# **Bootstrap5**

Bootstrap 5 개념 및 기본 사용법

김태민

# 저번에 우리는

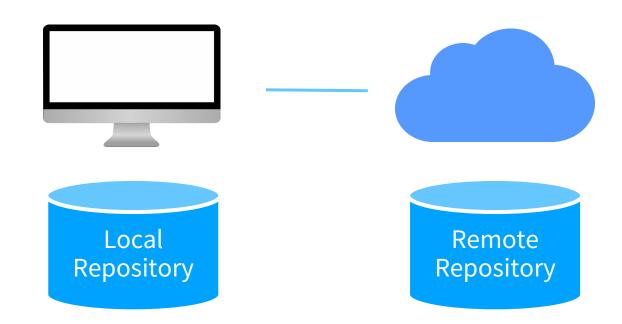
# 버전관리 Version Control System

파일 변경 이력을 기록하고 관리하는 방법

- 1. 협업: 여러 사람이 동시에 작업 가능
- 2. 복구: 실수해도 이전 버전으로 돌아감
- 3. 추적 : 누가 언제 무엇을 바꿨는지 확인 가능

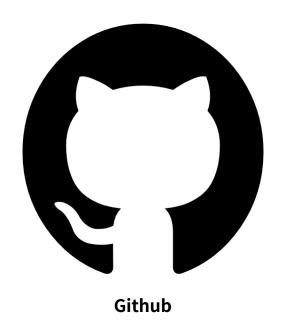
# 로컬저장소와 원격저장소

- ✔ Git의 두 가지 저장소
- ✓ 로컬은 내 컴퓨터에서 관리
- ✓ 원격은 온라인에 공유



# 원격저장소 Remote Repository

팀과 공유하며 어디서나 온라인으로 어디서나 접근 가능한 저장소







GitLab

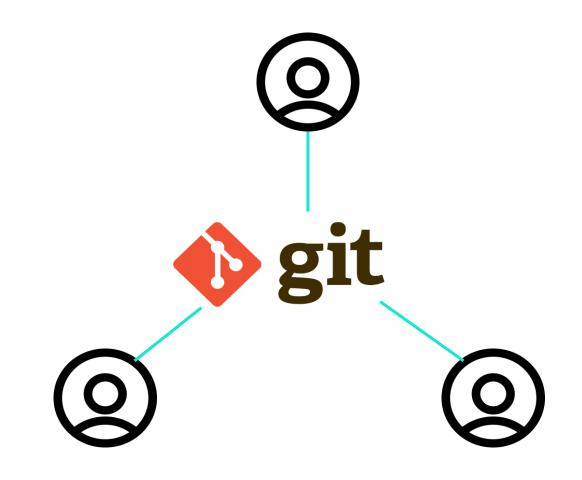
**BitBucket** 

### **Git Workflow**

Git을 사용해 코드를 체계적으 로 관리하는 규칙

워크플로우를 통해 **작업 분리**와 **체계적 병합** 

- ✓ 변경 사항 추적
- ✓ 협업 효율성 증대
- ✓ 충돌 최소화



### 충돌 해결

- 1. 충돌 파일 확인 : git status 실행
- 2. 수동 수정 : 코드 편집기로 충돌 파일을 열어 **마커를 제거**하고 원하는 코드로 수정
- 3. 병합 완료 : git add \${파일명} 으로 스테이징 후 git commit 으로 커밋

# 실습환경

OS: Window / Mac

브라우저: Chrome

에디터: VS Code <a href="https://code.visualstudio.com/">https://code.visualstudio.com/</a>

VS Code 익스텐션: ESLint, Prettier, HTML CSS Support, HTML to CSS autocompletion, Auto

