Server Side Programming

Basics

Client Side vs Server Side

Client Side vs Server Side

Server Code

```php
$title = 'Client Side Vs. Server Side Code';
if($title == '')
    echo '<title>Tinsology</title>';
else
    echo "<title>$title</title>";
```

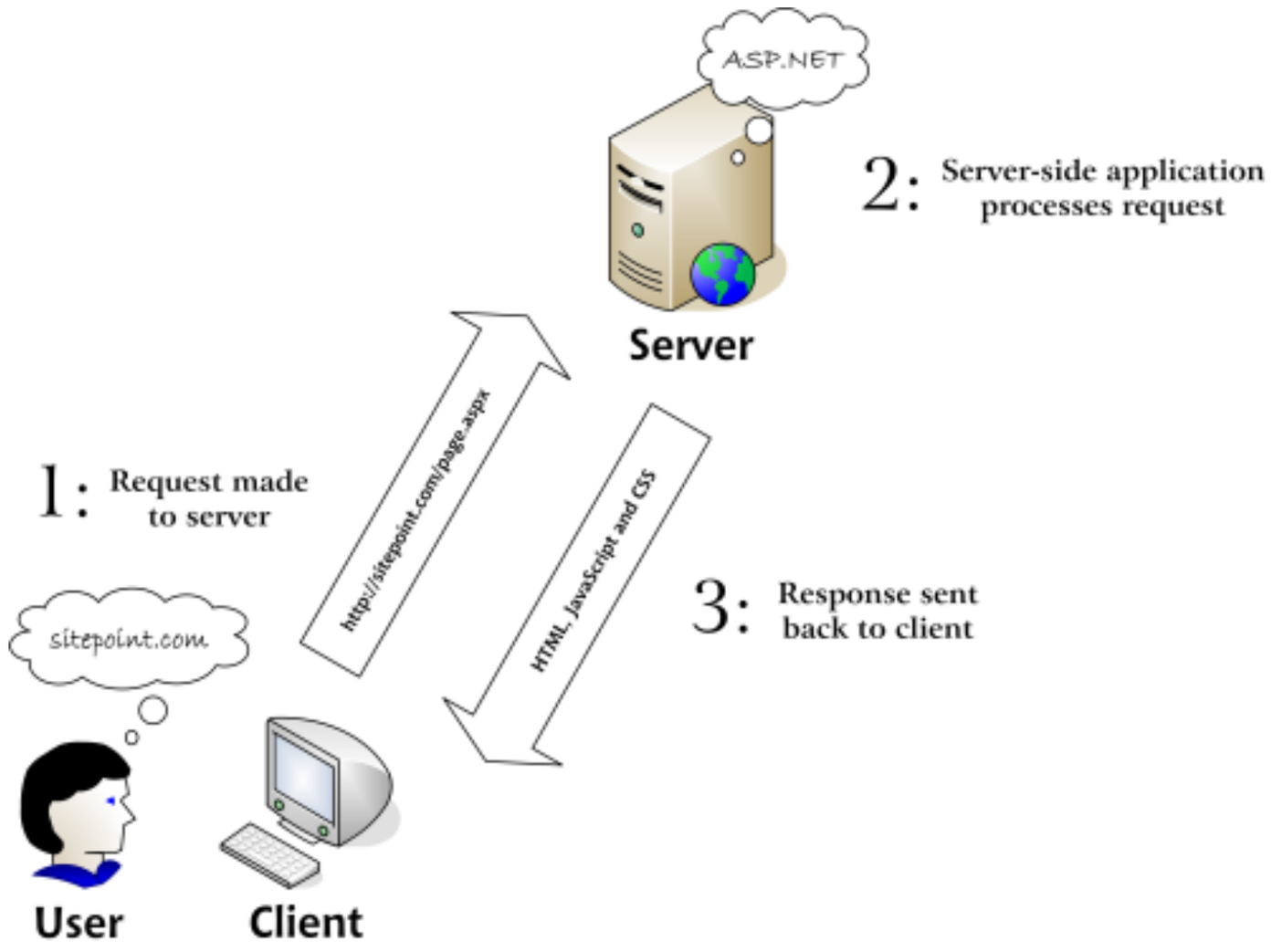
What the client side sees

<title>Client Side Vs. Server Side Code</title>

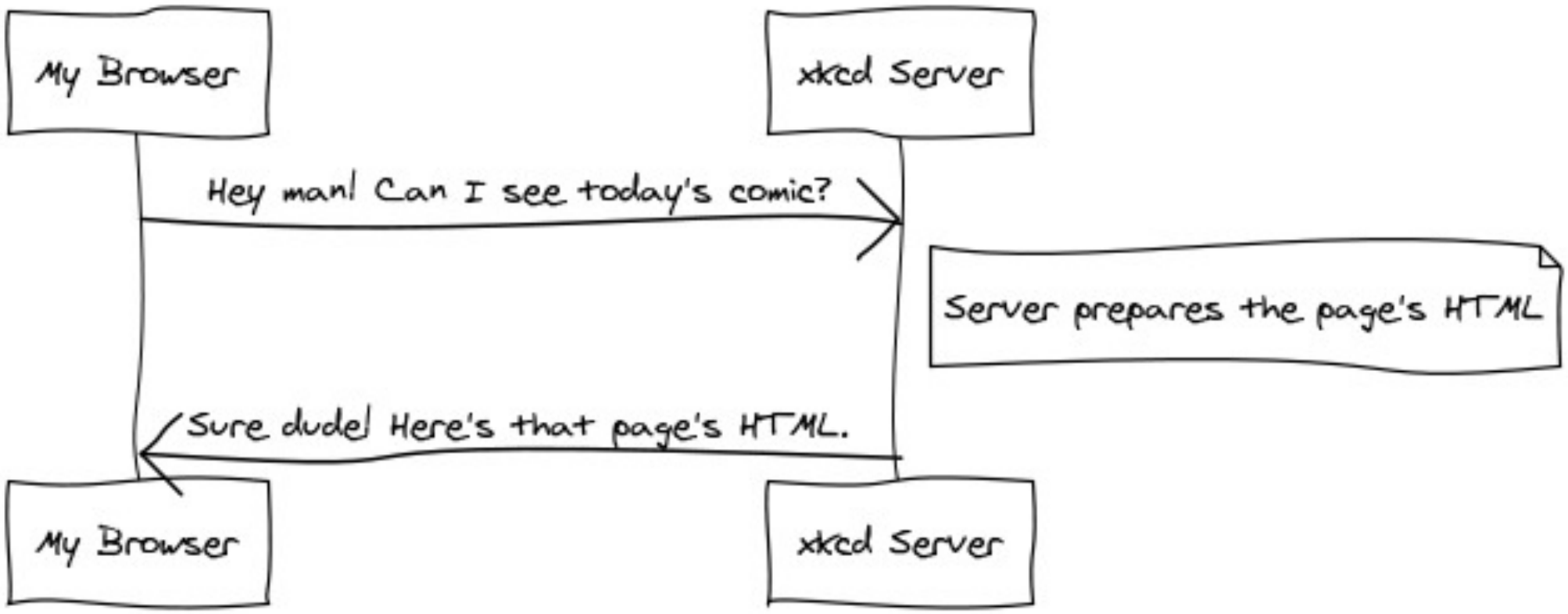
What does server side programs do?

- Dynamically edit, change or add any content to a Web page
