



Center for Evaluation  
and Development

## Making a Presentation in R Using c4ed theme: Xaringan

### Center for Evaluation and Development(C4ED) Using c4ed theme

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## Packages for making presentation in R

1. **rmarkdown**: Creates dynamic reports and documents by blending code and text.
2. **knitr**: Embeds and executes R code within R Markdown, generating tables and plots.
3. **tinytex**: Simplifies LaTeX package management for high-quality documents.
4. **xaringan**: Builds interactive web-based presentations using R Markdown.
5. **xaringanthemer**: Customizes themes and styles for Xaringan presentations.
6. **xaringanExtra**: Enhances Xaringan presentations with features like slide notes and transitions.

```
packs ← c(rmarkdown, knitr, tinytex, xaringan, xaringanExtra,  
          xaringanthemer)  
install.packages("packs")
```



# Creating an R project 🐧

4

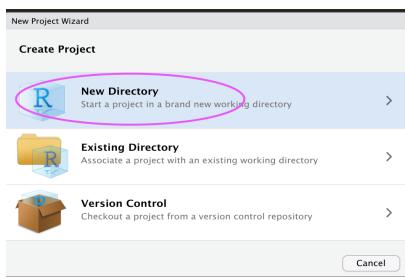
- Create a new R Project from within R Studio

The screenshot shows the RStudio interface with a project titled "xaringan-metropolis - master - RStudio". The left pane displays an R Markdown file named "xaringan-metropolis.Rmd" containing YAML front matter for a presentation. The right pane shows the "Environment" tab of the project browser, which lists objects like "data", "mpg\_dag", "RAW\_Book1", and "tidy data". A blue oval highlights the "New Project..." option in the top menu bar under the "Project" dropdown.

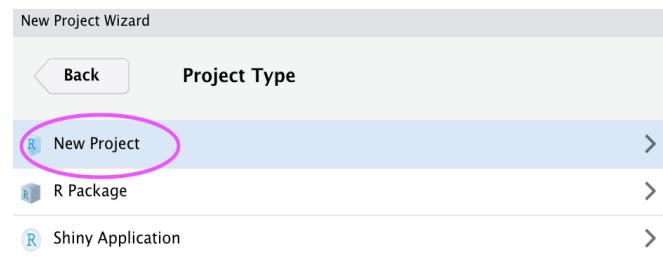
```
1 ---  
2 title: "Making a Presentation in R: Xaringan"  
3 subtitle: " Using c4ed theme "  
4 author: "Yebelay Berehan"  
5 date: "`r stringr::str_replace(format(Sys.time(), '%B %d, %Y'), '^0','')`"  
6  
7 output:  
8   xaringan::moon_reader:  
9     css:  
10       - default  
11       - mtheme.css  
12       - fonts_mtheme.css  
13     nature:  
14       beforeInit: "macros.js"  
15       highlightStyle: github  
16       highlightLines: true  
17       countIncrementalSlides: false  
18     includes:  
19       after_body: [css/insert-logo.html]  
20 ---
```



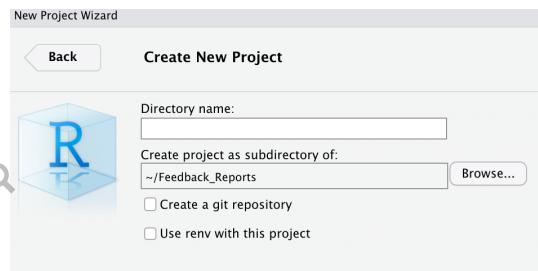
- Save in new directory

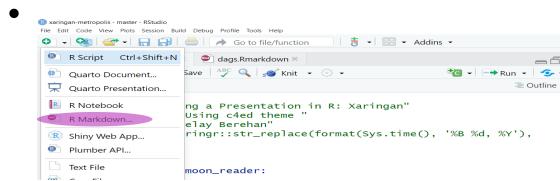


- Choose the folder where you want to store your R



## Markdown file





- When you knit, the following happens:
- When
  - File → New File → R Markdown → Click OK

