

■ Meteor – Module 1

INF1802

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Outline – Module 1

- Web concepts with Meteor
- Install Meteor, Generate starter application, Run it, Look at the files
- Templates
 - Editing a template
 - Sending data to templates with helpers
 - Responding to user actions
- Using Bootstrap

Reference

- Meteor
 - <https://www.meteor.com/>
 - <http://guide.meteor.com/>
- Discover Meteor. Tom Coleman, Sacha Greif.
 - <http://pt.discovermeteor.com/pdf>
- Coursera Responsive Website Development and Design Specialization, Dr Matthew Yee-King, University of London, 2016.
 - Course Introduction to Meteor.js Development
<https://www.coursera.org/learn/meteor-development/home/welcome>
 - Web Application Development with JavaScript and MongoDB
<https://www.coursera.org/learn/web-application-development/home/welcome>

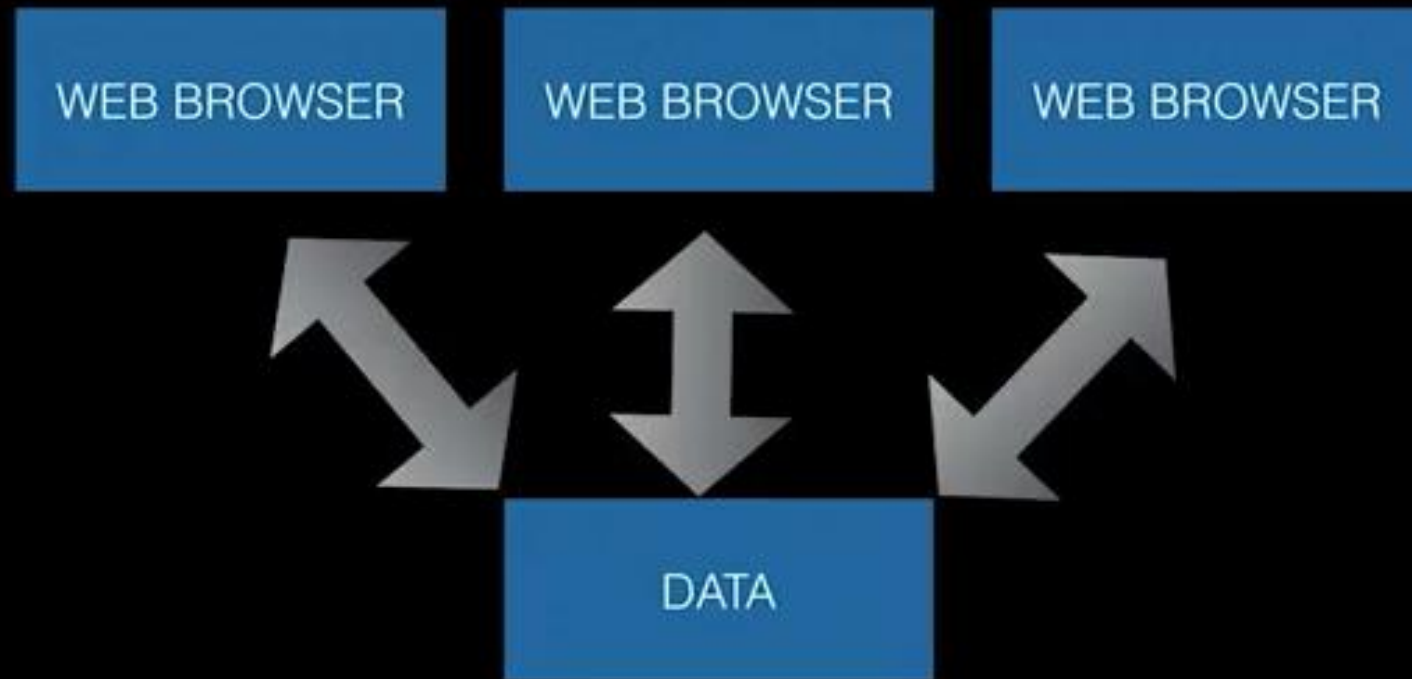
1 - Web Concepts with Meteor, Introduction

CLIENT



SERVER

Why a server?



Meteor

- Meteor is a full-stack JavaScript platform for developing modern web and mobile applications. Meteor includes a key set of technologies for building connected-client reactive applications, a build tool, and a curated set of packages from the Node.js and general JavaScript community.
- Meteor allows you to develop in one language, JavaScript, in all environments: application server, web browser, and mobile device.

- Web Application - Concepts



2 – Install Meteor, Generate Starter App, Run it, Look at the files

- Install Meteor: <https://www.meteor.com/install>

The screenshot shows the Meteor website's installation page. The browser's address bar displays `https://www.meteor.com/install`. The page features the Meteor logo, navigation links for "Why Meteor?", "Develop", and "Apps", and a prominent "INSTALL" button. The main content area includes a "Build your first Meteor app" section with links for "TODO APP WITH ANGULAR" and "TODO APP WITH REACT". A terminal window overlay is positioned over the right side of the page, displaying the following text:

```
Meteor 1.1.0.2 has been installed in your home directory (~/.meteor)
Writing a launcher script to /usr/local/bin/meteor for your convenience.

To get started fast:

$ meteor create ~/my_cool_app
$ cd ~/my_cool_app
$ meteor

Or see the docs at:

docs.meteor.com
```