- Respond to user queries or data submitted from HTML forms
- Database access
- Provide security
- Communicate with Javascript
- Send mail

Basics

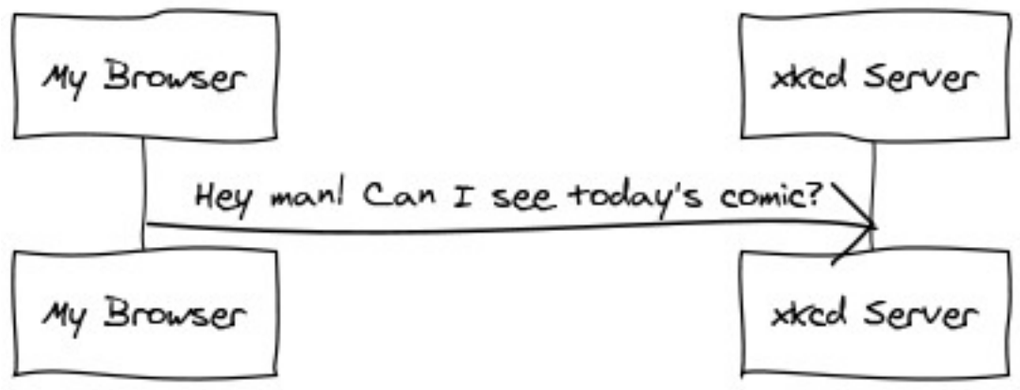

ASP.NET
2. Server-side application processes request
Server
http://sitepoint.com/page.aspx
HTML, JavaScript and CSS
1. Request made to server
3. Response sent back to client
sitepoint.com
User
Client

How do servers work?



Step 1: Client sends HTTP request

```
GET / HTTP/1.1
Host: xkcd.com
Accept: text/html
User-Agent: Mozilla/5.0 (Macintosh)
```