In that new folder, create an R Markdown file

- When
  - File → New File → R Markdown → Click OK



## The YAML header

YAML includes the metadata variables

- e.g., title, output format
- written between a pair of three hyphens -

```
---
```

```
title:
```

```
output:
```

```
---
```

- Typical **YAML variables** for any output format:

```
---
```

```
title:
```

```
author:
```

```
date:
```

```
output:
```

```
---
```



- Variables can be provided as strings, options, sub-options, and code

```
---
```

```
title: "My very funny first slide"
output:
  pdf_document:
    keep_tex: true
date: "`r Sys.Date()`"
---
```

- Documents as output formats include

```
---
```

```
output: html_document
output: latex_document
output: pdf_document
output: word_document
---
```

- HTML
- LaTeX
- PDF
- Word



## Headers

- The number sign # introduces headers; lower levels are created with additional # — up to total four levels

```
# Introduction  
## Introduction  
### Introduction  
#### Introduction
```

Introduction

Introduction

Introduction

Introduction

## Emphases

- A pair of single asterisk \* or underscores \_ introduces italics
- **\*italics\*** or italics becomes *italics*
- A pair of double asterisk or underscores introduces bold
- **\*\*bold\*\*** or bold becomes **bold**



# Equations

Inline equations go between a pair of single dollar signs "\$" with no space between the signs and the equation itself

`$E = mc^2$` becomes  $E = mc^2$

Block equations go in between a pair of double dollar signs

`$$E = mc^2$$` becomes

$$E = mc^2$$

```
 $$Y = \beta_0 + \beta_1 x^2 + \epsilon
 $$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}
```

$$Y = \beta_0 + \beta_1 x + \beta_2 x^2 + \epsilon$$

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$



Lines starting with asterisk \* as well as plus + or minus – signs introduce lists

- books
- articles
- reports

- books
- articles
- reports

- Lists can be numbered, nested within each other, with indentation

1. books
2. articles
  - published
  - under review
    - + revised and resubmitted
  - work **in** progress

1. books
2. articles
  - published
  - under review
    - revised and resubmitted
  - work in progress



## Dashes

- Two hyphens grouped together introduce small dash
    - -- becomes  $\text{—}$
  - Three hyphens grouped together introduce bigger dash
    - --- becomes  $\text{—}$
- 

## Subscripts and Superscripts

- underscore ( $\underline{\phantom{x}}$ ) introduces subscript
  - $\$ \text{CO}_2 \$$  becomes  $co_2$
- $\hat{\phantom{x}}$  introduces superscript
  - $R^2$  becomes  $R^2$



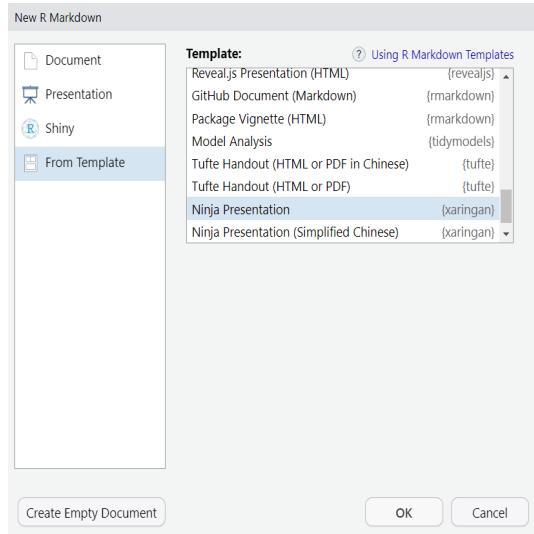
- Xaringan = shar-in-gen or [ʃæ.'riŋ.gæn], which is created by Yihui Xie
- Install the package from GitHub

```
remotes::install_github("yihui/xaringan")
```

- In RStudio: Make a new project
- File ➔ New File ➔ R Markdown ➔ From Template ➔ Ninja Presentation
- Delete everything but YAML
- Save. (save, save, save!)



