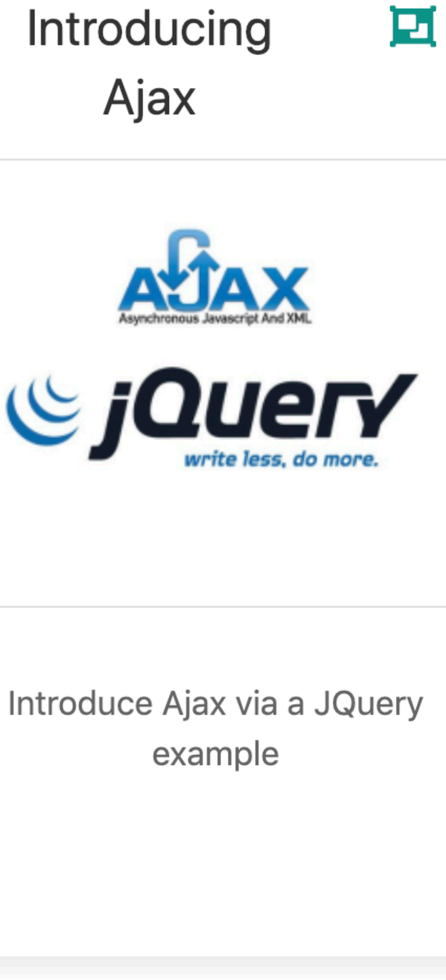
# Ajax

- Asynchronous JavaScript & XML (Ajax).
- Exploration using Query Ajax.
- Using a very small subset of available functionality.

Introducing Ajax




Introduce Ajax via a JQuery example

# Ajax

What is it?

- A technology to manage transmission of data between client and server.
- Generally text-based data.
- Binary data transmission also possible.
- Originally data format Extensible Markup Language (XML).
- JSON now the format of choice.

# Ajax

## Why use it?

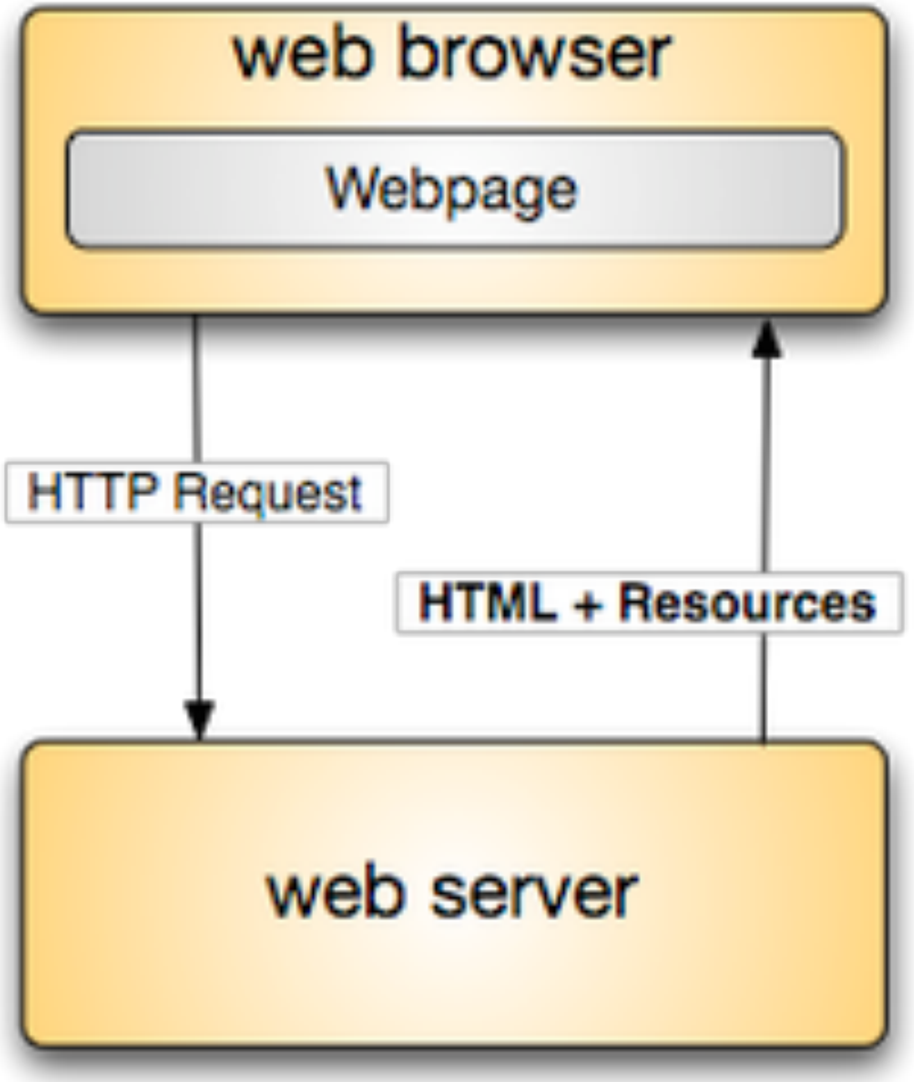
- Once Upon a Time. . .
  - Http request caused whole-page refresh
  - Complete pages ‘Server Rendered’ and delivered to the browser, replacing the previous page
- Ajax Changed this dynamic. Requests can be issued by client for:
  - Specific information it needs
  - when itneeds it,
  - for exactly where on page it is needed. .
- This avoids page flicker and facilitates greater efficiency.