Rename Tag, Auto Close Tag, htmltagwrap

Git: git bash, github 가입

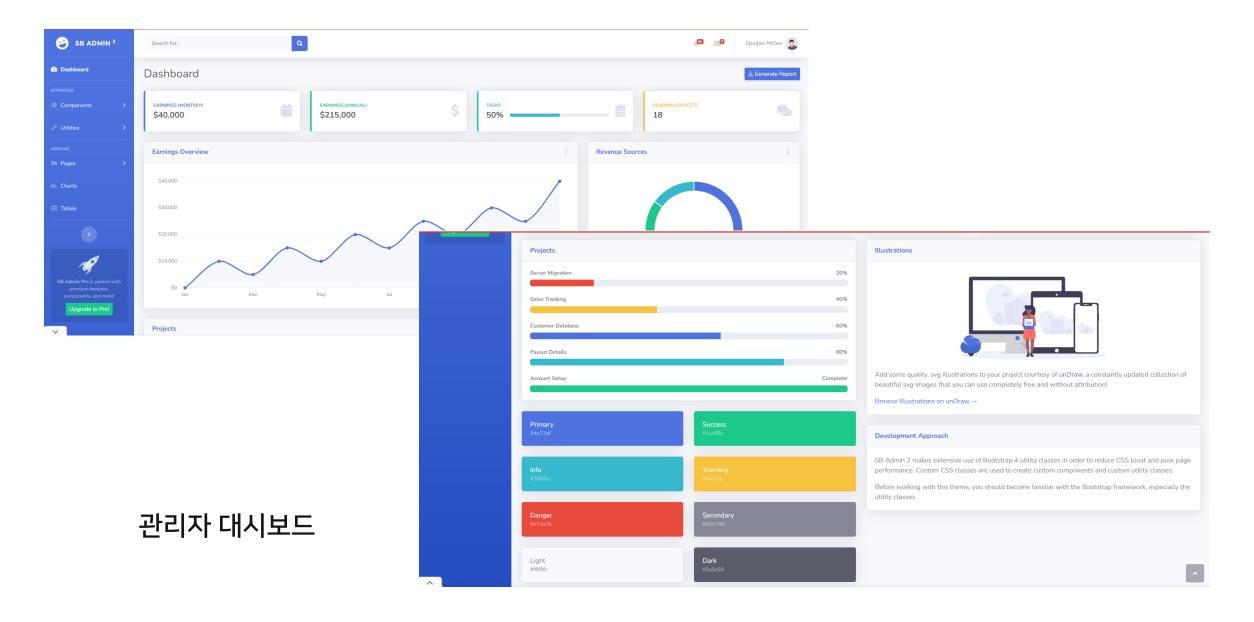
# Bootstrap 개념

# Bootstrap이란?

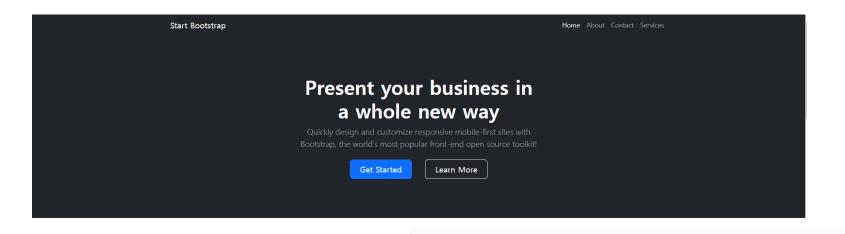
- Bootstrap은 반응형, 모바일 퍼스트 웹 개발을 위한 오픈소스 CSS 프레임워크
- HTML, CSS, JavaScript를 활용해 빠르고 일관된 UI 제공
- 2025년 기준, Bootstrap 5.0 사용 (jQuery 제거, 경량화)
- **모바일 퍼스트**: 기본 스타일이 작은 화면에 최적화, 미디어 쿼리로 큰 화면 지원
- Flexbox 기반: 유연한 레이아웃 구현
- 풍부한 컴포넌트: 버튼, 폼, 네비게이션 바 등 사전 정의된 UI 제공
- 유틸리티 클래스: 빠른 스타일링을 위한 클래스(text-center, d-flex 등)

# 빠른 프로토타이핑, 크로스 브라우저 호환성

# Bootstrap 개념



# Bootstrap 개념





#### Featured title

Paragraph of text beneath the heading to explain the heading. We'll add onto it with another sentence and probably just keep going until we run out of words.

Call to action →



#### Featured title

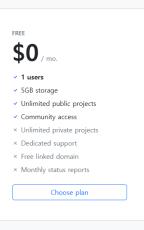
Paragraph of text bene the heading. We'll add sentence and probably run out of words.

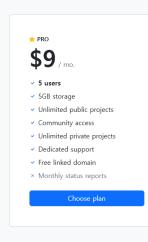
Call to action  $\rightarrow$ 

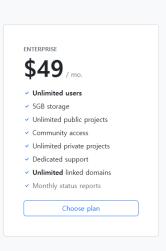
블로그, 전자상거래 …

#### Pay as you grow

With our no hassle pricing plans

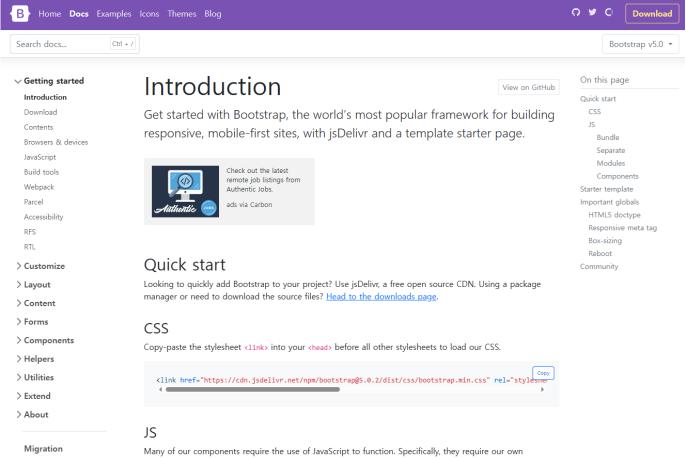






## **Bootstrap 5 Introduction**

https://getbootstrap.com/docs/5.0/getting-started/introduction/



JavaScript pluging and Popper Place one of the following receipts near the end of your pages right before

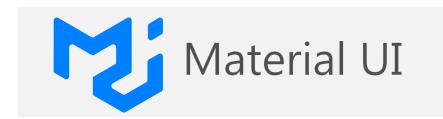
#### Starter template

Be sure to have your pages set up with the latest design and development standards. That means using an HTML5 doctype and including a viewport meta tag for proper responsive behaviors. Put it all together and your pages should look like this:

```
Copy
<!doctype html>
<html lang="en">
  <head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <!-- Bootstrap CSS -->
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="style")</pre>
    <title>Hello, world!</title>
  </head>
  <body>
    <h1>Hello, world!</h1>
    <!-- Optional JavaScript; choose one of the two! -->
    <!-- Option 1: Bootstrap Bundle with Popper -->
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js" into</pre>
    <!-- Option 2: Separate Popper and Bootstrap JS -->
    <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js" integri</pre>
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.min.js" integrity=</pre>
  </body>
</html>
```