# Then the YAML page



```
---
```

```
title: "Presentation Ninja"
subtitle: "x<br/>with xaringan"
author: "Yihui Xie"
institute: "RStudio, PBC"
date: "2016/12/12(updated: `r Sys.Date()`)"
output:
  xaringan::moon_reader: # output format
  nature:
    highlightStyle: # how the code displays
    highlightLines: true
  countIncrementalSlides: false
#ratio "16:9" # or 4:3
---
```



- To view the slides generated by your new Rmd file, you have two options:

**Option 1.** Run xaringan's infinite moon reader function in the console 🚀

```
xaringan::inf_mr()
```

**Option 2.** Knit the document 💭



## Familiar from **markdown**

- Headings (#, ##, ###)
- **Bold** and *italic* type
- Links and images with `[]()` and `![]()`
- Bullet points can be added with  
- , +, or \*
- Numbered lists can be created with 1.

## Not so familiar, from **remark.js**

- First slide starts immediately after YAML, doesn't need to begin with three dashes( --- )
- Slides are separated by three dashes  
( --- )
- Incremental slides are separated by two dashes ( -- )



How can we make our slides look more interesting?

by adjusting

- Placement of texts
- pretty pictures
- and icons



Horizontally

```
left,  
center,  
right
```

Vertically

```
top,  
middle,  
bottom
```

```
---
```

```
class: center, middle
```

This content is also centered and **in** the middle of the slide

```
---
```

- Slide with some text aligned

```
.right[ ... and finish it on the right.]
```

...and finish it on the right.



# Make slides look more interesting: Placement

19

- Pull content to either side of the slide

- **The `.pull-left[]` class pulls content to the left 47%**

```
.pull-left[  
  
]
```



- And `.pull-right[]` pulls content to the right 47%

```
.pull-right[  
  
]
```



- They don't have to take up the entire slide. Like for this text, you can decide to continue creating content that isn't pulled to either side.



`.left-column[]` places  
content into a column 20%  
wide

- And text is a little lighter

`.right-column[]` places content into a column 75% wide

- It also has a *little* bit of padding on the top
- And unlike the `.pull` content classes, these column classes are fixed for the entire slide
- They are meant to be used together



## How to add images to your slides pictures

- Insert image from local or external sources
- Integrate R plots to the slide



## insert image from local or external sources

- There are a variety of ways to add images to your slides!

---

Markdown    knitr    HTML

---

```
![ ](img/fig.png)
```

- simple
- not very flexible
- output size fully dependent on the size of the image, but scaling can be managed



# insert image from local or external sources

- There are a variety of ways to add images to your slides!

Markdown    knitr    HTML

---

```
knitr::include_graphics("img/fig.png")
```

- pretty flexible
- a little bulky



## insert image from local or external sources

- There are a variety of ways to add images to your slides!

Markdown    knitr    HTML

---

```

```

- most flexible
- a bit unsightly
- takes time to [get used to syntax](#)



## Full background image

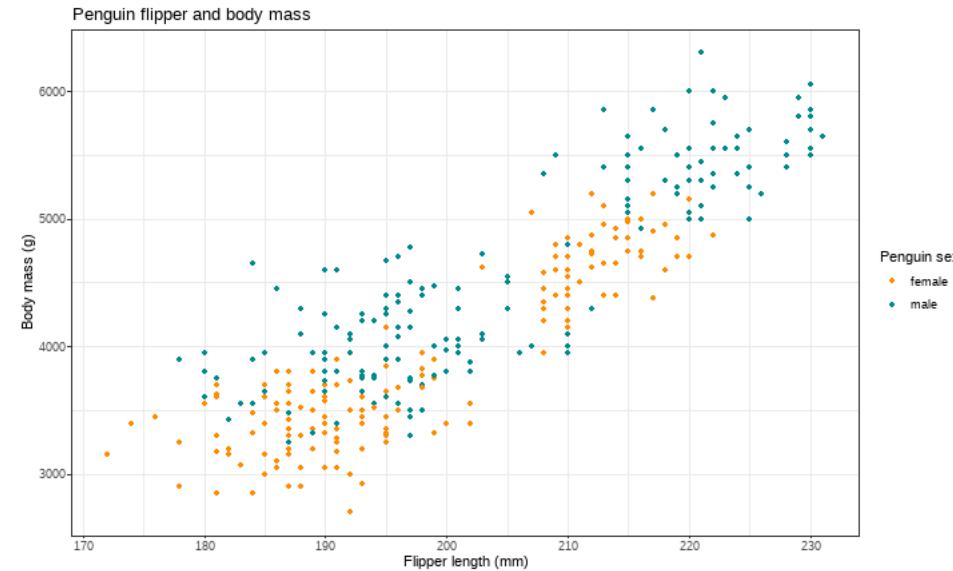
For example I use the this code for this background image.

```
background-image: url("img/fullimage.png")  
background-size: cover
```