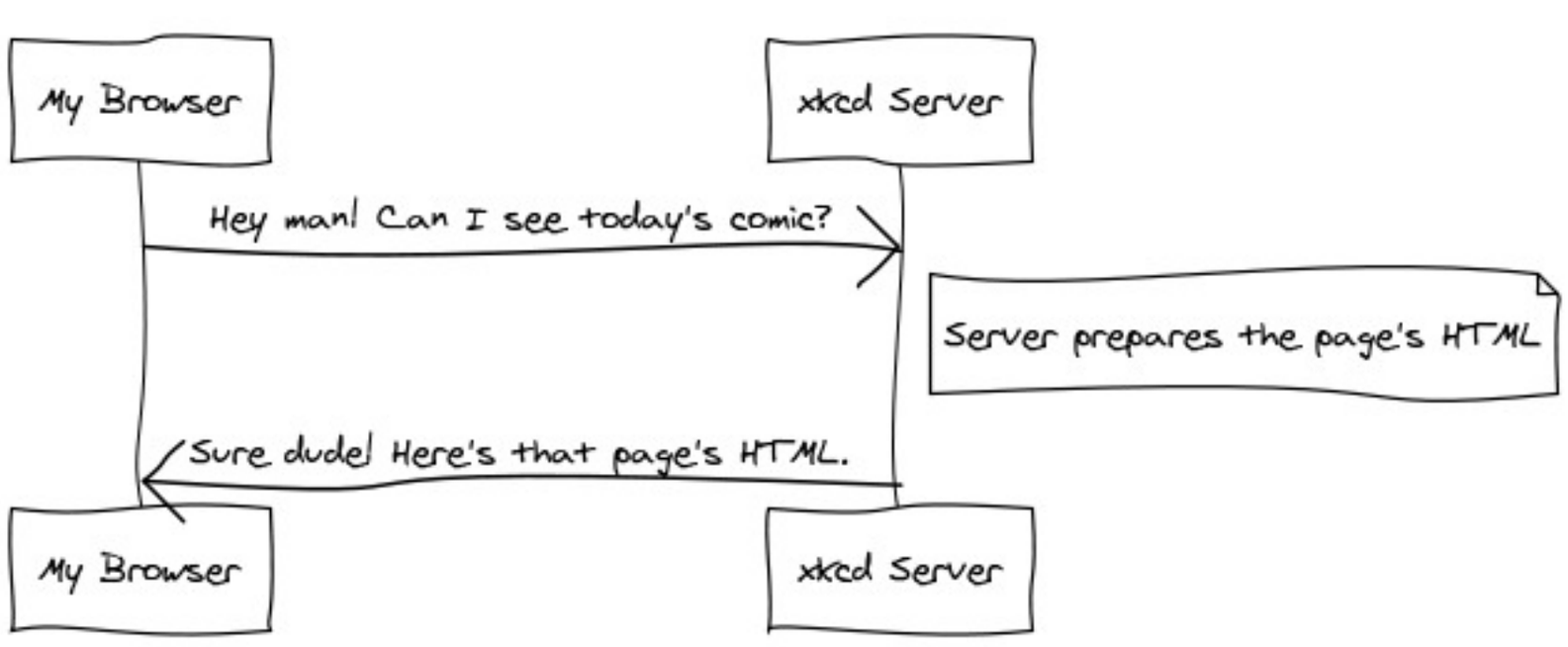


- GET Retrieve the resource from the server
- POST Create a resource on the server
- PUT Update the resource on the server
- DELETE Delete the resource from the server