## **Day 07**

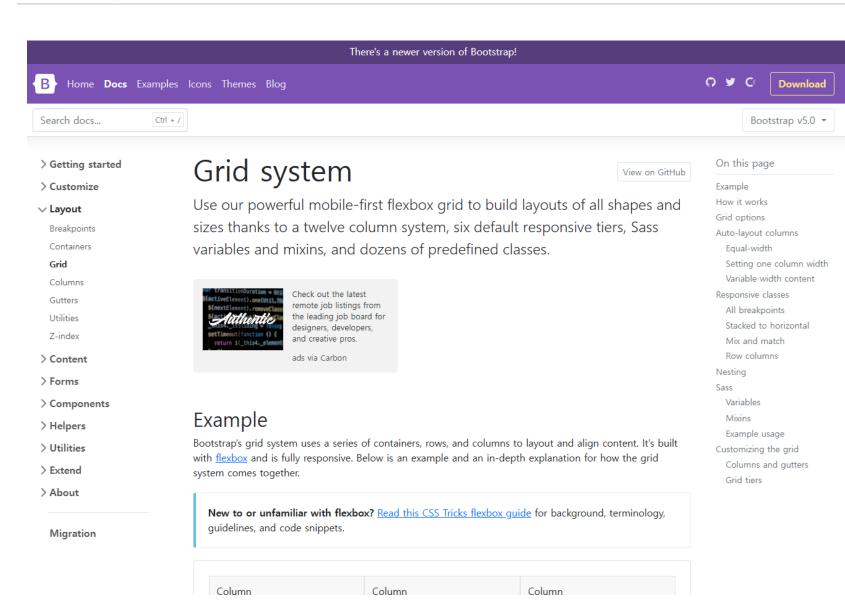
• Bootstap CDN 연결

```
index.html X
      EXPLORER
day07 > bootstrap > 5 index.html > ...
                                                                                                                        <!DOCTYPE html>
     > a day01
                                                                                                                        <html lang="ko">
     > a day02
                                                                                                                                <head>
     > a day03
                                                                                                                                        <meta charset="UTF-8" />
     > a day04
                                                                                                                                        <meta name="viewport" content="width=device-width, initial-scale=1.0" />
     > a day05
                                                                                                                                        <title>Bootstrap 5 실습</title>

✓ Image: Value of the value of the day of the value 
                                                                                                                                        <!-- Bootstrap CSS CDN -->
                                                                                                                                       link
                   index.html
                                                                                                                                                href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
                                                                                                                                                rel="stylesheet"
                                                                                                  11
                                                                                                  12
                                                                                                                                </head>
                                                                                                                                <body>
                                                                                                                                       <h1>Bootstrap 5 반응형 웹</h1>
                                                                                                                                       <!-- Bootstrap JS Bundle (Popper 포함) -->
                                                                                                                                        <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"></script>
                                                                                                                                </body>
                                                                                                                        </html>
                                                                                                   19
```

# **Grid System**

# **Grid System**



강력한 Mobile-First 플렉스 박스 그리드를 사용하여 12개의 컬럼 시스템, 6개의 기본 응답 계층, Sass 변수 및 믹스인, 그리고 수십 개의 미리 정의된 클래스를 통해 모든 모양과 크기의 레이아웃을 구축하세요.

## **Bootstrap Grid System**

• Flexbox 기반의 12열 그리드 시스템. 컨테이너, 행, 열로 구성, 반응형 레이아웃 지원

### 구성 요소:

- 컨테이너: .container (고정 너비), .container-fluid (전체 너비)
- 행(Row): .row로 열 그룹화, 자동 간격(gutter) 제공
- 열(Column): .col-\*로 12개 열 분할, 반응형 접두사(sm, md, lg, xl, xxl)

## 반응형 브레이크포인트:

xs (<576px), sm (≥576px), md (≥768px), lg (≥992px), xl (≥1200px), xxl (≥1400px)</li>

# **Grid Options**

- Extra small (xs)
- Small (sm)
- Medium (md)
- Large (lg)
- Extra large (xl)
- Extra extra large (xxl)

	<b>xs</b> <576px	<b>sm</b> ≥576px	<b>md</b> ≥768px	<b>lg</b> ≥992px	<b>xl</b> ≥1200px	<b>xxl</b> ≥1400px		
Container max-width	None (auto)	540px	720px	960px	1140px	1320px		
Class prefix	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-	.col-xxl-		
# of columns	12							
Gutter width	1.5rem (.75rem	1.5rem (.75rem on left and right)						
Custom gutters	Yes							
Nestable	Yes							
Column ordering	<u>Yes</u>							

# **Equal-width**

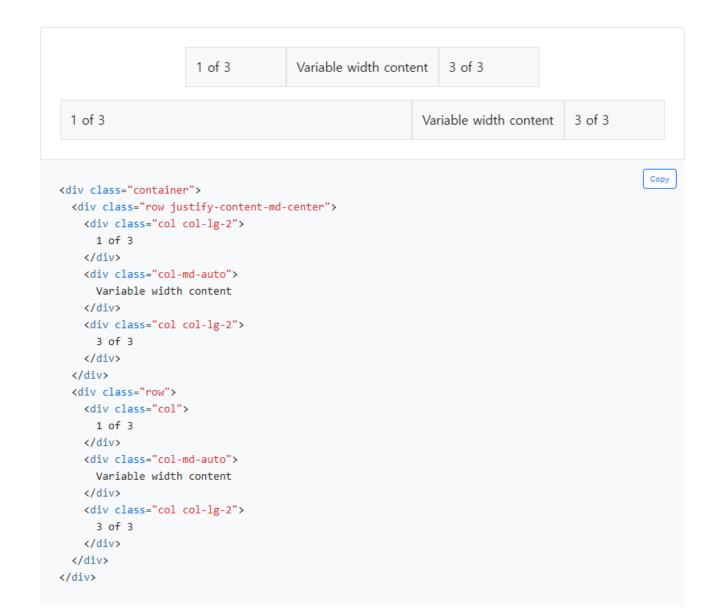
```
1 of 2
                                                 2 of 2
 1 of 3
                                 2 of 3
                                                                 3 of 3
                                                                                             Сору
<div class="container">
 <div class="row">
   <div class="col">
     1 of 2
   </div>
   <div class="col">
     2 of 2
   </div>
 </div>
  <div class="row">
   <div class="col">
     1 of 3
   </div>
   <div class="col">
     2 of 3
   </div>
   <div class="col">
     3 of 3
   </div>
 </div>
</div>
```