# Ajax

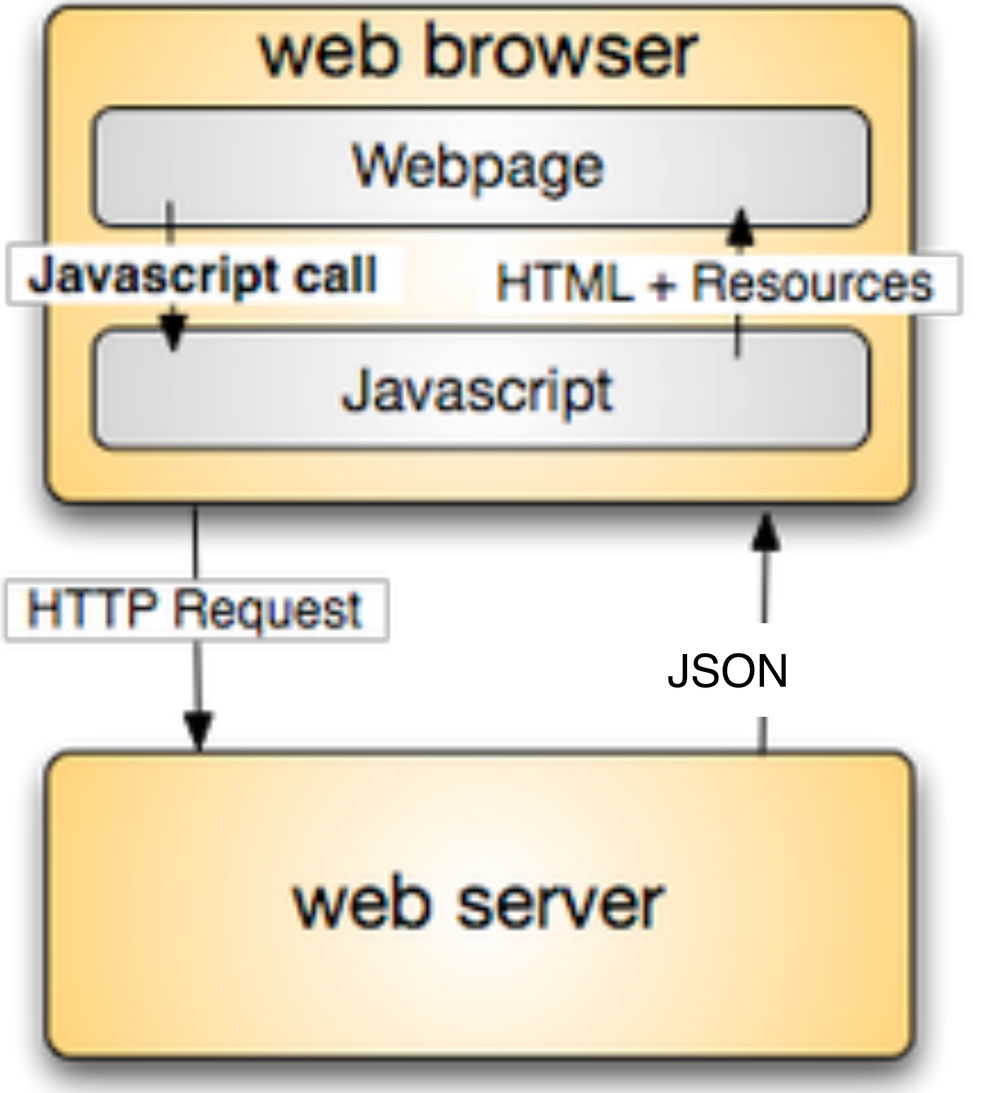
## Asynchronous communication

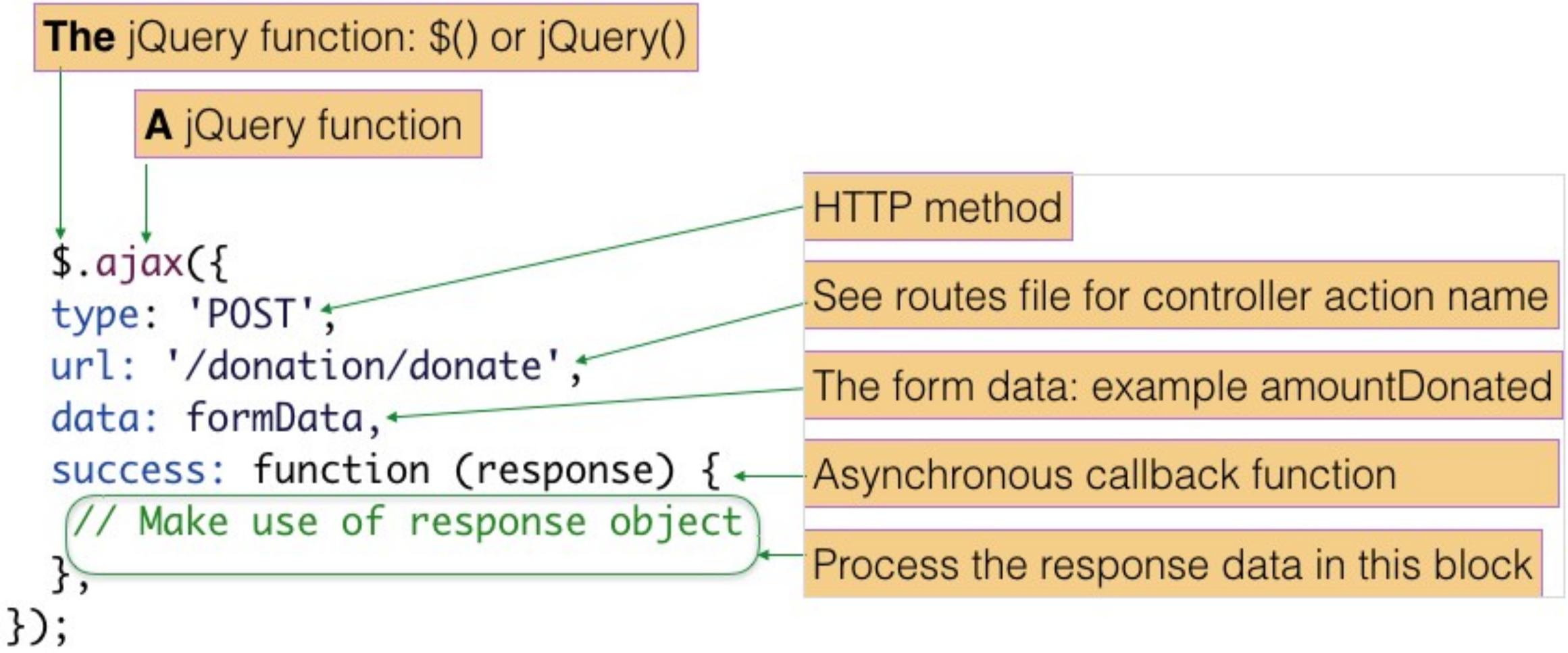
- Web page sends HTTP Ajax request.
- User free to continue other page activity.
- Request processed independently.
- Server transmits respose to web page.
- Synchronous communication also possible.