**background-size: cover** → will cover the slide so that there is no white space.  
**background-position:** play with this



# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

```
library(ggplot2)
library(palmerpenguins)
ggplot(penguins, aes(x = flipper_length_mm, y = body_mass_g, color = sex)) +
  geom_point() + theme_bw() +
  scale_color_manual(values = c("darkorange", "cyan4"), na.translate = FALSE) +
  labs(title = "Penguin flipper and body mass") +
  labs(x = "Flipper length (mm)", y = "Body mass (g)",
       color = "Penguin sex") # facet_wrap(~ species)
```



# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

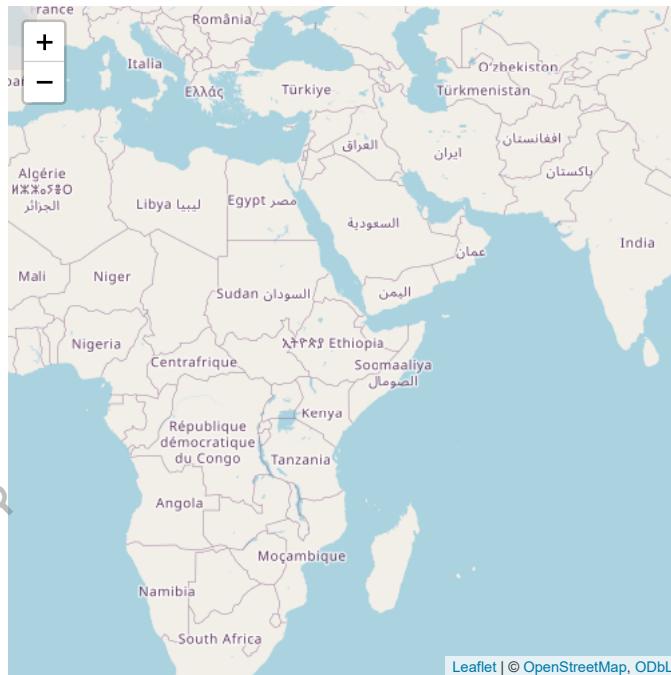
```
```{r, fig.showtext = TRUE, fig.align='center', echo=FALSE, warning=FALSE,
message=FALSE, fig.width=6, fig.height=4}
library(ggplot2)
library(palmerpenguins)
ggplot(penguins, aes(x = flipper_length_mm, y = body_mass_g, color = sex)) +
  geom_point() + theme_bw() +
  scale_color_manual(values = c("darkorange", "cyan4"), na.translate = FALSE) +
  labs(title = "Penguin flipper and body mass") +
  labs(x = "Flipper length (mm)", y = "Body mass (g)",
       color = "Penguin sex") # facet_wrap(~ species)
```



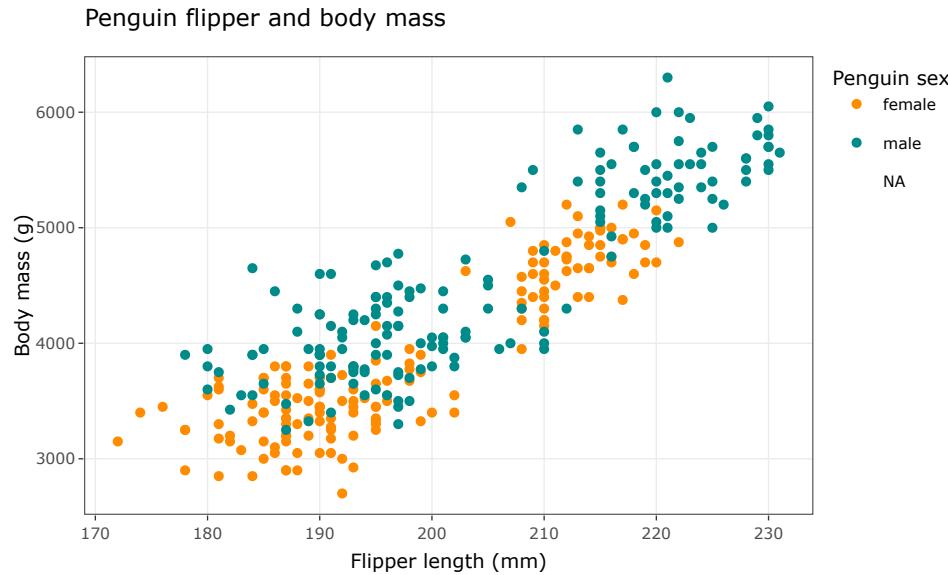
# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