# Setting one column width

```
3 of 3
 1 of 3
                         2 of 3 (wider)
 1 of 3
                             2 of 3 (wider)
                                                                     3 of 3
                                                                                             Сору
<div class="container">
  <div class="row">
    <div class="col">
     1 of 3
    </div>
    <div class="col-6">
     2 of 3 (wider)
    </div>
    <div class="col">
     3 of 3
   </div>
  </div>
  <div class="row">
   <div class="col">
     1 of 3
    </div>
    <div class="col-5">
     2 of 3 (wider)
    </div>
    <div class="col">
     3 of 3
   </div>
  </div>
```

</div>

### Variable width content



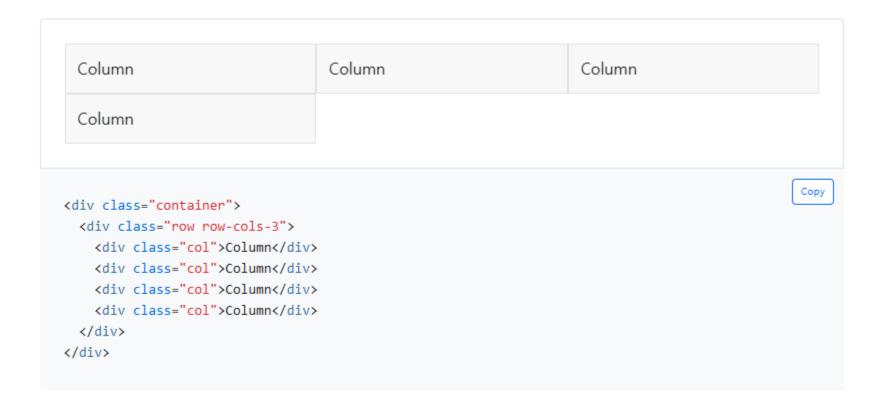
### Mix and Match

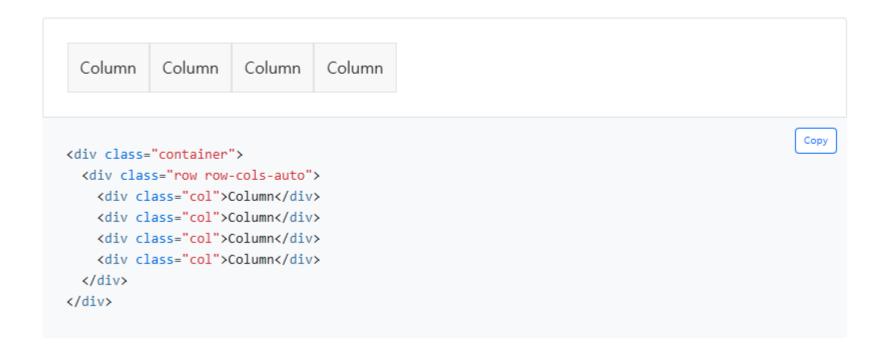
```
      .col-md-8
      .col-6 .col-md-4

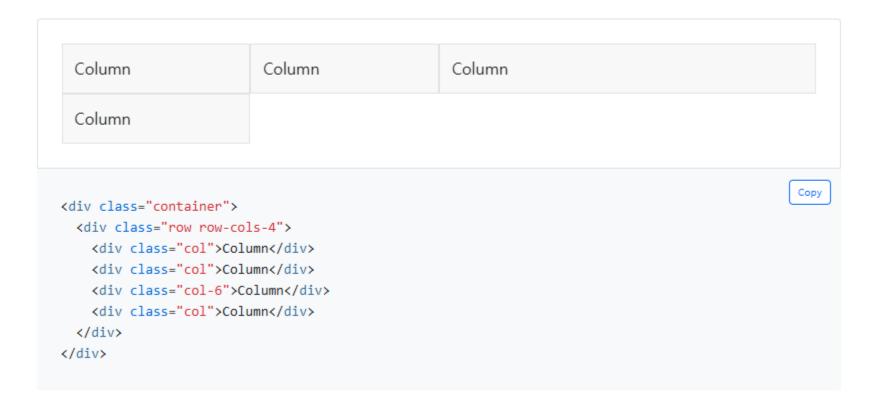
      .col-6 .col-md-4
      .col-6 .col-md-4

      .col-6
      .col-6
```

```
Copy
<div class="container">
 <!-- Stack the columns on mobile by making one full-width and the other half-width -->
  <div class="row">
    <div class="col-md-8">.col-md-8</div>
   <div class="col-6 col-md-4">.col-6 .col-md-4</div>
  </div>
 <!-- Columns start at 50% wide on mobile and bump up to 33.3% wide on desktop -->
  <div class="row">
    <div class="col-6 col-md-4">.col-6 .col-md-4</div>
    <div class="col-6 col-md-4">.col-6 .col-md-4</div>
    <div class="col-6 col-md-4">.col-6 .col-md-4</div>
  </div>
 <!-- Columns are always 50% wide, on mobile and desktop -->
  <div class="row">
    <div class="col-6">.col-6</div>
    <div class="col-6">.col-6</div>
  </div>
</div>
```