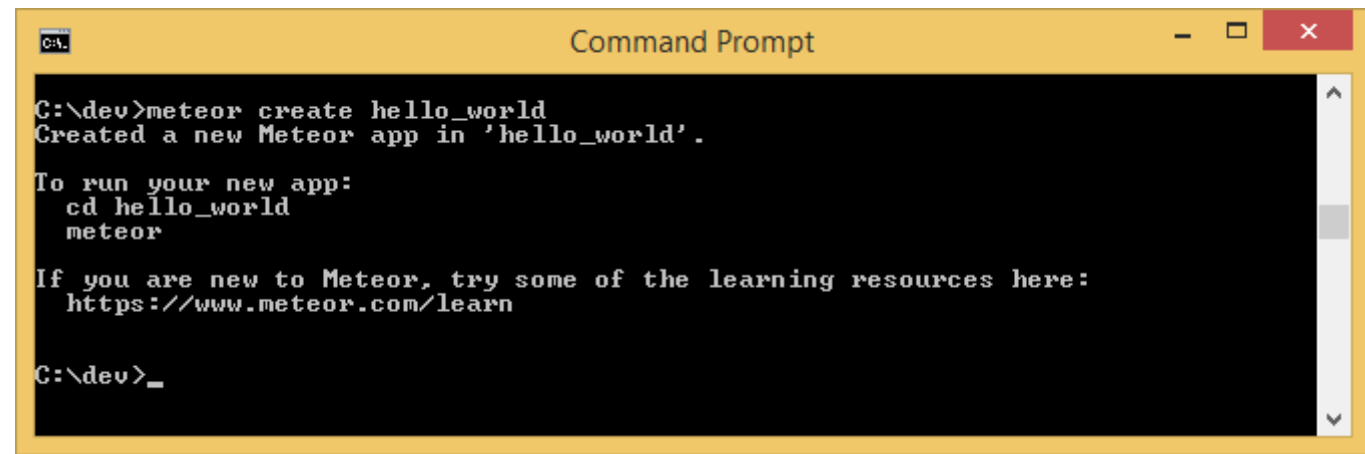
Below the terminal, the text "Or see the docs at:" is followed by a link to docs.meteor.com. To the right of the terminal, a partial link "s you how t" and "t the design" are visible.

- Create a starter application

- Create a directory (example dev)

- Create a example application

- meteor create hello_world



```
CA. Command Prompt
C:\dev>meteor create hello_world
Created a new Meteor app in 'hello_world'.

To run your new app:
  cd hello_world
  meteor

If you are new to Meteor, try some of the learning resources here:
  https://www.meteor.com/learn

C:\dev>_
```



```
CA. Command Prompt
C:\dev>cd hello_world

C:\dev\hello_world>dir
Volume in drive C has no label.
Volume Serial Number is 5E80-AA28

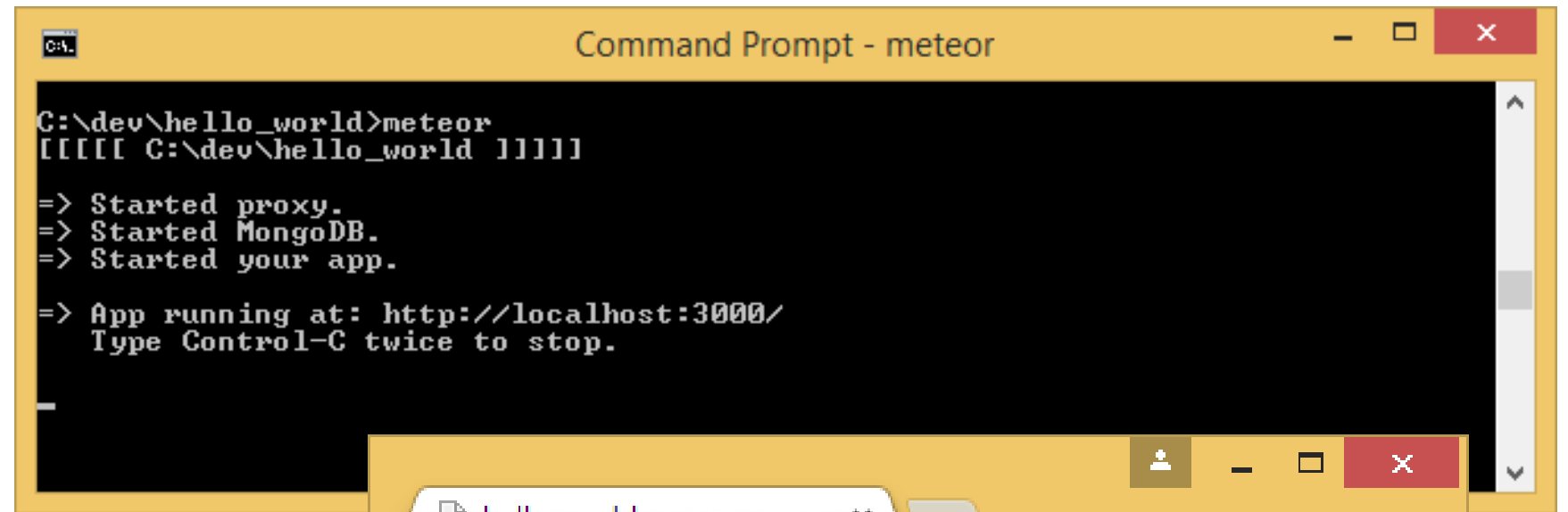
Directory of C:\dev\hello_world

27/11/2015  12:00    <DIR>          .
27/11/2015  12:00    <DIR>          ..
27/11/2015  12:00    <DIR>          .meteor
27/11/2015  12:00                31 hello_world.css
27/11/2015  12:00                224 hello_world.html
27/11/2015  12:00                478 hello_world.js
                3 File(s)              733 bytes
                3 Dir(s)  135.193.600.000 bytes free

C:\dev\hello_world>_
```

