

What is Ajax?

- 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 Origins

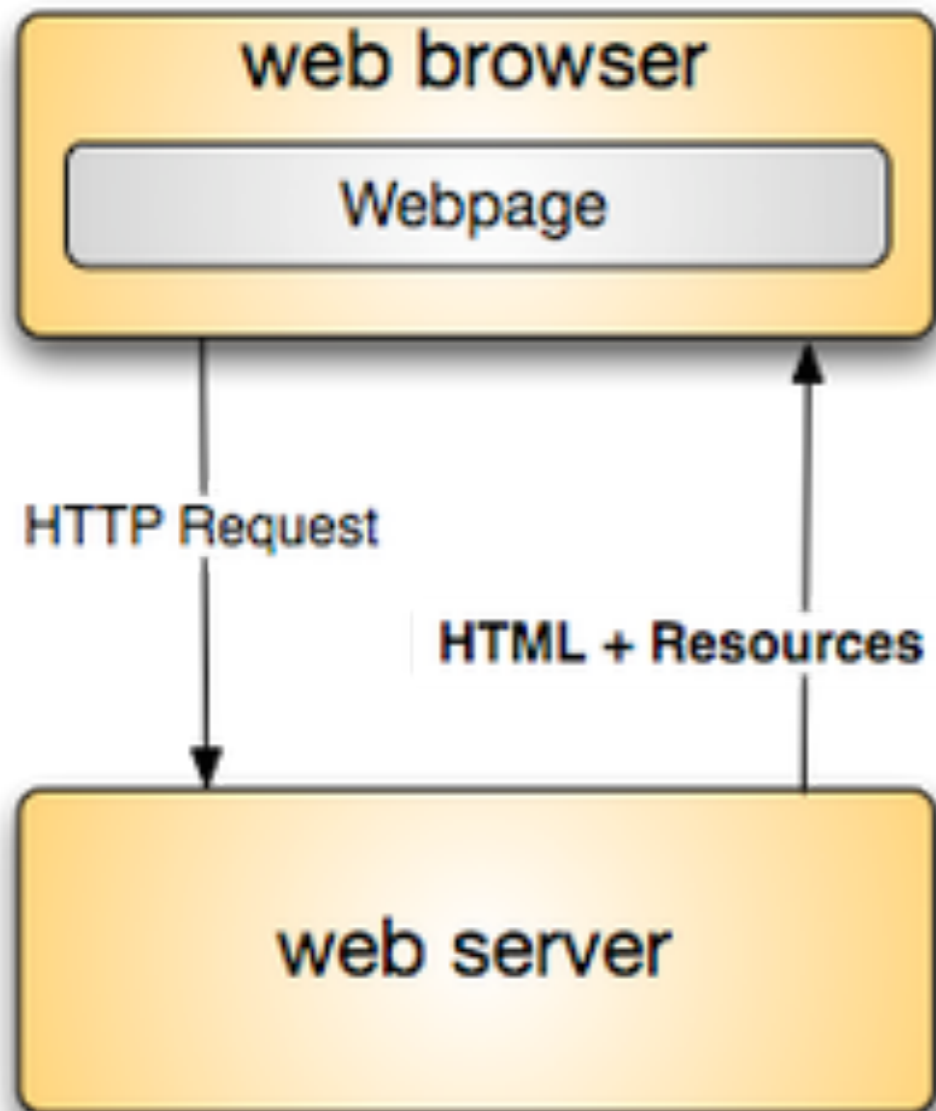
- Once Upon a Time. . .
 - Http request caused whole-page refresh
 - Complete pages 'Server Rendered' and delivered to the browser, replacing the previous page
- Ajax Changed this dynamic. Requests can be issued by client for:
 - Specific information it needs
 - when it needs it,
 - for exactly where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

