37 </html>
```

4. Media Types and Media Queries

■ Set the viewport

- meta tags: provide additional web page information

(a) `<meta name="title" content="ITCookbook HTML5 프로그래밍을 위한 페이지">`
`<meta name="description" content="meta 태그의 title 속성과 description 속성입니다.">`

(b) **ITCookbook HTML5 프로그래밍을 위한 페이지**
<http://test.test.test.co.kr> ▼
2017.12.09 meta 태그의 title 속성과 description 속성입니다.

그림 8-2 meta 태그를 읽은 검색 엔진

■ Set meta tags related to the viewport

- viewport meta tag - meta tag with viewport entered in the name attribute

```
<meta name="viewport" content="user-scalable=no,initial-scale=1,maximum-scale=1">
```

4. Media Types and Media Queries

- Set the viewport
- A value that you can enter in the content attribute of the viewport

표 8-1 viewport meta 태그에 입력할 수 있는 값

값	설명	예
width	화면 너비	width=240
height	화면 높이	height=800
initial-scale	초기 확대 비율	initial-scale=2.0
user-scalable	확대 및 축소 가능 여부	user-scalable=no
minimum-scale	최소 축소 비율	minimum-scale=1.0
maximum-scale	최대 확대 비율	maximum-scale=2.0
target-densitydpi	DPI 지정	target-densitydpi=medium-dpi

■ Set the viewport

코드 데모

코드 8-2 with_meta.html

```
<!DOCTYPE html>
<html>
<head>
  <title>With Viewport Meta</title>
  <meta name="viewport" content="user-scalable=no,initial-scale=1">
</head>
<body>
  <h1>Lorem ipsum dolor sit amet</h1>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.</p>
</body>
</html>
```

iPod 08:19 192.168.0.9

Lorem ipsum dolor sit amet

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec mollis urna sed turpis luctus laoreet. Fusce auctor maximus finibus. Nam ac dictum velit. Donec sit amet bibendum erat. Sed varius arcu est. Nullam maximus, libero id sollicitudin malesuada, nunc nunc varius neque, eu rhoncus dui nunc ac felis. Integer sit amet turpis metus. Nam id efficitur velit. Mauris suscipit, odio et dictum fermentum, nulla orci fermentum quam, a condimentum magna justo dictum leo. Aenean et odio mattis, maximus elit sed, fringilla est. Sed eget purus sit amet arcu elementum aliquet in eu mi. Donec dui tortor, viverra in fermentum ut, aliquam ac ipsum.

■ Setting up a media query

■ @-rule

- Used to express specific rules inside a style sheet
- @import rule - import the outer style
- @font-face rule - further define fonts

```
@media (<미디어 쿼리>) {  
    <CSS 코드>  
}
```

(a) @media 규칙

■ media properties

- Used to load CSS files only on devices that meet the corresponding media query criteria by typing in the link tag

```
<link rel="stylesheet" href="<파일 이름>" media="<미디어 쿼리>">
```

(b) media 속성

그림 8-3 미디어 쿼리를 사용하는 방법

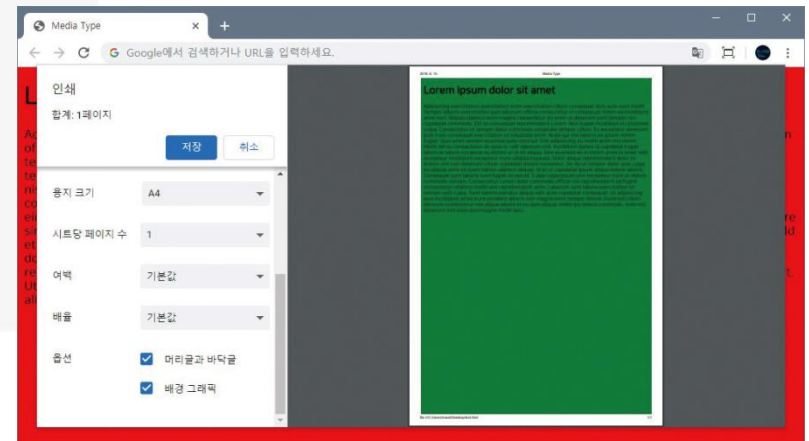
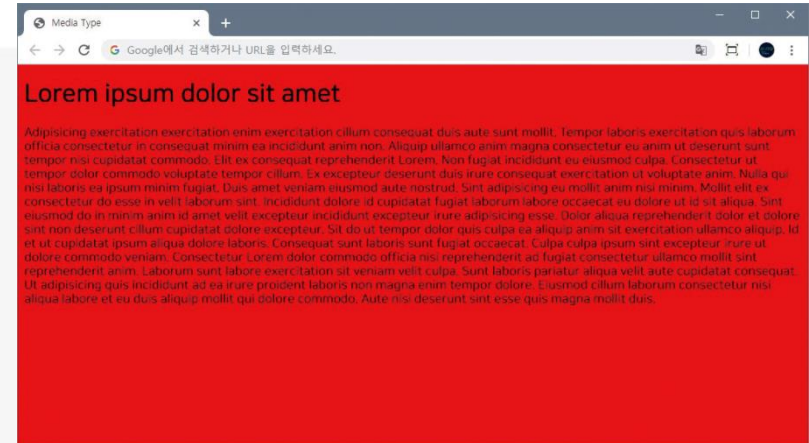
■ Distinguish between monitor and printer

[코드 데모](#)

코드 8-3 at_media_rule.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Media Type</title>
  <style>
    @media screen {
      body { background-color: red; }
    }

    @media print {
      body { background-color: green; }
    }
  </style>
</head>
<body>
  <h1>Lorem ipsum dolor sit amet</h1>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.</p>
</body>
</html>
```