- Run the application

- meteor

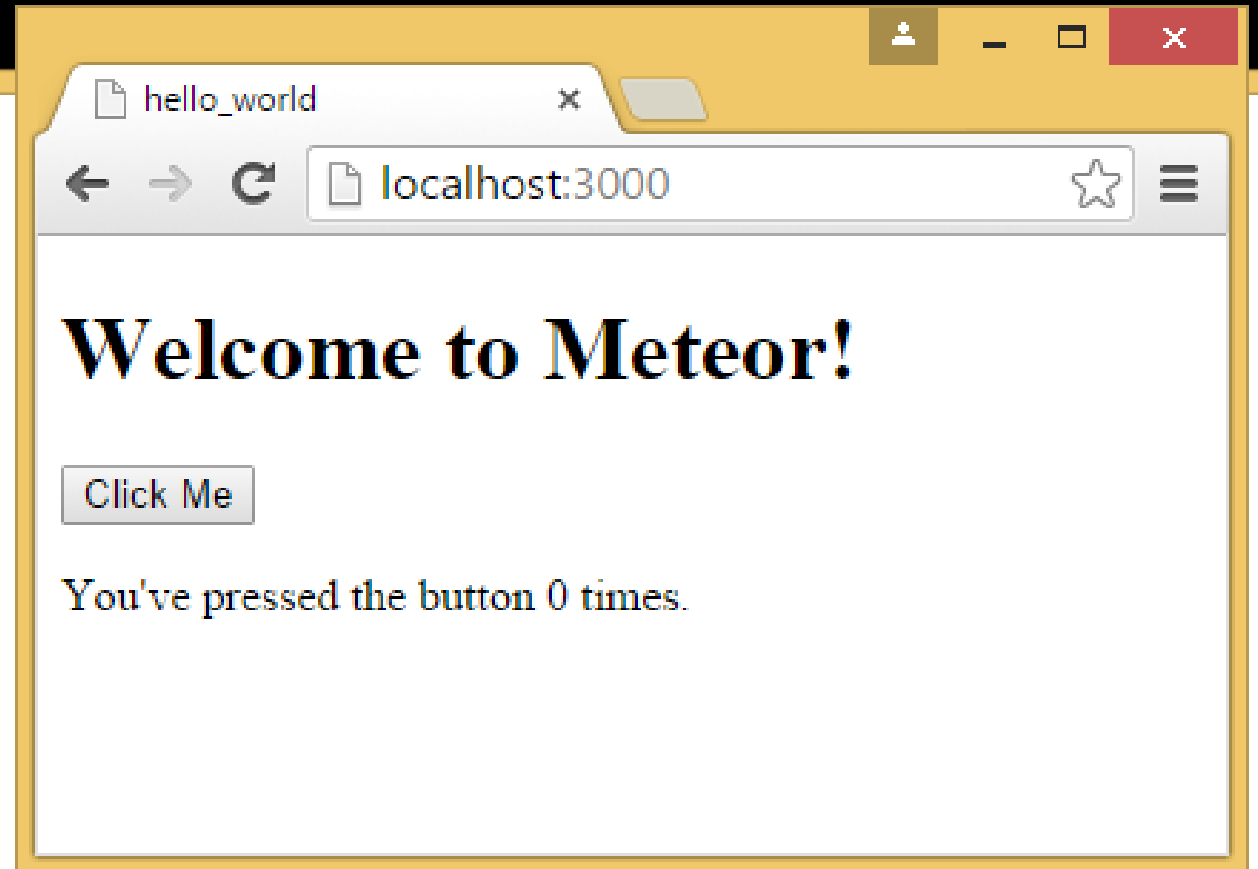


```
Command Prompt - meteor

C:\dev\hello_world>meteor
[[[[[ C:\dev\hello_world ]]]]]

=> Started proxy.
=> Started MongoDB.
=> Started your app.

=> App running at: http://localhost:3000/
    Type Control-C twice to stop.
```



3 – Templates

Create

Template

- The template element is used to declare fragments of HTML that can be cloned and inserted in the document by script. *
- Templates provide a method for declaring inert DOM subtrees and manipulating them to instantiate document fragments with identical contents.
- When web pages dynamically alter the contents of their documents (e.g. in response to user interaction or new data arriving from the server), it is common that they require fragments of HTML which may require further modification before use, such as the insertion of values appropriate for the usage context.
- The template element allows for the declaration of document fragments which are unused by the document when loaded, but are parsed as HTML and are available at runtime for use by the web page.

* The Template element is HTML5 (W3C recommendation)

<https://www.w3.org/TR/html5/scripting-1.html#the-template-element>

Meteor template documentation:

http://docs.meteor.com/#/full/templates_api
<http://meteorcapture.com/spacebars/>

hello_world.html *

```
1 <head>
2   <title>hello_world</title>
3 </head>
4
5 <body>
6   <h1>Welcome to Meteor!</h1>
7
8   {{> hello}}
9 </body>
10
11 <template name="hello">
12   <button>Click Me</button>
13   <p>You've pressed the button {{counter}} times.</p>
14 </template>
15
```

Trigger the templating language. So greater than means go and find a template, and render it, and place the output here, the template is called hello.

```
C:\dev\hello_world\hello_world.html - Subli
File Edit Selection Find View Goto Tools Pro
hello_world.html x
1 <head>
2   <title>hello_world</title>
3 </head>
4
5 <body>
6   <h1>Welcome to Meteor!</h1>
7
8   {{> hello}}
9 </body>
10
11 <template name="hello">
12   <button>Click Me</button>
13   <p>You've pressed the button {{count}}
14 </template>
15
Line 1, Column 1
```

hello_world x
localhost:3000

Welcome to Meteor!

Click Me

You've pressed the button 0 times.

Elements Network Sources Timeline Profiles Resources Audits Console

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <h1>Welcome to Meteor!</h1>
    <button>Click Me</button>
    <p>
      "You've pressed the button "
      "0"
      " times."
    </p>
```

In the head, Meteor includes all the scripts that we need to make the application work. And in the body tag you can see you've got the header, which we saw in the template ...

hello_world x

localhost:3000

Welcome to the Course!

Click Me

You've pressed the button 0 times.

Elements Network Sources Timeline Profiles Resources Audits Console

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <h1>Welcome to the Course!</h1>
    <button>Click Me</button>
    <p>
      "You've pressed the button "
      "0"
      " times."
    </p>
  </body>
</html>
```