Asynchronous Communication

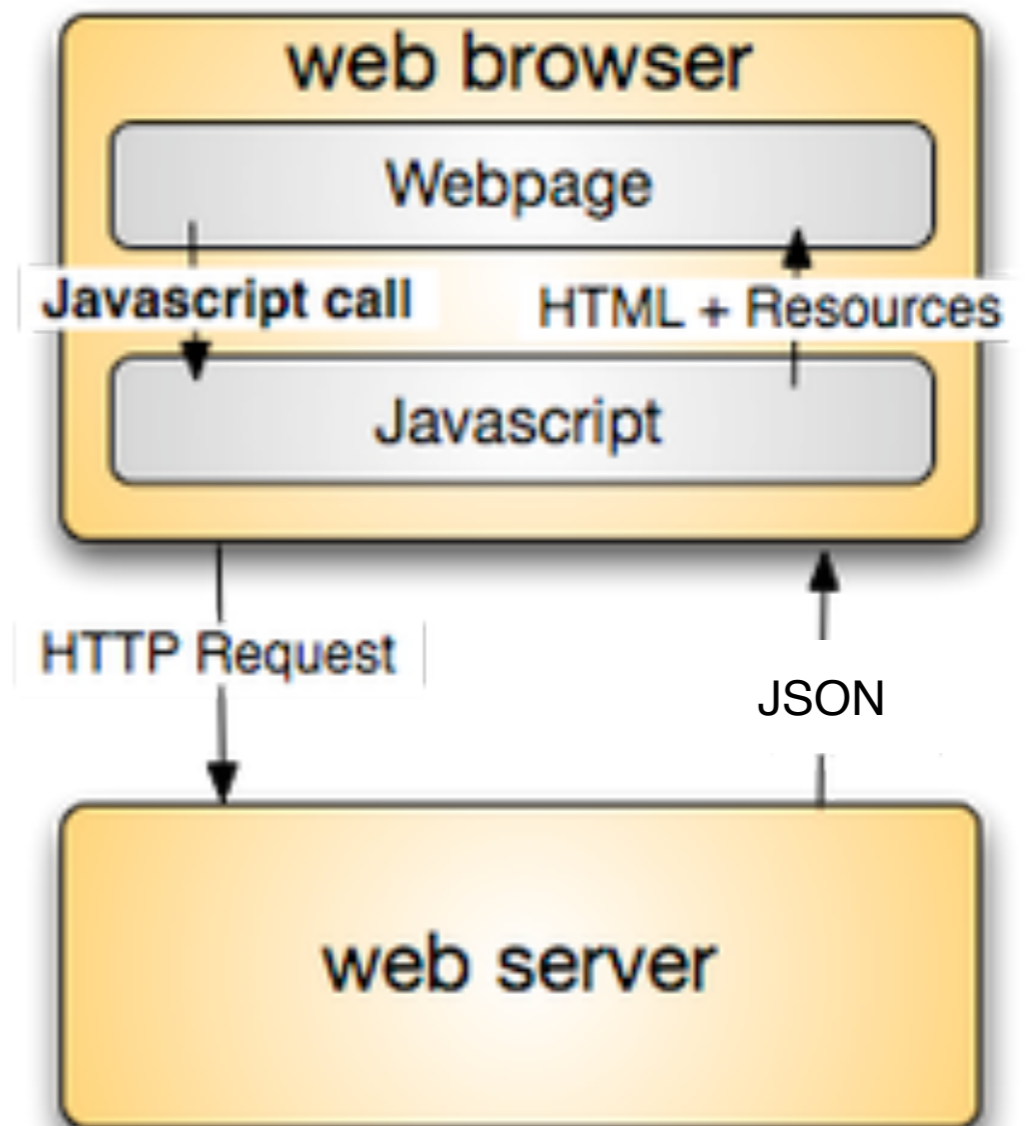
- Web page sends HTTP Ajax request.
- User free to continue other page activity.
- Request processed independently.
- Server transmits response to web page.
- Synchronous communication also possible.