Column		Column	Column		Column	
Column		Column	Column		Column	
Column	Column	Column	Column	Column	Column	

```
Copy
<div class="container">
  <div class="row row-cols-2 row-cols-lg-3">
    <div class="col">Column</div>
    <div class="col">Column</div>
    <div class="col">Column</div>
    <div class="col">Column</div>
    <div class="col">Column</div>
    <div class="col">Column</div>
    <div class="col-4 col-lg-2">Column</div>
    <div class="col-4 col-lg-2">Column</div>
  </div>
</div>
```

# Day 07

Body 내에 Container, col 추가

# Components

## Components

- 웹 페이지의 사용자 인터페이스를 구성하는 재사용 가능한 구성 요소
- Bootstrap 5에서는 사전 스타일링된 컴포넌트를 제공하여 빠르고 일관된 UI 구현

# Bootstrap 컴포넌트 사용 목적

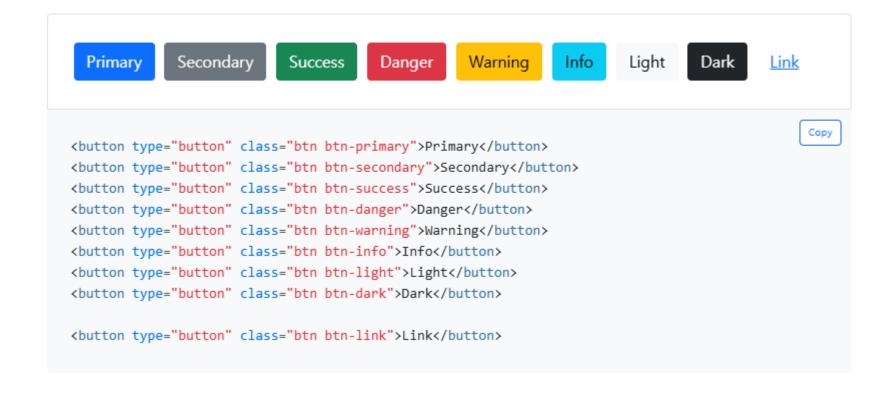
- 사용자 경험(UX) 개선: 직관적이고 접근 가능한 인터페이스 제공
- 개발 효율성: 재사용 가능한 코드로 개발 시간 단축
- 일관성 유지: 통일된 디자인 시스템으로 브랜드 정체성 강화

#### ∨ Components

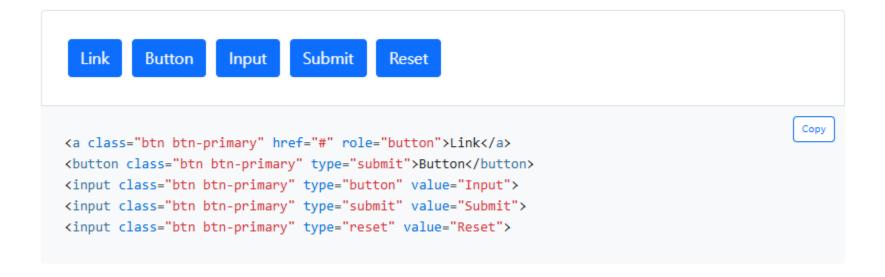
Accordion	Close button	Pagination
Alerts	Collapse	Popovers
Badge	Dropdowns	Progress
Breadcrumb	List group	Scrollspy
Buttons	Modal	Spinners
Button group	Navs & tabs	Toasts
Card	Navbar	Tooltips
Carousel	Offcanvas	

#### **Button Color**

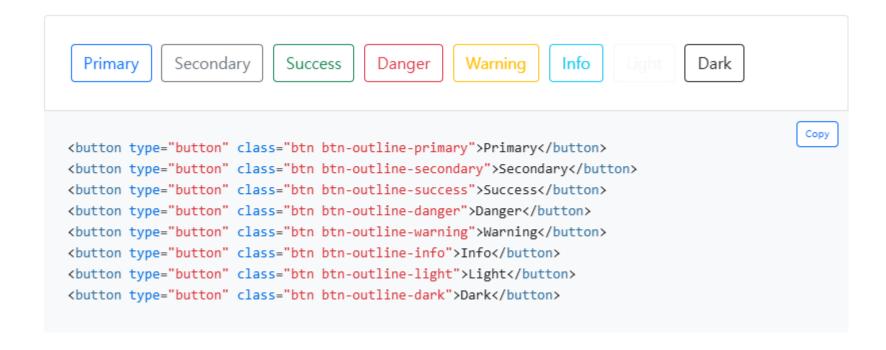
https://getbootstrap.com/docs/5.0/components/buttons/