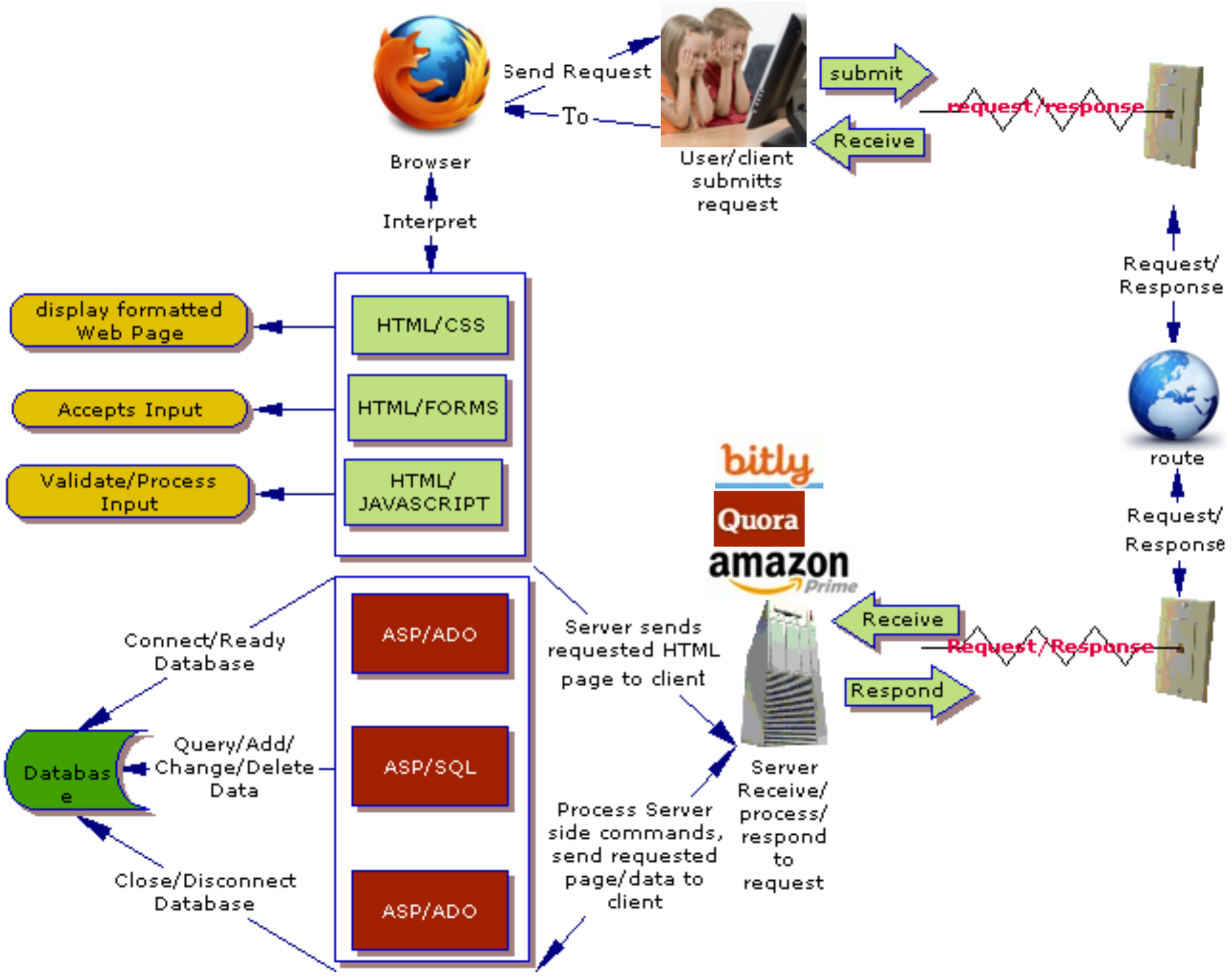
Step 2: Server sends Response

```
HTTP/1.1 200 OK
Date: Sat, 02 Apr 2011 21:05:05 GMT
Server: lighttpd/1.4.19
Content-Type: text/html

<html>
  <!-- ... HTML for the xkcd comic -->
</html>
```



In more detail



Languages

- Ruby
- PHP
- Python
- ASP.Net

What is a scripting language?

- Interpreted in runtime rather than compiled.
- Used mainly for web.

PHP: Basic Syntax

```php
<?php
$vars['product']['price']=11;

$aa='product';
$bb='price';

echo $vars{$aa}{$bb};

//prints 11
?>
```

PHP: Basic Syntax

```php
<?php
//considering 2 arrays
$foo1 = array ("a", "b", "c");
$foo2 = array ("d", "e", "f");

//and 2 variables that hold integers
$num = 1;
$cell = 2;

echo ${foo.$num}[$cell]; // outputs "c"

$num = 2;
$cell = 0;

echo ${foo.$num}[$cell]; // outputs "d"
?>
```

Ruby

- Power to the user. “Machines should be our slaves”.
- Dynamically typed.

Ruby: Basic Syntax

```
sum = 0
i = 1
while i <= 10 do
    sum += i*i
    i = i + 1
end
puts "Sum of squares is #{sum}\n"
```