- Distinguish between monitor and printer

[코드 데모](#)

코드 8-4 media_attribute.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Media Type</title>
  <link rel="stylesheet" href="screen.css" media="screen">
  <link rel="stylesheet" href="print.css" media="print">
</head>
<body>
  <h1>Lorem ipsum dolor sit amet</h1>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.</p>
</body>
</html>
```

코드 8-5 screen.css

```
@media screen {
  body {
    background-color: red;
  }
}
```

코드 8-6 print.css

```
@media print {
  body {
    background-color: green;
  }
}
```


■ Media Types and Features

표 8-2 지원하는 미디어 타입

미디어 타입	설명
all	모든 장치
aural	음성 장치
braille	표시 전용 점자 장치
handheld	손으로 들고 다니는 작은 장치
print	프린터
projection	프로젝터
screen	화면
tty	터미널 등 그림을 띄울 수 없는 장치
tv	텔레비전
embossed	인쇄 전용 점자 장치

표 8-3 미디어 타입 연산자

연산자	설명
only	'해당 장치에서만'을 나타냄
not	'해당 장치를 제외한'을 나타냄

■ Media Types and Features

- All attributes except orientation can be prefixed with min and max
- You can also use the and operator to combine conditions

표 8-4 미디어 특징

미디어 특징	설명
width	화면 너비
height	화면 높이
device-width	장치 너비
device-height	장치 높이
orientation	장치 방향
device-aspect-ratio	화면 비율
color	장치 색상 비트
color-index	장치에서 표현 가능한 최대 색상 개수
monochrome	흑백 장치의 픽셀당 비트 개수
resolution	장치 해상도

■ Smartphone, Tablet PC, Desktop Division (1)

- Smartphone - Red Background
- Tablet PC portrait screen - green background
- Tablet PC Horizontal Screen and Desktop - Blue Background

코드 8-7 media_feature.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Media Feature</title>
  <meta name="viewport" content="user-scalable=no,initial-scale=1,maximum-scale=1">
  <style>
    /* 스마트폰 */
    @media screen and (max-width: 767px) {
      body { background-color: red; }
    }

    /* 태블릿PC 세로 */
    @media screen and (min-width: 768px) and (max-width: 959px) {
      body { background-color: green; }
    }
  </style>
</head>
</html>
```

■ Smartphone, Tablet PC, Desktop Division (2)

[코드 데모](#)

```
/* 데스크톱 */
@media screen and (min-width: 960px) {
    body { background-color: blue; }
}
</style>
</head>
<body>
    <h1>Lorem ipsum dolor sit amet</h1>
    <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.</p>
</body>
</html>
```



■ Switch screen orientation

[코드 데모](#)

- Use orientation property - Apply different background colors based on screen orientation

```
<!DOCTYPE html>
<html>
<head>
  <title>Media Feature</title>
  <meta name="viewport" content="user-scalable=no,initial-scale=1,maximum-scale=1">
  <style>
    @media screen and (orientation: portrait) {
      body { background-color: red; }
    }

    @media screen and (orientation: landscape) {
      body { background-color: green; }
    }
  </style>
</head>
<body>
  <h1>Lorem ipsum dolor sit amet</h1>
  <p>Lorem ipsum dolor sit amet, conse
</body>
</html>
```