html body

Styles

```
element.
style {
}
user ag...
body {
  display:
}
```

Console Emulation Rendering

<top frame> Preserve log

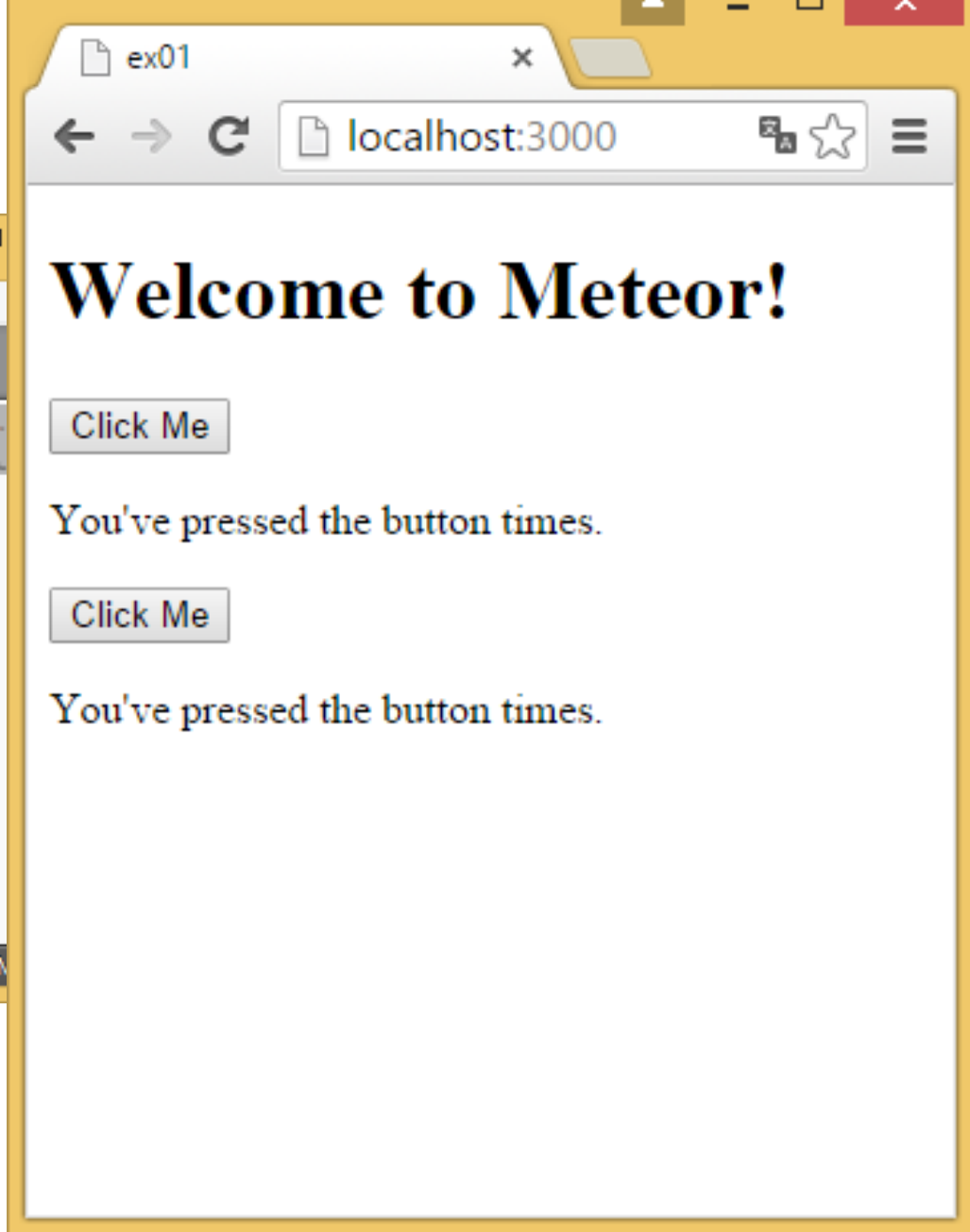
C:\dev\ex01\ex01.html • - Sublime Text 2 (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

ex01.html

```
1 <head>
2   <title>ex01</title>
3 </head>
4
5 <body>
6   <h1>Welcome to Meteor!</h1>
7
8   {{> images}}
9   {{> images}}
10
11 </body>
12
13 <template name="images">
14   <button>Click Me</button>
15   <p>You've pressed the button {{counter}} times.</p>
16 </template>
```

Line 10, Column 3 Tab Size: 4 HTM

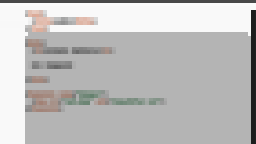




ex01.html



```
4
5 <body>
6   <h1>Animals Gallery</h1>
7
8   {{> images}}
9
10 </body>
11
12 <template name="images">
13   
14 </template>
15
```



4 – Templates

Sending data to Templates with
Helpers



C:\dev\ex02\ex02.js - Sublime Text 2 (UNREGISTERED)



File Edit Selection Find View Goto Tools Project Preferences Help

ex02.js

*

```
1  if (Meteor.isClient) {  
2  |  
3  }  
4  
5  if (Meteor.isServer) {  
6  
7  }  
8
```

Line 2, Column 2


Spaces: 2

JavaScript

```
C:\dev\ex02\ex02.js - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex02.js
1 if (Meteor.isClient) {
2   console.log("I am the client");
3 }
4
5 if (Meteor.isServer) {
6   console.log("I am the server");
7 }
8
Line 7, Column 2 Spaces: 2
```

ex01 localhost:3000

Animals Gallery



Elements Network Sources Timeline Console >>

<top frame> Preserve log

I am the client ex02.js:10

Console Emulation Rendering

```
C:\dev\ex02>meteor
[[[[[ C:\dev\ex02 ]]]]]

=> Started proxy.
=> Started MongoDB.
=> Started your app.

=> App running at: http://localhost:3000/
Type Control-C twice to stop.

=> Meteor server restarted
=> Meteor server restarted120151127-12:42:08.347(-2)? I am the server
```

- Send some data in from the Javascript layer into the template
- Template helpers provide data for templates

```
C:\dev\ex02\ex02.js • - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

ex02.js ex02.html
1  if (Meteor.isClient) {
2    var img_data = {
3      img_src:"cat.jpg",
4      img_alt:"beautiful cat"
5    };
6  };
7
8  Template.images.helpers(img_data);
9
10 }
11
12 if (Meteor.isServer) {
13   console.log("I am the server");
14 }
15

Line 9, Column 1 Spaces: 2
```

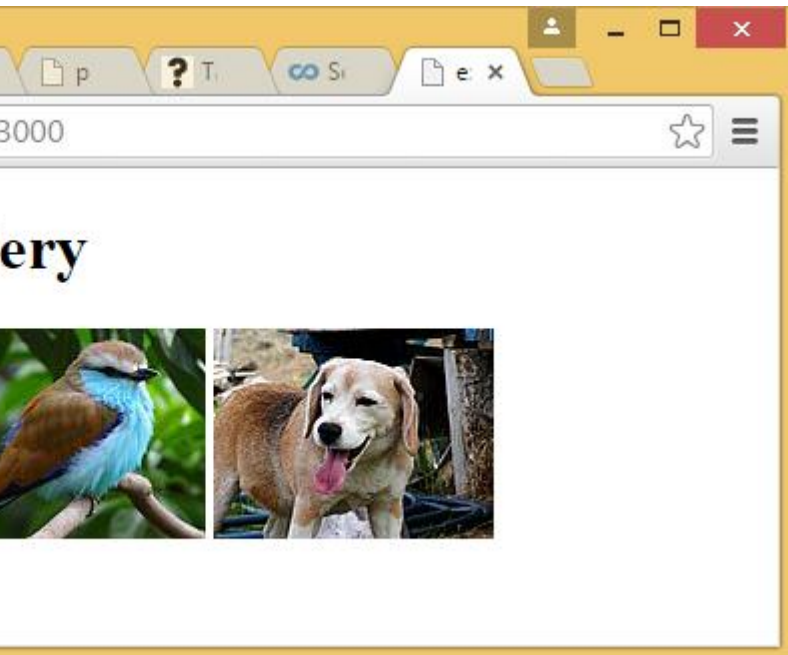
```
C:\dev\ex02\ex02.html • - Sublime Text 2
File Edit Selection Find View Goto Tools Project Preferences Help

ex02.js ex02.html
1  <head>
2    <title>ex01</title>
3  </head>
4
5  <body>
6    <h1>Animals Gallery</h1>
7
8    {{> images}}
9
10 </body>
11
12 <template name="images">
13   
14 </template>
15

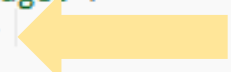
Line 13, Column 40 Tab Size: 4 HTML
```