```
library(leaflet)
leaflet() %>% addTiles() %>% setView(lng = 40.489673, lat = 9.1450, zoom = 3)
```



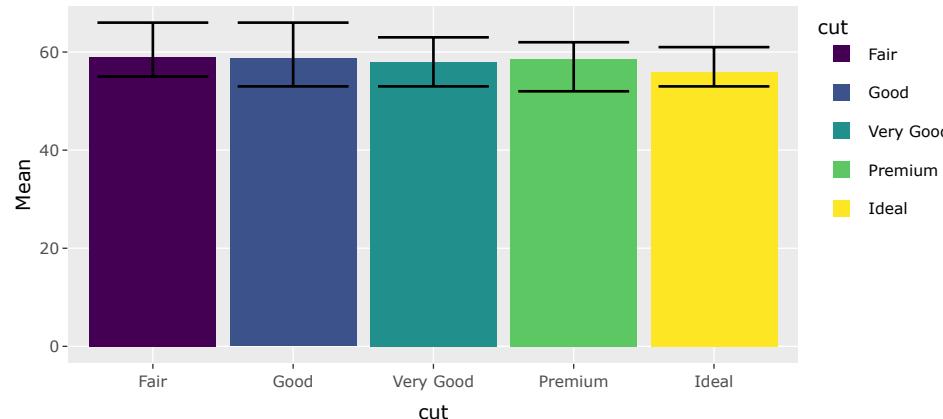
# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

# visualize our data using r code

[plot](#)[R code](#)[Chunk Code](#)[Map](#)[Interactive plot1](#)[Interactive plot2](#)

Bar chart with Error Bars



[New Rmd File](#)[Directory](#)[YAML 1](#)[YAML 2](#)[c4ed1](#)[c4ed2](#)

## 1. New File

## 2. New R Markdown

```
## Xaringan - Metropolis - master - RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
R Script Ctrl+Shift+N
Quarto Document...
Quarto Presentation...
R Notebook
R Markdown... (highlighted)
Shiny Web App...
Plumber API...
Text File
Save ABC Knit Outline
dags.Rmarkdown
ng a Presentation in R: Xaringan"
Using c4ed theme "
elay Berehan"
ringr::str_replace(format(Sys.time(), '%B %d, %Y'),
moon_reader:
```

## 3. From Template

[New R Markdown](#)

Template:	
Reveal.js Presentation (HTML)	{revealjs}
GitHub Document (Markdown)	{rmarkdown}
Package Vignette (HTML)	{rmarkdown}
Model Analysis	{tidymodels}
Tufte Handout (HTML or PDF in Chinese)	{tufte}
Tufte Handout (HTML or PDF)	{tufte}
Ninja Presentation	{xaringan}
Ninja Presentation (Simplified Chinese)	{xaringan}

[Create Empty Document](#)[OK](#)[Cancel](#)

[New Rmd File](#)[Directory](#)[YAML 1](#)[YAML 2](#)[c4ed1](#)[c4ed2](#)

The new directory in the "Files" pane contains

- ⚡ the new Rmd file (i.e. `Xaringan_Slide.Rmd`)
- 📁 the `img` folder containing logo files
- 📁 the `css` folder containing the custom `C4ED` theme files and an HTML file in charge of adding the c4ed logo to each slide.



[New Rmd File](#)[Directory](#)[YAML 1](#)[YAML 2](#)[c4ed1](#)[c4ed2](#)