**Button Tags** 



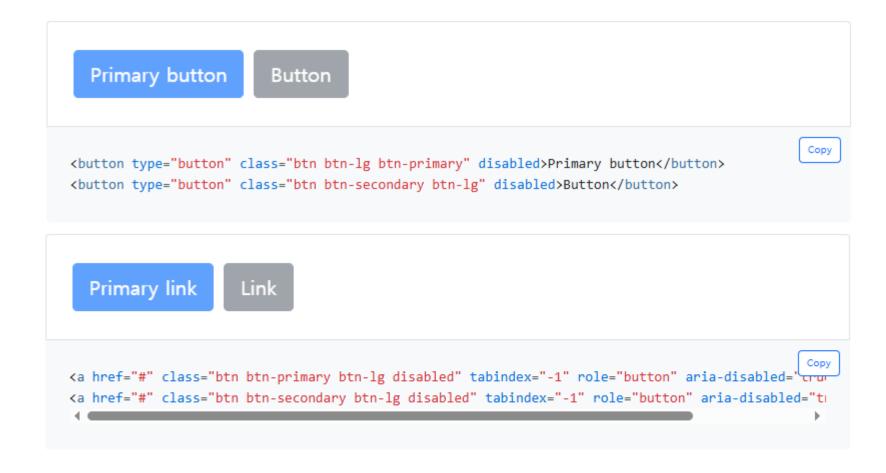
**Button Outlines** 



### **Button Sizes**



**Disabled State** 



### Components – Form

Overview

https://getbootstrap.com/doc s/5.0/forms/overview/

Email address			
We'll never share your email v	ith anyone else.		
Password			
Check me out			
Submit			

```
Copy
<form>
 <div class="mb-3">
   <label for="exampleInputEmail1" class="form-label">Email address</label>
   <input type="email" class="form-control" id="exampleInputEmail1" aria-describedby="emailHelp">
   <div id="emailHelp" class="form-text">We'll never share your email with anyone else.</div>
  </div>
  <div class="mb-3">
   <label for="exampleInputPassword1" class="form-label">Password</label>
   <input type="password" class="form-control" id="exampleInputPassword1">
  </div>
  <div class="mb-3 form-check">
   <input type="checkbox" class="form-check-input" id="exampleCheck1">
   <label class="form-check-label" for="exampleCheck1">Check me out</label>
 </div>
 <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

## Components – Form

Form control

Input

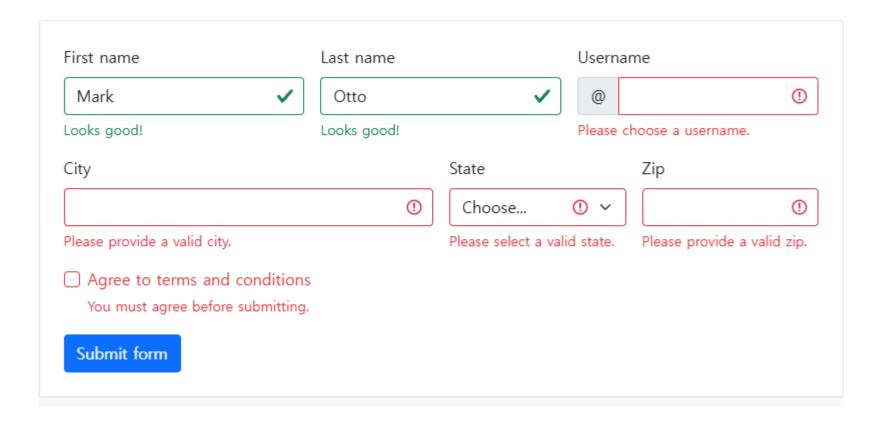
textarea

```
Email address
 ffgf
Example textarea
 gfgfgfgf
                                                                                                 Copy
<div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Email address</label>
  <input type="email" class="form-control" id="exampleFormControlInput1" placeholder="name@example</pre>
</div>
<div class="mb-3">
  <label for="exampleFormControlTextarea1" class="form-label">Example textarea</label>
  <textarea class="form-control" id="exampleFormControlTextarea1" rows="3"></textarea>
</div>
```

## Components – Form

Validation

### https://getbootstrap.com/docs/5.0/forms/validation/



### Components - Navbar

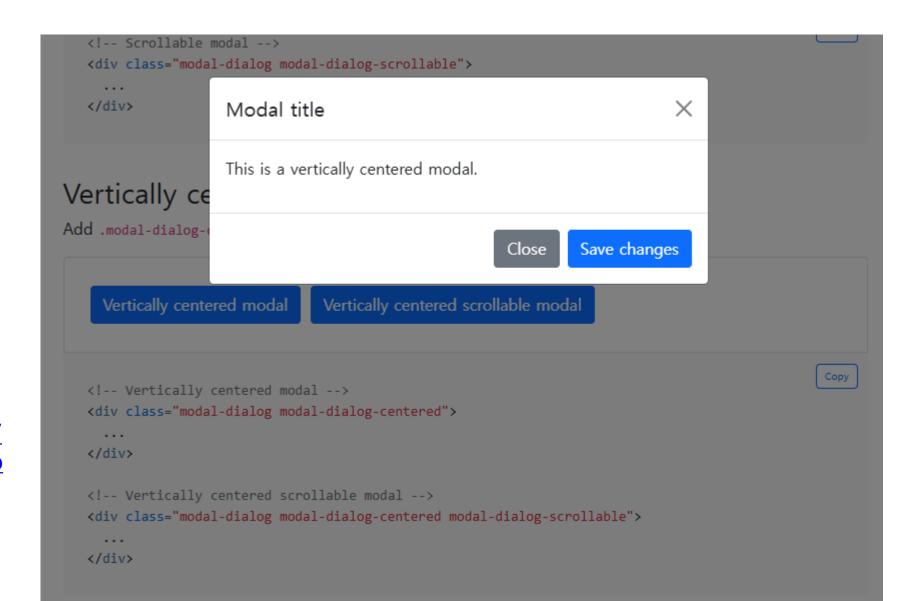
https://getbootstrap.com/ docs/5.0/components/na vbar/