Newline is statement separator

`do ... end` instead of `{ ... }`

Optional parentheses in method invocation

Substitution in string value

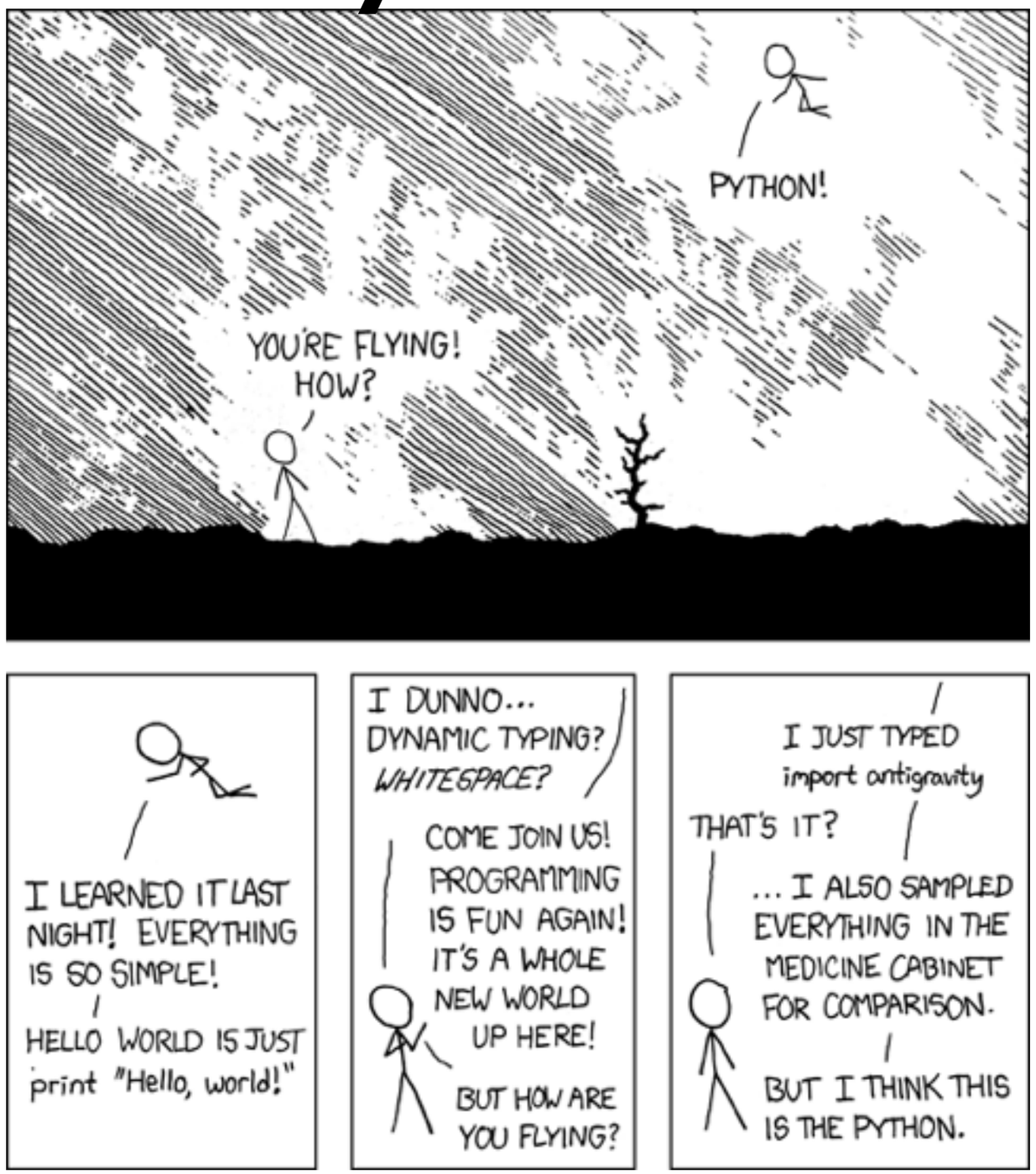
Ruby: Basic Syntax

```
presidents = ["Ford", "Carter", "Reagan", "Bush1", "Clinton",
"Bush2"]
presidents.each { |i| print i, "\n"}
```

Python

- "There should be one— and preferably only one —obvious way to do it".
- Dynamically typed

Python


PYTHON!
YOU'RE FLYING! HOW?
I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!
HELLO WORLD IS JUST print "Hello, world!"
I DUNNO... DYNAMIC TYPING? WHITESPACE?
COME JOIN US! PROGRAMMING IS FUN AGAIN! IT'S A WHOLE NEW WORLD UP HERE!
BUT HOW ARE YOU FLYING?
I JUST TYPED import antigravity
THAT'S IT?
... I ALSO SAMPLED EVERYTHING IN THE MEDICINE CABINET FOR COMPARISON.
BUT I THINK THIS IS THE PYTHON.