The same name



```
10 </body>
11
12 <template name="images">
13   {{#each images}}
14
15   
16
17   {{/each}}
18 </template>
19
```



```
C:\dev\ex03\ex03.js - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex03.html x ex03.js x
1  if (Meteor.isClient) {
2    var img_data = [
3      {
4        img_src:"cat.jpg",
5        img_alt:"beautiful black and white cat"
6      },
7    },
8    {
9      img_src:"bird.jpg",
10     img_alt:"beautiful bird"
11   },
12   },
13   {
14     img_src:"dog.jpg",
15     img_alt:"cute dog"
16   },
17   },
18 ];
19
20
21 ];
22
23 Template.images.helpers({images:img_data});
24 console.log("oi oi");
25 }
26
```


5 – Using Bootstrap

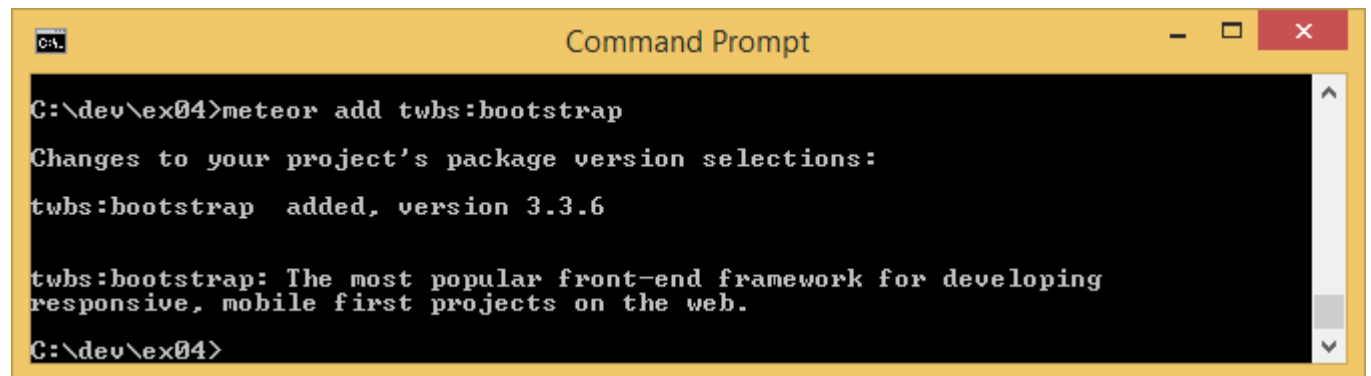
- Meteor packages provide additional features
- Search installed packages.

```
C:\dev>meteor search .  
Searching packages
```

- Search the most popular Bootstrap package

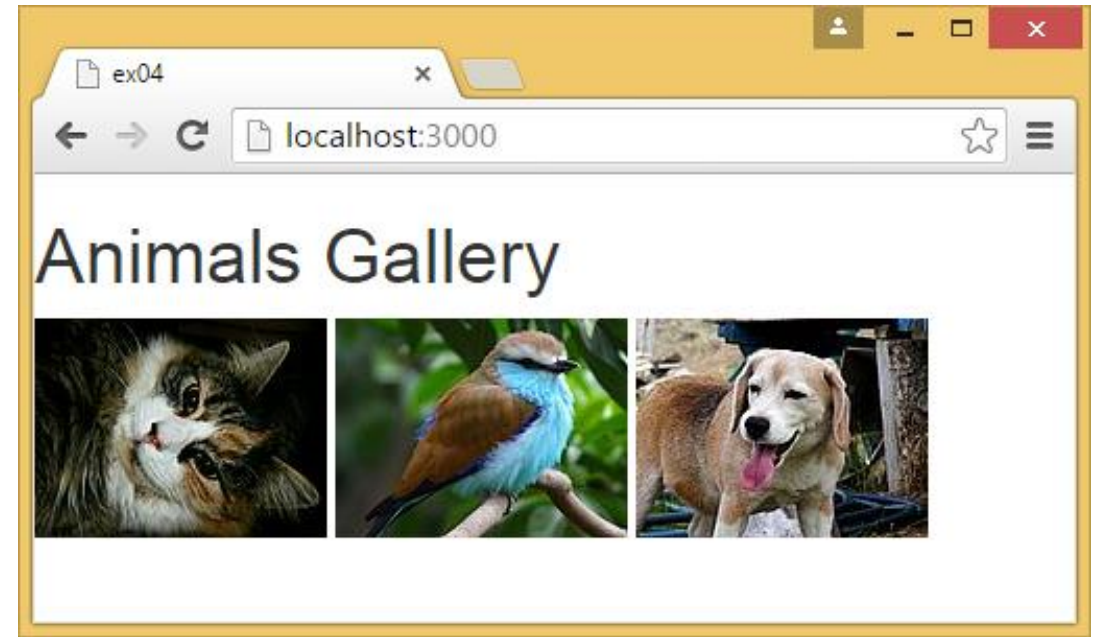
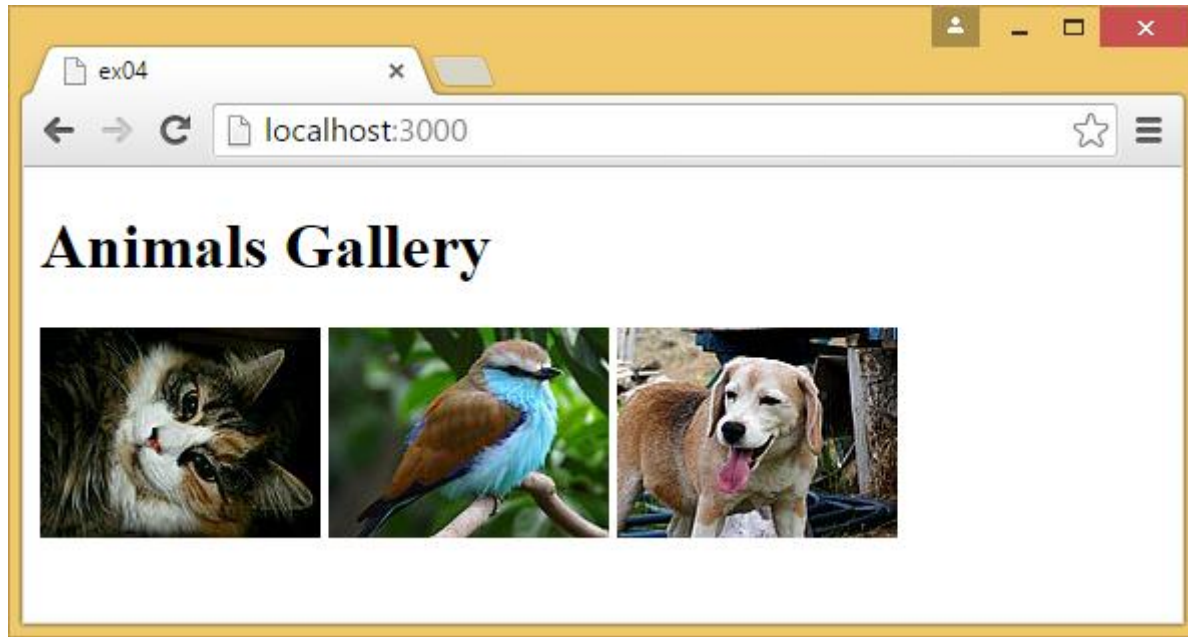
```
You can use 'meteor show' to get more information on a specific item.  
C:\dev>meteor search twbs  
Matching packages:  
twbs:bootstrap          The most popular front-end framework for develop...  
twbs:bootstrap-noglyph Bootstrap without the Glyphicons font (official)...  
You can use 'meteor show' to get more information on a specific item.
```