```
Navbar Home Features Pricing Disabled
```

```
Copy
<nav class="navbar navbar-expand-lg navbar-light bg-light">
 <div class="container-fluid">
   <a class="navbar-brand" href="#">Navbar</a>
   <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbari</pre>
    <span class="navbar-toggler-icon"></span>
   </button>
   <div class="collapse navbar-collapse" id="navbarNav">
     <a class="nav-link active" aria-current="page" href="#">Home</a>
      <a class="nav-link" href="#">Features</a>
      <a class="nav-link" href="#">Pricing</a>
      <a class="nav-link disabled" href="#" tabindex="-1" aria-disabled="true">Disabled</a>
      </div>
 </div>
</nav>
```

## Components - Modal

https://getbootstrap.com/docs/5.0/components/modal/



# Components - Carousel

Third slide Third slide label Some representative placeholder content for the third slide.

https://getbootstrap.com/docs/5.0/components/carousel/

#### Card



#### Special title treatment

With supporting text below as a natural lead-in to additional content.

Go somewhere

https://getbootstrap.com/docs/5.0/components/card/

# **Utility Class**

## **Utility Class**

- 간단한 CSS 클래스들로, 빠르고 직관적인 스타일링과 레이아웃 조정을 가능하게 함
- 커스텀 CSS 작성 없이 요소의 정렬, 여백, 디스플레이, 색상 등을 조정
- 복잡한 CSS 규칙 대신 간단한 클래스 이름
- 반응형 디자인: 반응형 접두사(sm, md, lg 등)를 활용해 다양한 화면 크기에 대응

(*) Utilities		
API	Float	Shadows
Background	Interactions	Sizing
Borders	Link	Spacing
Colors	Object fit	Text
Display	Opacity	Vertical align
Flex	Overflow	Visibility
	Position	Z-index

## Text 정렬

https://getbootstrap.com/docs/5.3/utilities/text/

Start aligned text on all viewport sizes.

Center aligned text on all viewport sizes.

End aligned text on all viewport sizes.

End aligned text on viewports sized SM (small) or wider.

End aligned text on viewports sized MD (medium) or wider.

End aligned text on viewports sized LG (large) or wider.

End aligned text on viewports sized XL (extra large) or wider.

End aligned text on viewports sized XXL (extra extra large) or wider.

HTML



Start aligned text on all viewport sizes.
Center aligned text on all viewport sizes.
End aligned text on all viewport sizes.
End aligned text on viewports sized SM (small) or wider.
End aligned text on viewports sized MD (medium) or wider.
End aligned text on viewports sized LG (large) or wider.
End aligned text on viewports sized XL (extra large) or wider.
End aligned text on viewports sized XXL (extra extra large) or wider.
End aligned text on viewports sized XXL (extra extra large) or wider.
End aligned text on viewports sized XXL (extra extra large) or wider.

### Font Size

.fs-1 text .fs-2 text .fs-3 text .fs-4 text .fs-5 text .fs-6 text **f** 📋 HTML

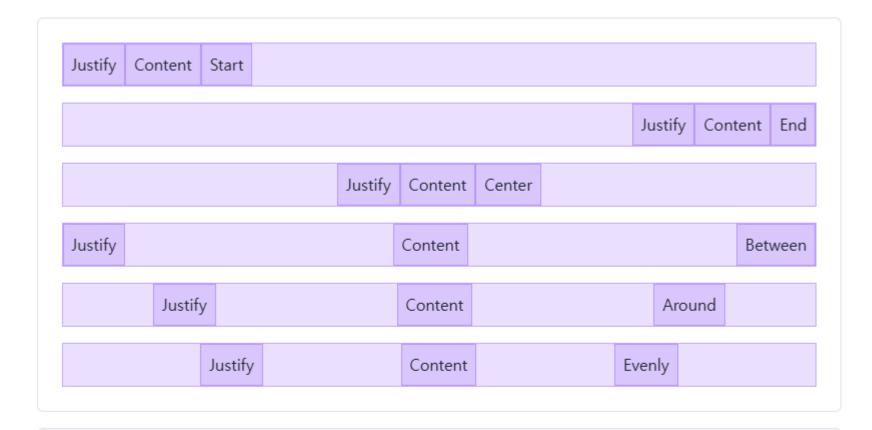
https://getbootstrap.com/docs/5.3/utilities/text/

```
.fs-1 text
.fs-2 text
.fs-3 text
.fs-4 text
.fs-5 text
.fs-6 text
```

### Flex



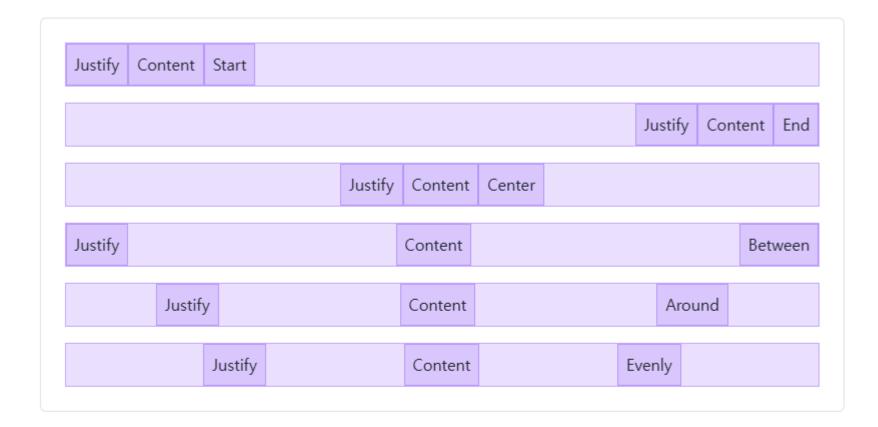
#### Flex



```
<div class="d-flex justify-content-start">...</div>
<div class="d-flex justify-content-end">...</div>
<div class="d-flex justify-content-center">...</div>
<div class="d-flex justify-content-between">...</div>
<div class="d-flex justify-content-around">...</div>
<div class="d-flex justify-content-evenly">...</div></div></div>
```

Flex

Justify content



```
<div class="d-flex justify-content-start">...</div>
<div class="d-flex justify-content-end">...</div>
<div class="d-flex justify-content-center">...</div>
<div class="d-flex justify-content-between">...</div>
<div class="d-flex justify-content-around">...</div>
<div class="d-flex justify-content-evenly">...</div></div></div>
```

# **Utility Class**

Flex

Align items