Python: Basic Syntax

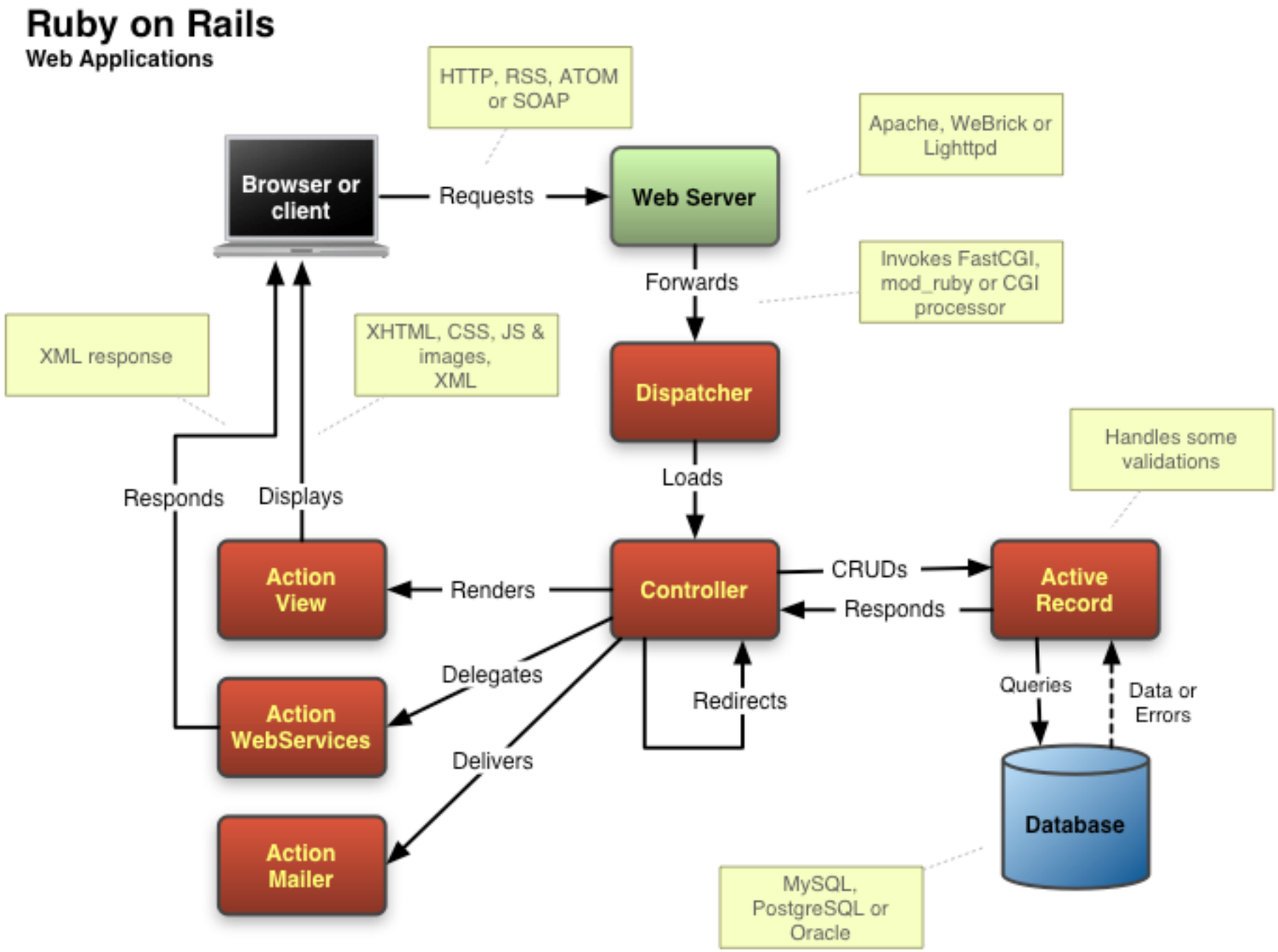
```
friends = ['john', 'pat', 'gary',
'michael']
for i, name in enumerate(friends):
    print "iteration {iteration} is
{name}".format(iteration=i, name=name)
```

Python: Basic Syntax

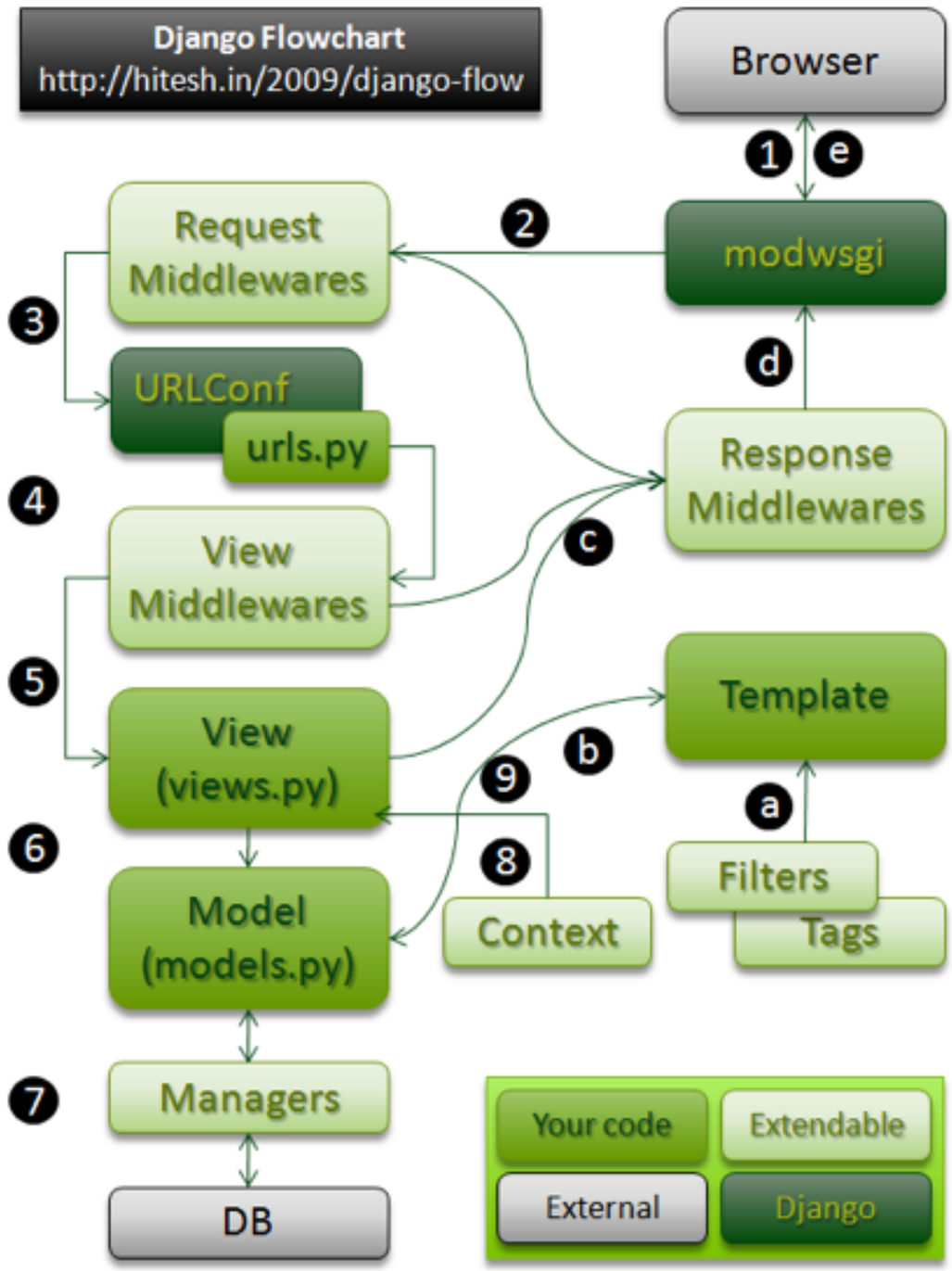
```
prices = {'apple': 0.40, 'banana':
0.50}
my_purchase = {
     'apple': 1,
     'banana': 6}
grocery_bill = sum(prices[fruit] *
my_purchase[fruit]
                   for fruit in
my_purchase)
print 'I owe the grocer $%.2f' %
grocery_bill
```