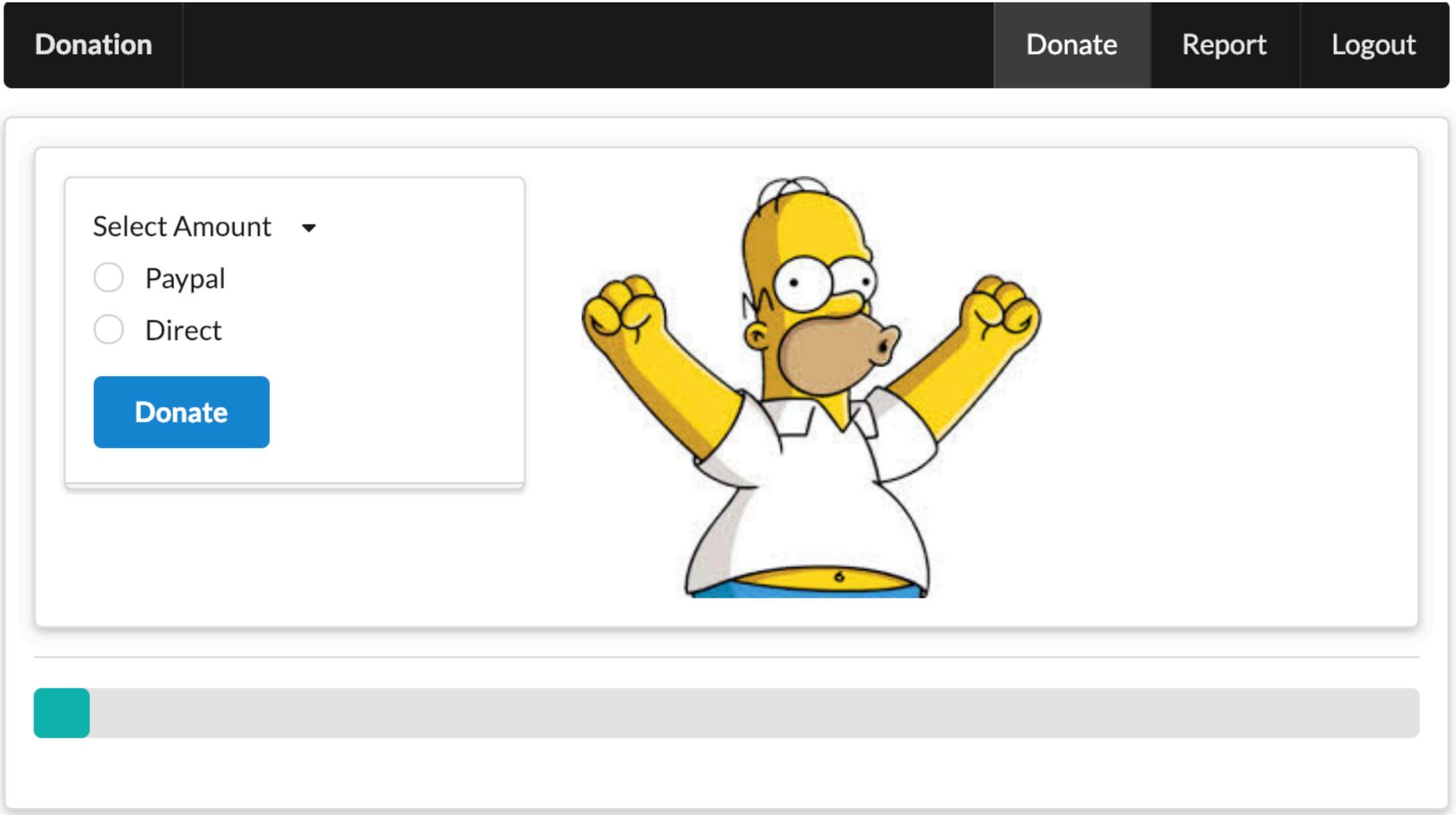
## Traditional web model




## AJAX web model




The jQuery function: $() or jQuery()
A jQuery function
$.ajax({
type: 'POST',
url: '/donation/donate',
data: formData,
success: function (response) {
// Make use of response object
},
});
HTTP method
See routes file for controller action name
The form data: example amountDonated
Asynchronous callback function
Process the response data in this block




Press Donate should update progress bar +  table without page flicker/refresh

Select Amount

Paypal

Direct

Donate

```
<form action="/donate" method="POST">
  <div class="ui dropdown" name="amount">
    <input type="hidden" name="amount">
    <div class="text">Select Amount</div>
    <i class="ui dropdown icon"></i>
    <div class="menu">
      <div class="item">50</div>
      <div class="item">100</div>
      <div class="item">1000</div>
    </div>
  </div>
  <div class="grouped inline fields">
    <div class="field">
      <div class="ui radio checkbox">
        <input type="radio" name="method" value="paypal">
        <label>Paypal</label>
      </div>
    </div>
    <div class="field">
      <div class="ui radio checkbox">
        <input type="radio" name="method" value="direct">
        <label>Direct</label>
      </div>
    </div>
  </div>
  <button class="ui blue submit button">Donate</button>
</form>

<div class="ui  divider"></div>

<div class="ui teal progress" data-percent="${progress}" id="mainprogress">
  <div class="bar"></div>
</div>
```