- To add, you need to be in the application folder



```
Command Prompt  
C:\dev\ex04>meteor add twbs:bootstrap  
Changes to your project's package version selections:  
twbs:bootstrap added, version 3.3.6  
  
twbs:bootstrap: The most popular front-end framework for developing  
responsive, mobile first projects on the web.  
C:\dev\ex04>
```

- Before and after Bootstrap



The grid has 12 columns

col-xs-12 (xs-phone): Use all 12 columns for an image


col-md-3 (md-desktop): Use 3 columns per image (4 images per row)

```
File Edit Selection Find View
ex04.html x
1 <div class="row">
2   <div class="col-
3     <div class="
4       <div cla
5         <h3>
6         <p>
7       </div>
8     </div>
9   </div> <!-- /col
10 </div> <!-- /row -->
```


```
C:\de
File Edit Selection Find V
ex04.html
13 <template name="ima
14   {{#each images}}
15
16   
14
15 <div class="row">
16   {{#each images}}
17
18   <div class="col-xs-12 col-md-3">
19     <div class="thumbnail">
20
21       
22
23       <div class="caption">
24         <h3> Thumbnail label</h3>
25         <p> Description of the image</p>
26       </div>
27     </div>
28   </div> <!-- /col -->
29
30   {{/each}}
31 </div> <!-- /row -->
32
33 </template>
34
```