```
Flex item Flex item Flex item
```

```
<div class="d-flex align-items-start">...</div>
<div class="d-flex align-items-end">...</div>
<div class="d-flex align-items-center">...</div>
<div class="d-flex align-items-baseline">...</div>
<div class="d-flex align-items-stretch">...</div></div>
```

# Spacing

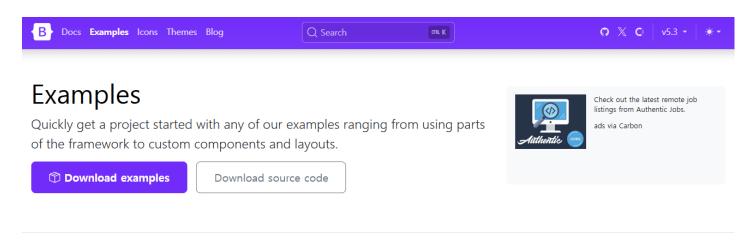
**Notation** 

https://getbootstrap.com/docs/5.3/utilities/spacing/#notation

```
.mt-0 {
 margin-top: 0 !important;
.ms-1 {
 margin-left: ($spacer * .25) !important;
.px-2 {
 padding-left: ($spacer * .5) !important;
 padding-right: ($spacer * .5) !important;
.p-3 {
 padding: $spacer !important;
```

자기소개 페이지 HTML / CSS / Bootstrap으로 구현

### https://getbootstrap.com/docs/5.3/examples/



#### **Starters**

Functional examples of using Bootstrap in common JS frameworks like Webpack, Parcel, Vite, and more you can edit in StackBlitz.

CDN starter

Instantly include Bootstrap's compiled CSS and JavaScript via the jsDelivr CDN.

∳ Edit in StackBlitz

Bootstrap color modes

Import and compile Bootstrap's Sass with Stylelint, and the Bootstrap color modes.

∳ Edit in StackBlitz

React

Import and hundle Rootstran's source Sass and

Sass & JS

Use npm to import and compile Bootstrap's Sass with Autoprefixer and Stylelint, plus our bundled JavaScript.

Bootstrap Icons

Import and compile Bootstrap's Sass with Stylelint, PurgeCSS, and the Bootstrap Icons web font.

★ Edit in StackBlitz

Import and hundle Rootstran's source Sass and

Sass & ESM JS

Import and compile Bootstrap's Sass with
Autoprefixer and Stylelint, and compile our source
JavaScript with an ESM shim.

★ Edit in StackBlitz

Parcel

Import and bundle Bootstrap's source Sass and JavaScript via Parcel.

★ Edit in StackBlitz

∀ue

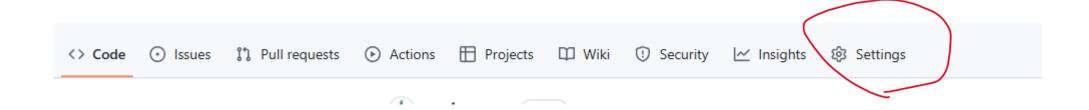
Import and hundle Rootstran's source Sass and

## 새로운 git repository 생성

Repository 생성시 마지막에 github.io

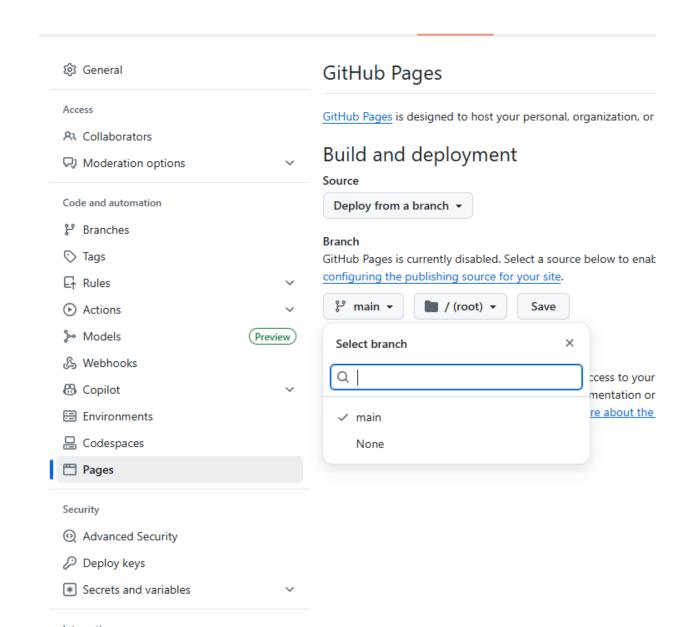
이전 과제 참고하여 자기소개 페이지를 위한 git repository 생성

Repository 화면에서 Settings 이동



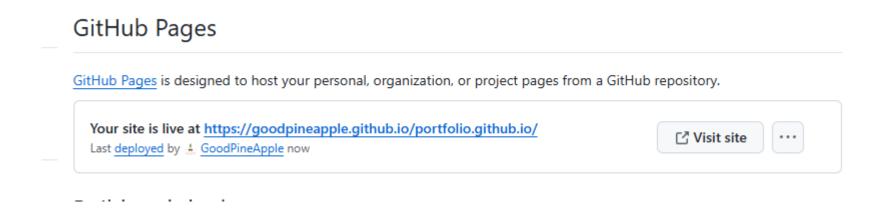
# 새로운 git repository 생성

좌측 Pages 메뉴 선택 Deploy from a branch Branch: main



## 새로운 git repository 생성

생성에 조금 시간 걸릴 수 있음. Pages 화면에 재접속하면 링크 확인 가능



# 오늘우리는

# 감사합니다