■ Responsive web patterns

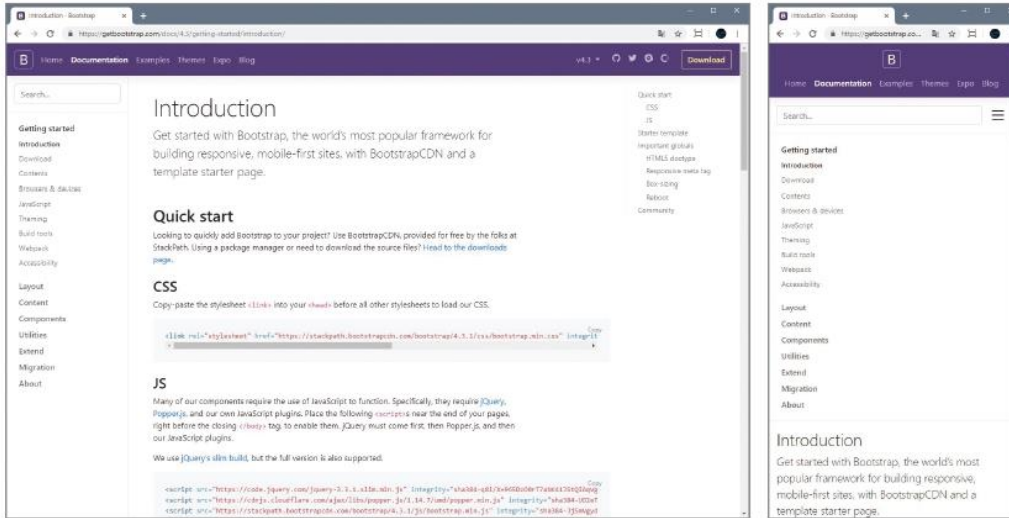


그림 8-4 화면이 작아졌을 때 왼쪽 메뉴가 위쪽으로 이동
(<https://getbootstrap.com/docs/4.3/getting-started/introduction/>)

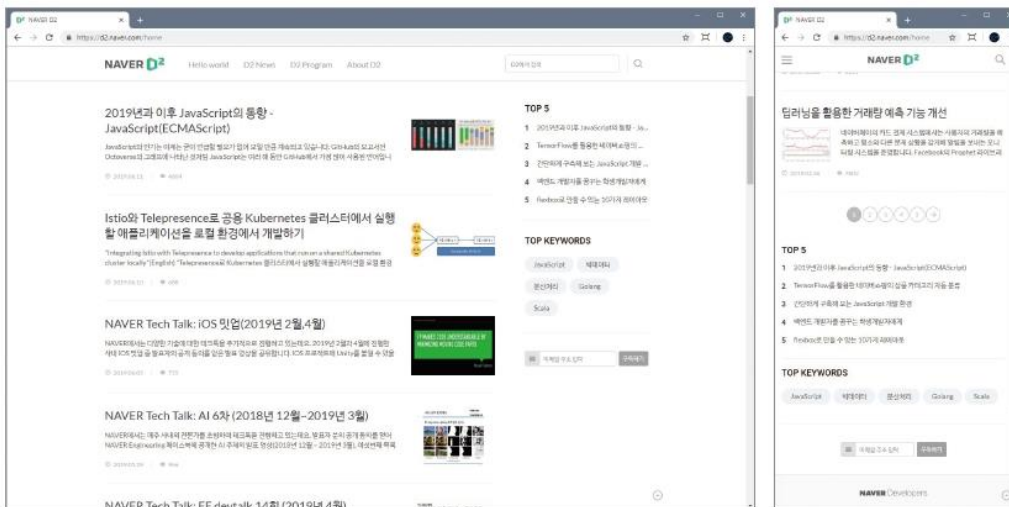


그림 8-5 화면이 작아졌을 때 오른쪽 메뉴가 아래쪽으로 이동(<https://d2.naver.com/home>)


```
#section {  
    width: 700px;  
    float: right; /* left로 입력해도 상관없습니다. */  
}  
  
li { list-style: none; }  
  
@media screen and (max-width: 767px) {  
    /* 스마트폰 사이즈에서는 전부 해제합니다. */  
    body { width: auto }  
    #menu { width: auto; float: none; }  
    #section { width: auto; float: none; }  
}  
</style>  
</head>  
<body>  
    <div id="menu">  
        <ul>  
            <li>메뉴A</li>  
            <li>메뉴B</li>  
            <li>메뉴C</li>  
        </ul>  
    </div>  
    <div id="section">  
        <h1>Lorem ipsum</h1>  
        <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.</p>  
    </div>  
</body>  
</html>
```