ex04 localhost:3000


Animals Gallery



Thumbnail label
Description of the image




Thumbnail label
Description of the image




Thumbnail label
Description of the image

ex04 localhost:3000

Animals Gallery



Thumbnail label
Description of the image

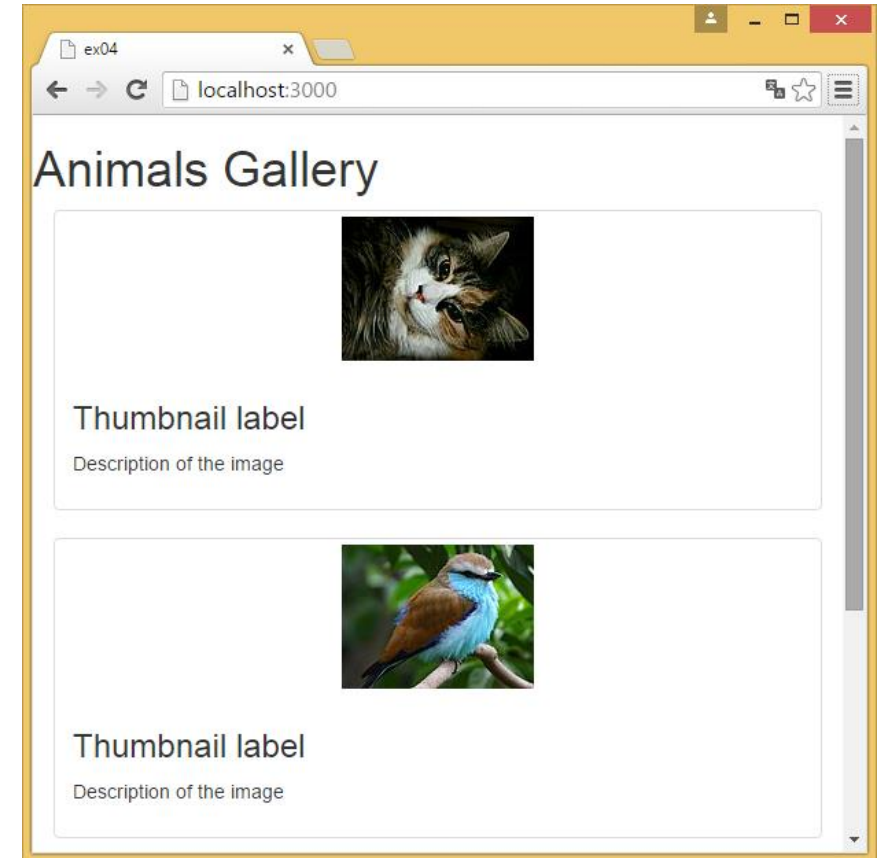


Thumbnail label
Description of the image

In Bootstrap, you have to put things in containers

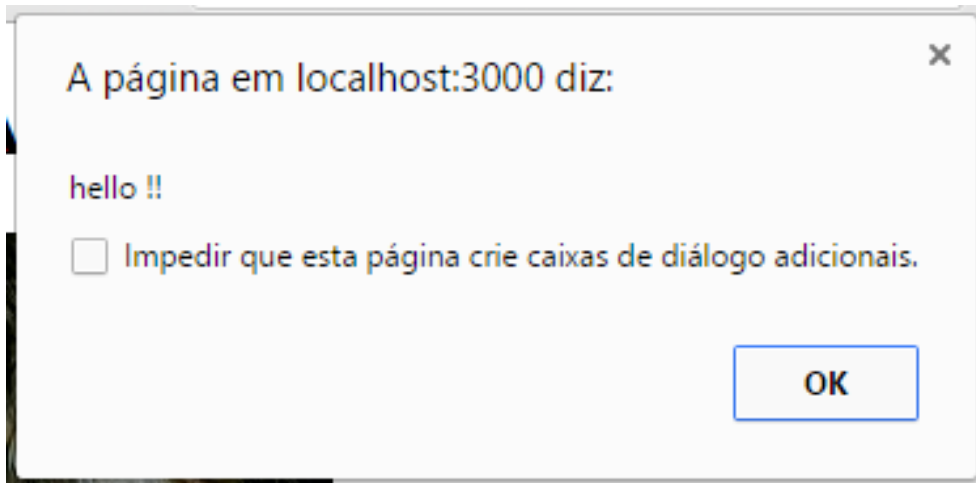
```
File Edit Selection Find View Goto Tools Project Preferences Help
ex04.html x untyped ex04.js x
2 <title>ex04</title>
3 </head>
4
5 <body>
6 <h1>Animals Gallery</h1>
7 <div class="container">
8   {{> images}}
9 </div>
10 </body>
11
12
13 <template name="images">
14
15 <div class="row">
16   {{#each images}}
17
18     <div class="col-xs-12 col-md-3">
19       <div class="thumbnail">
20
21         
22
23         <div class="caption">
24           <h3> Thumbnail label</h3>
25           <p> Description of the image</p>
26         </div>
27       </div>
28     </div> <!-- /col -->
29
30   {{/each}}
31 </div> <!-- /row -->
32
33 </template>
34
```

Line 33, Column 12 Tab Size: 4 HTML



6 – Responding to User Actions

- Interactivity: Reacting user input



```
C:\dev\ex05\ex05.html - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex05.html x ex05.js x
1 <head>
2   <title>ex05</title>
3 </head>
4
5 <body>
6   <h1>Animals Gallery</h1>
7   <div class="container">
8     {{> images}}
9   </div>
10 </body>
11
12
13 <template name="images">
14
15 <div class="row">
16   {{#each images}}
17
18     <div class="col-xs-12 col-md-3"
19       <div class="thumbnail">
20
21     
23
24     <div class="caption">
25       <h3> Thumbnail label</h3>
26       <p> Description of the image</p>
27     </div>
28   </div>
29 </template>
30
31
Line 21, Column 35 Tab Size: 4 HTML
```

Alert Function

If you want to do something on the server (as something in the database) after they click on an image, I can't do that because it's all happening inside the browser. I don't have access that event inside my Meteor system.

Let's re-create the same functionality in the Meteor way

Create a class that relates to interactively. *Js-image*
It is useful to prefix the event classes with "js".

```
ex05.html  x  ex05.js  x
1  <head>
2  | <title>ex05</title>
3  </head>
4
5  <body>
6  | <h1>Animals Gallery</h1>
7  | <div class="container">
8  | | {{> images}}
9  | </div>
10 </body>
11
12
13 <template name="images">
14
15 <div class="row">
16 | | {{#each images}}
17
18 | | <div class="col-xs-12 col-md-3">
19 | | | <div class="thumbnail">
20 | | | |
21 | | | | 
23 | | | |
24 | | | | <div class="caption">
25 | | | | | <h3> Thumbnail label</h3>
26 | | | | | <p> Description of the image</p>
27 | | | | | </div>
28 | | | | </div> <!-- /col -->
29 | | |
30 | | | {{/each}}
31 </div> <!-- /row -->
32
33 </template>
```

Line 21, Column 33 Tab Size: 4 HTML

```
C:\dev\ex05\ex05.js - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex05.html  x  ex05.js  x
1  if (Meteor.isClient) {
2  |   var img_data = [
3  |     {
4  |       |   img_src:"cat.jpg",
5  |       |   img_alt:"beautiful black and white cat"
6  |     },
7  |     {
8  |       |   img_src:"bird.jpg",
9  |       |   img_alt:"beautiful bird"
10 |     },
11 |     {
12 |       |   img_src:"dog.jpg",
13 |       |   img_alt:"cute dog"
14 |     },
15 |   ];
16
17
18
19
20
21 | ];
22
23 | Template.images.helpers({images:img_data});
24
25 | Template.images.events({
26 | | 'click .js-image':function(event){
27 | | | alert('hi !!');
28 | | }
29 | }
30
31 | }
32
33 | );
34
```

Line 29, Column 3 Spaces: 2 Javascript

Binding data to the template


Binding events to the template

Anything in that template that has the class .js-image, if I click on it, it will trigger this event (this function gets called).

ex05 x

localhost:3000

Animals




A página em localhost:3000 diz:
hi !!
 Impedir que esta página crie caixas de diálogo adicionais.