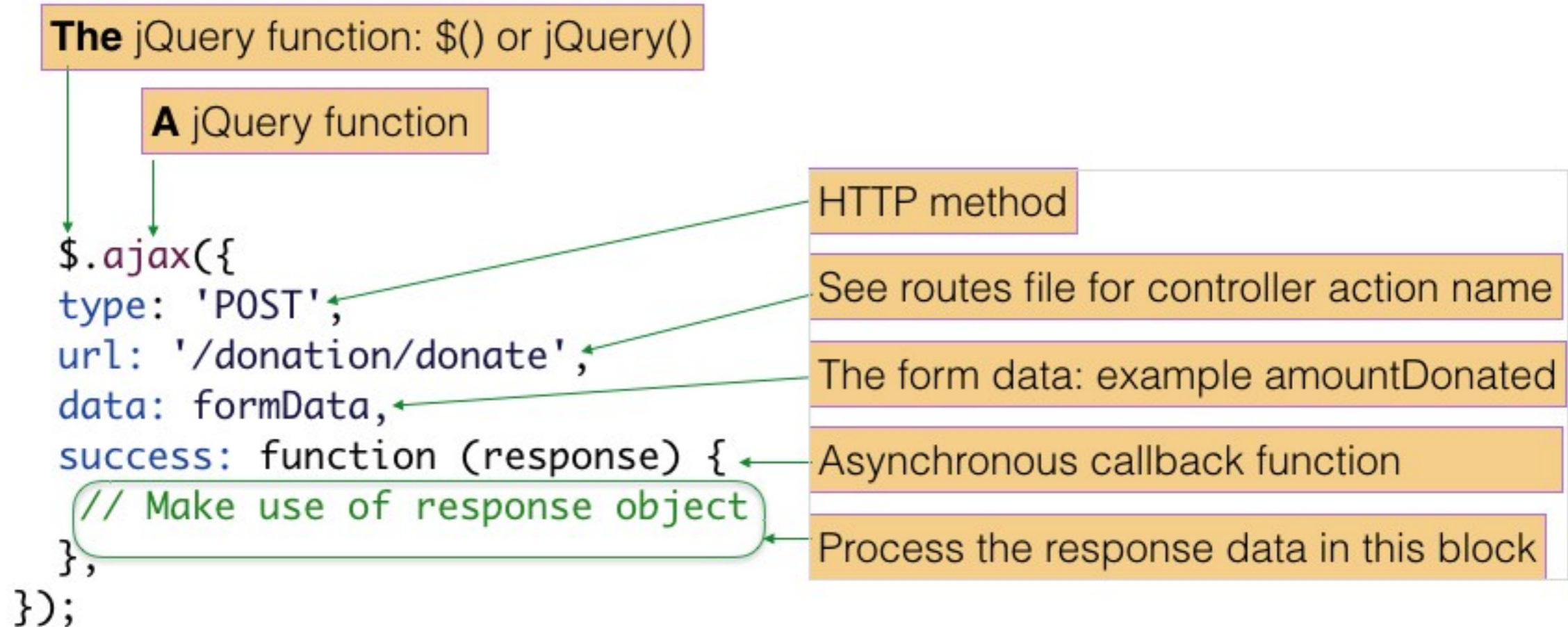
Traditional web model



AJAX web model



Ajax in jQuery



Ajax Example

Donation Donate Report Settings Logout

Enter Amount


Amount

Select Method

Paypal
 Direct

Select Candidate

Simpson, Lisa
 Simpson, Donald



Amount	Method donated	Donor	Candidate
40	paypal	Bart Simpson	Simpson, Lisa
90	direct	Marge Simpson	Simpson, Lisa
430	paypal	Homer Simpson	Simpson, Donald
2	paypal	Marge Simpson	Simpson, Lisa
562	Total		

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

Revised Form Element

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

```
<form class="ui form">  
  ...  
  ...  
</form>
```

Ajax requires **form** change

```

<form class = "ui form segment">
  <input name="candidateEmail" type="hidden">
  <input name="amountDonated" type="hidden">
<div class="ui blue submit button">Donate <i class="add icon"></i></div>

```

HTML

```

$('.ui.submit.button').click(function() {
  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);
    }
  });
});

```

JavaScript

Provides routing to controller action donate

The form data: example amountDonated

Asynchronous call back delivers response

Controller

```

JSONObject obj = new JSONObject();
obj.put("progress", getProgress());
renderJSON(obj);

```

Composes and transmits JSON object response



progress bar asynchronously updated

30 % of target achieved to date for candidate Abel Abamo

```
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

```
# 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);
}
}
```

Not using Ajax

Press Donate button

Entire page refreshes

Noticeable flicker

Using Ajax

Press Donate button

Only the progress bar affected

No noticeable flicker

Home	Sign Up	Log In	Make Donation	Report	Log Out
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Welcome Homer

Please give generously

Amount

PayPal
 Direct

DONATE +

Amount target achieved