Frameworks

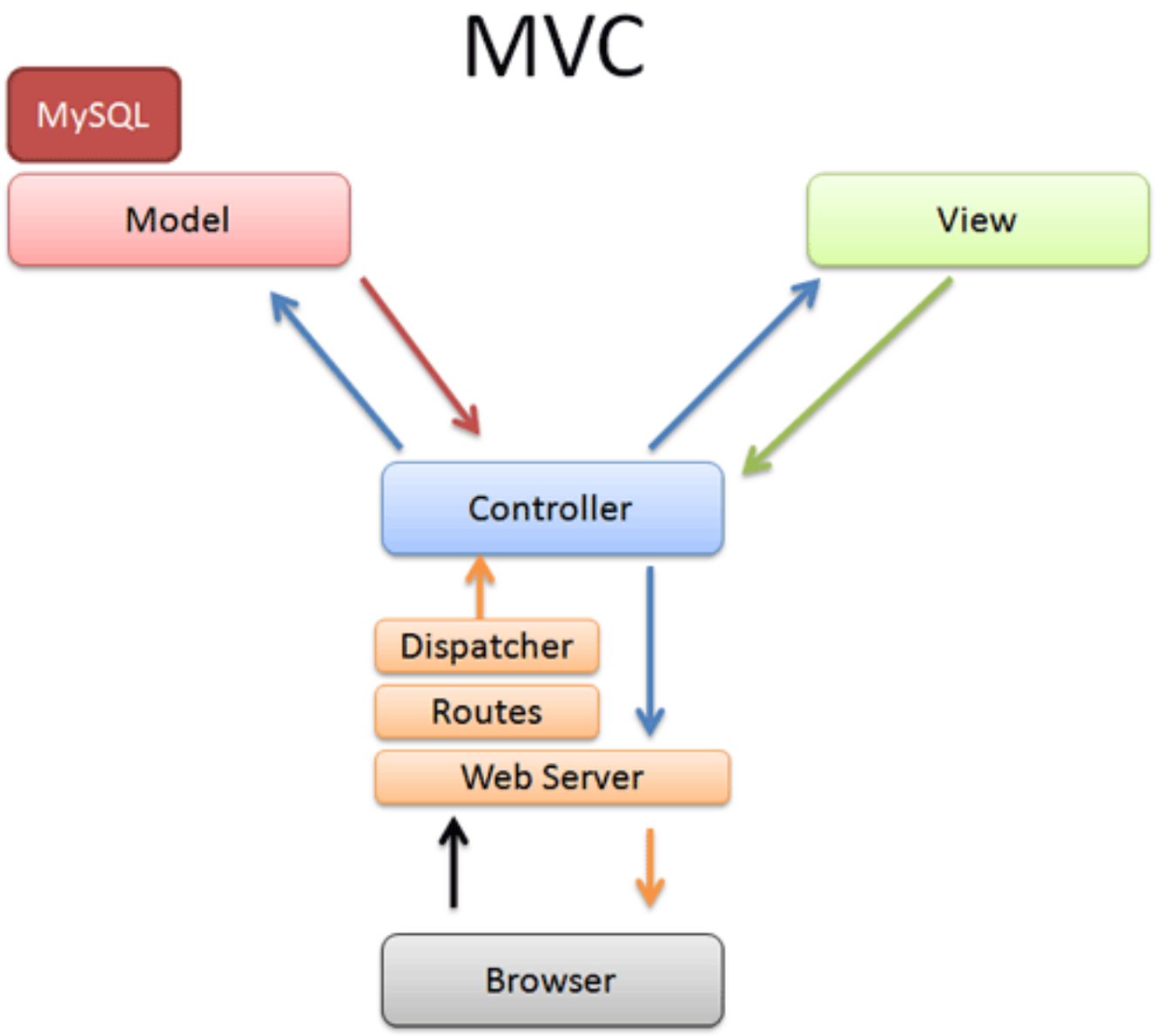
What is a web framework?