```
---
```

```
title: "Making a Presentation in R Using c4ed theme: Xaringan"
subtitle: "Center for Evaluation and Development(C4ED) Using c4ed theme"
#institution: " "
author: "Yebelay Berehan"
date: `r stringr::str_replace(format(Sys.time(), '%B %d, %Y'), '^0', '')`"
output:
  xaringan::moon_reader:
    css:
      - default
      - c4ed_theme.css
      - css/fonts_c4ed.css
```



[New Rmd File](#)[Directory](#)[YAML 1](#)[YAML 2](#)[c4ed1](#)[c4ed2](#)

More options for output [xaringan::moon\\_reader](#)

```
nature:  
  highlightStyle: github    # highlighting syntax for code  
  highlightLines: true      # true: enables code line highlighting  
  countIncrementalSlides: false # incremet not counted as page  
  highlightLanguage: ["r"]     # languages to highlight  
  countdown: 60000 # add time count for each slide  
  ratio: "16:10" # or 16:9 # size of slide  
includes:  
  after_body: [css/insert-logo.html]  # include logos to each page
```

---



New Rmd File

Directory

YAML 1

YAML 2

c4ed1

c4ed2

```
.remark-slide-content {  
  background-color: #FFFFFF;  
  border-top: 70px solid #006D6B;  
  font-size: 24px;  
  font-weight: 200;  
  line-height: 1.5;  
  padding: 1em 2em 1em 2em;  
}  
  
.title-slide {  
  background-image: url(img/logo-title-slide.png),  
  url(img/fig.png);  
  background-size: 200px auto, 100% 200px;  
  background-position: 90% 5%, bottom;  
  background-repeat: no-repeat;  
}
```

```
/* colored to white for slides that have both  
   the .title-slide and .inverse classes */  
.title-slide .inverse .remark-slide-content {  
  
  background-color: #ffffff;  
  color: #ffffff; /* Set the text color to white */  
}  
/*--Make color the inverse slide -- */  
.inverse {  
  background-color: #006D6B;  
  text-shadow: none;  
}
```

[New Rmd File](#)[Directory](#)[YAML 1](#)[YAML 2](#)[c4ed1](#)[c4ed2](#)

- The customized CSS to c4ed theme is found in the following link [c4ed\\_theme.css](#)



# Table

```
library(DT) # Create an interactive data table

datatable(iris, options = list(pageLength = 10))
```

Show 10 entries

Search:

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa

Showing 1 to 10 of 150 entries

Previous

1

2

3

4

5

...

15

Next



- **k** Go to previous slide
- **j** Go to next slide
- **b** Toggle blackout
- **m** Toggle mirrored
- **f** Toggle fullscreen mode
- **c** Clone slideshow
- **p** Toggle presenter mode
- **t** Restart the presentation timer
- **?, h** Toggle this help
- **o** Tile View: Overview of Slides
- **f** Fit Slides to Screen
- **s** Toggle scribble toolbox
- **w** open webcam



```
## Warning: package 'renderthis' was built under R version 4.3.1
```

```
##  
i Rendering 'file:/C:/Users/YebelayBerehan/Making_slide/Slide.html' into Slide...  
✓ Rendering 'file:/C:/Users/YebelayBerehan/Making_slide/Slide.html' into Slide...
```