OK


Thumbnail label

Description of the image



Thumbnail label


Description of the image



```
C:\dev\ex05\ex05.js • - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex05.html x ex05.js
22
23 Template.images.helpers({images:img_data});
24
25 Template.images.events({
26   'click .js-image':function(event){
27     console.log(event);
28   }
29 }
30
31 }
32
33 );
34
35 }
36
37 if (Meteor.isServer) {
Line 34, Column 1 Spaces: 2 JavaScript
```

ex05 localhost:3000

Animals Gallery



Elements Network Sources Timeline Profiles Resources Audits Console

<top frame> Preserve log

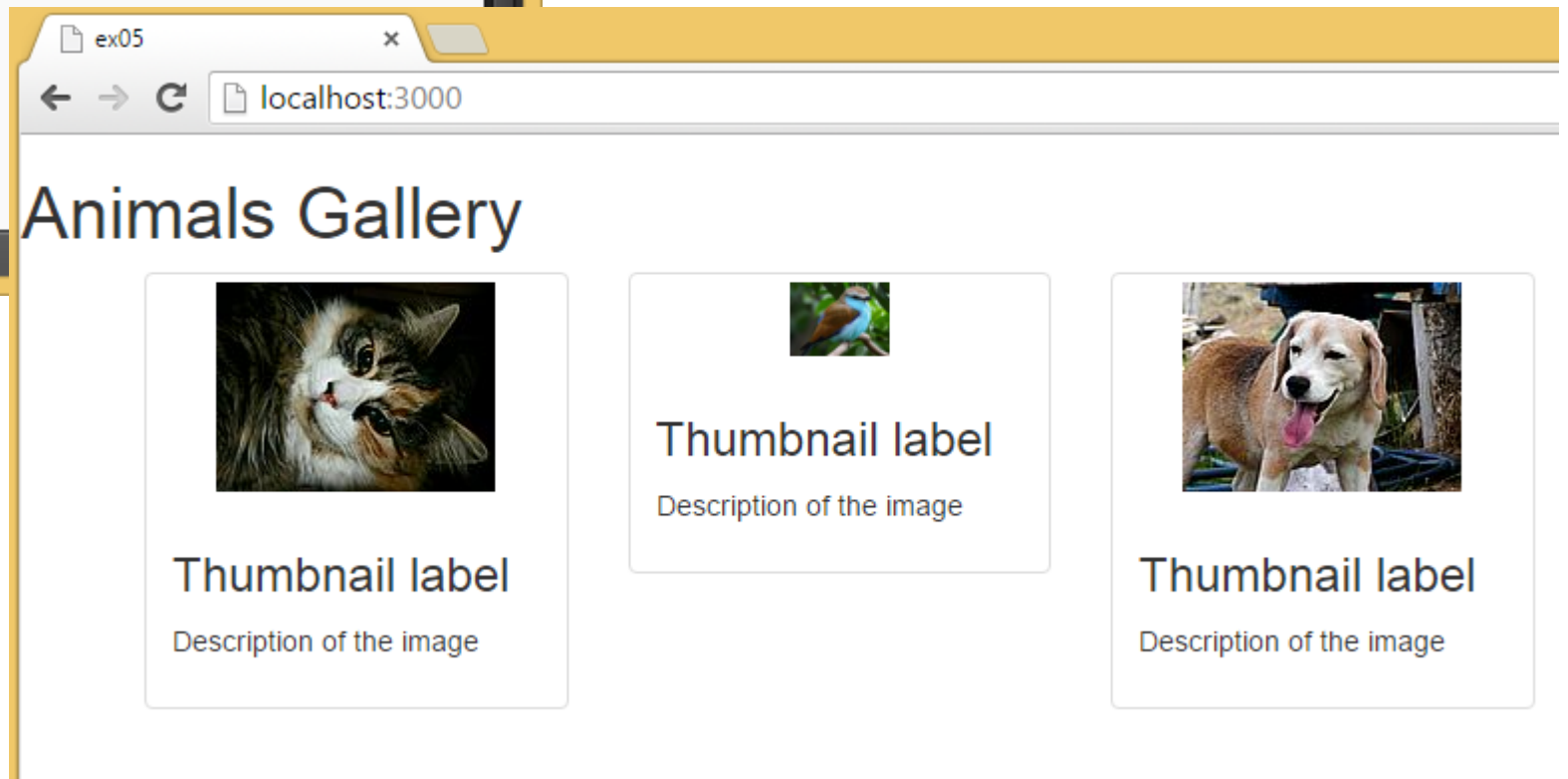
- screenY: 283
- shiftKey: false
- target: img.js-image
 - \$blaze_teardown_callbacks: TeardownCallback
 - accessKey: ""
 - align: ""
 - alt: "beautiful black and white cat"
 - attributes: NamedNodeMap
 - baseURI: "http://localhost:3000/"
 - border: ""
 - childElementCount: 0
 - childNodes: NodeList[0]
 - children: HTMLCollection[0]

Console Emulation Rendering

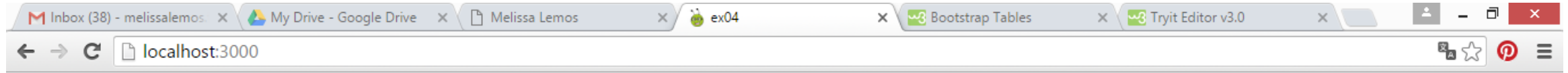
Console
Look at the target

```
C:\dev\ex05\ex05.js - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
ex05.html x ex05.js x
22
23   Template.images.helpers({images:img_data});
24
25   Template.images.events({
26     'click .js-image':function(event){
27       $(event.target).css("width","50px");
28     }
29   }
30 }
31 }
32 );
33 }
34 }
35 }
36
Line 27, Column 42
```




Changing the style



Test yourself with Exercises






Animals Gallery

	Title	Alt	Description	Age
	Great Cat	beautiful black and white cat	This is a very beautiful black and white cat. It seems very nice.	1
	Little Bird	beautiful bird	I saw this bird yesterday.	2
	Cute Dog	cute dog	This is my uncle's dog.	3

Test yourself with Exercises

- Create a project in meteor
 - Command Prompt – meteor create <project-name>
- Choose a collection from your project (ex. Animal)
- Define 5 fields (ex. Thumbnail, Title, Description, Age, Alt) using an array in javascript
- Create a HTML page with a table that each row presents the fields of each register from your collection
- Use Bootstrap
 - Command Prompt – meteor add twbs:bootstrap
 - Use the class = table (from bootstrap)
- ** Try to insert a field with a link to an URL (ex. Each animal has a link to wikipedia)

Animals Gallery

	Title	Alt	Description	Age	Link
	Great Cat	beautiful black and white cat	This is a very beautiful black and white cat. It seems very nice.	1	Click here
	Little Bird	beautiful bird	I saw this bird yesterday.	2	Click here
	Cute Dog	cute dog	This is my uncle's dog.	3	Click here