# jQuery

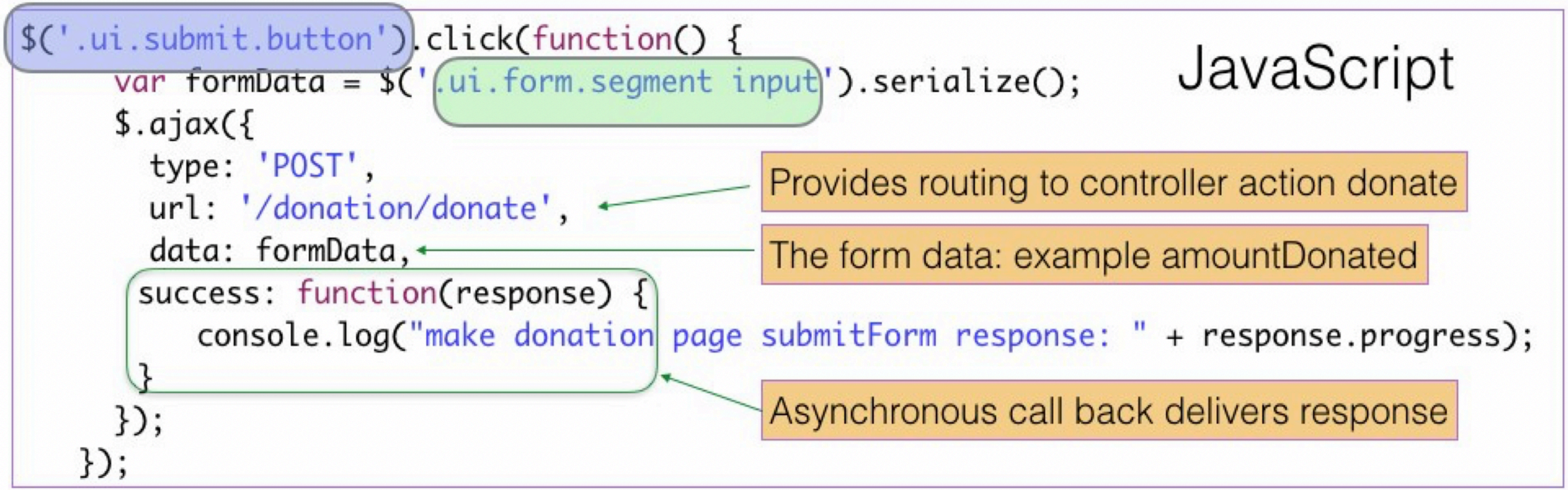
## Donation ajax call

```
<form action="/donate" method="POST">
  ...

</form>
```

```
<form action="/donate">
  ...

</form>
```

Ajax requires Form change

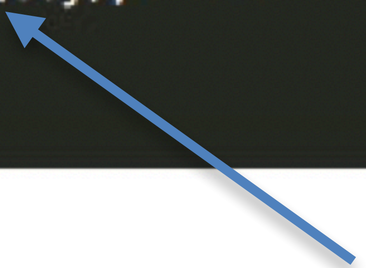
# Ajax Function in the Client



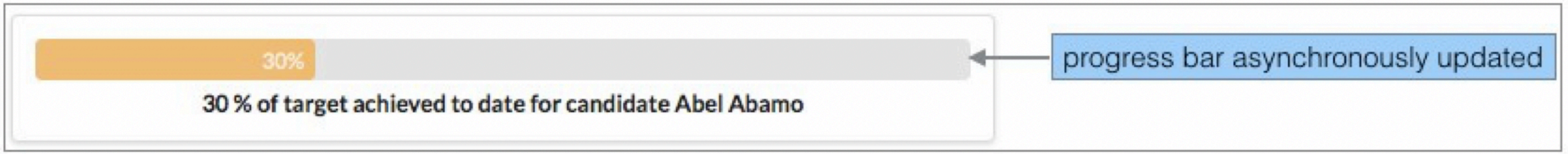
# Play/Java Web Application - in the Server

```
# routes
POST    /donation/donate                DonationController.donate
```

```
# DonationController

public static void donate(long amountDonated, String methodDonated, String candidateEmail)
{
        ...
        ...
        JSONObject obj = new JSONObject();
        obj.put("progress", progressPercent);
        obj.put("candidate", candidate.firstName + " " + candidate.lastName);
        renderJSON(obj);

    }
}
```



renderJSON (instead of html)




```
function submitForm() {
  var formData = $('.ui.form.segment input').serialize();
  $.ajax({
    type: 'POST',
    url: '/donation/donate',
    data: formData,
      success: function(response) {
          console.log("make donation page submitForm response: " + response.progress);
          $('.ui.indicating.progress').progress({
              percent: response.progress
            });
          $('#progresslabel').text(response.progress + " % of target achieved to date for candidate " + response.candidate);
      }
  });
}
```

asynchronous call to this url

write progress bar label

update progress bar in client

# Not using Ajax

- Press Donate button
- Entire page refreshes
- Noticeable flicker

# Using Ajax

- Press Donate button
- Only the progress bar affected
- No noticeable flicker