What is a web framework?



Model View Controller



PHP Frameworks

- CodeIgniter
- Symfony
- Yii
- Kohana
- CakePHP
- Zend

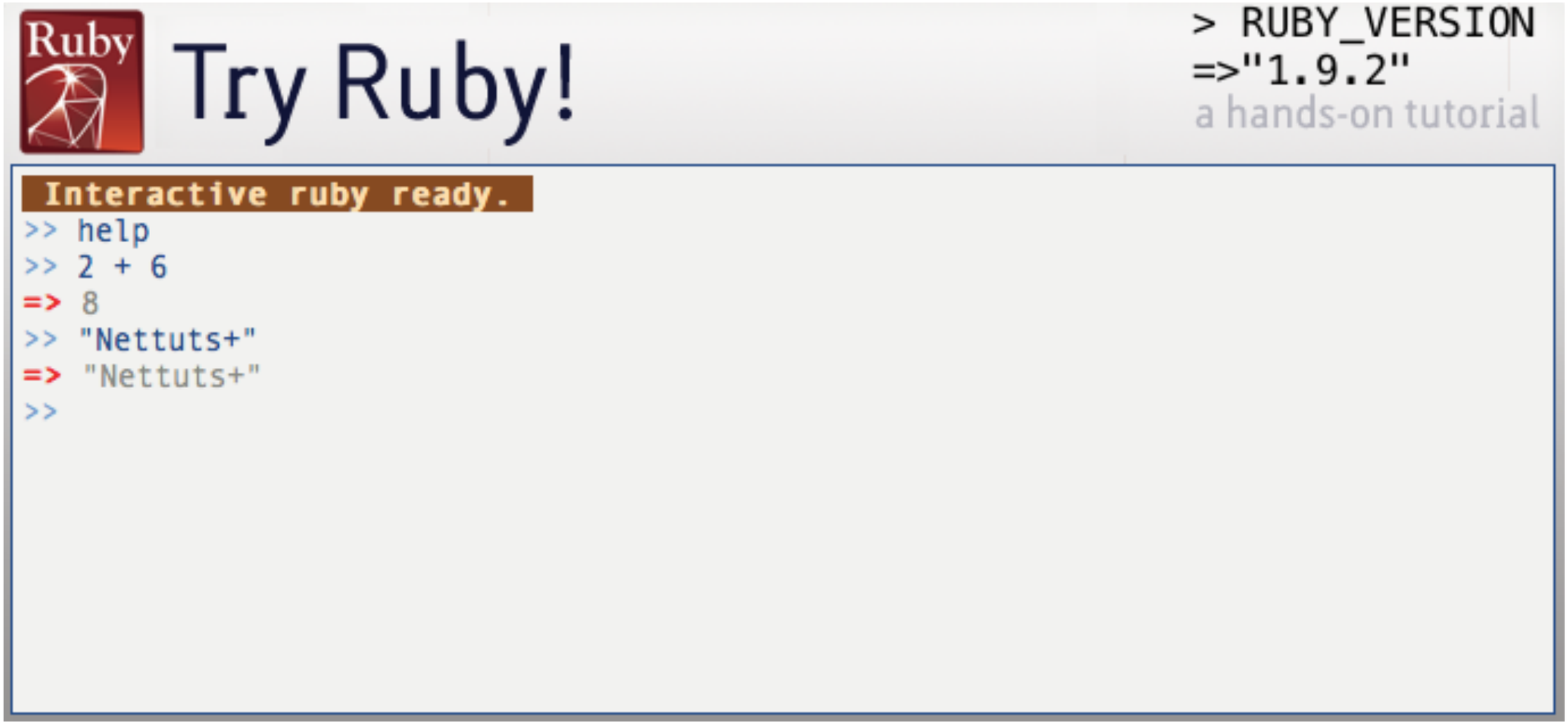
Python Frameworks

- **Django (most popular)**
- Flask
- Bottle
- CherryPy

Ruby on Rails

How Do I Learn Ruby on Rails?

Step 1: Learn Ruby in tryruby.org



Step 2: Install Ruby And Ruby on Rails

- Mac/Linux: rvm.io
- Windows: rubyinstaller.org

Step 3: railsforzombies.com

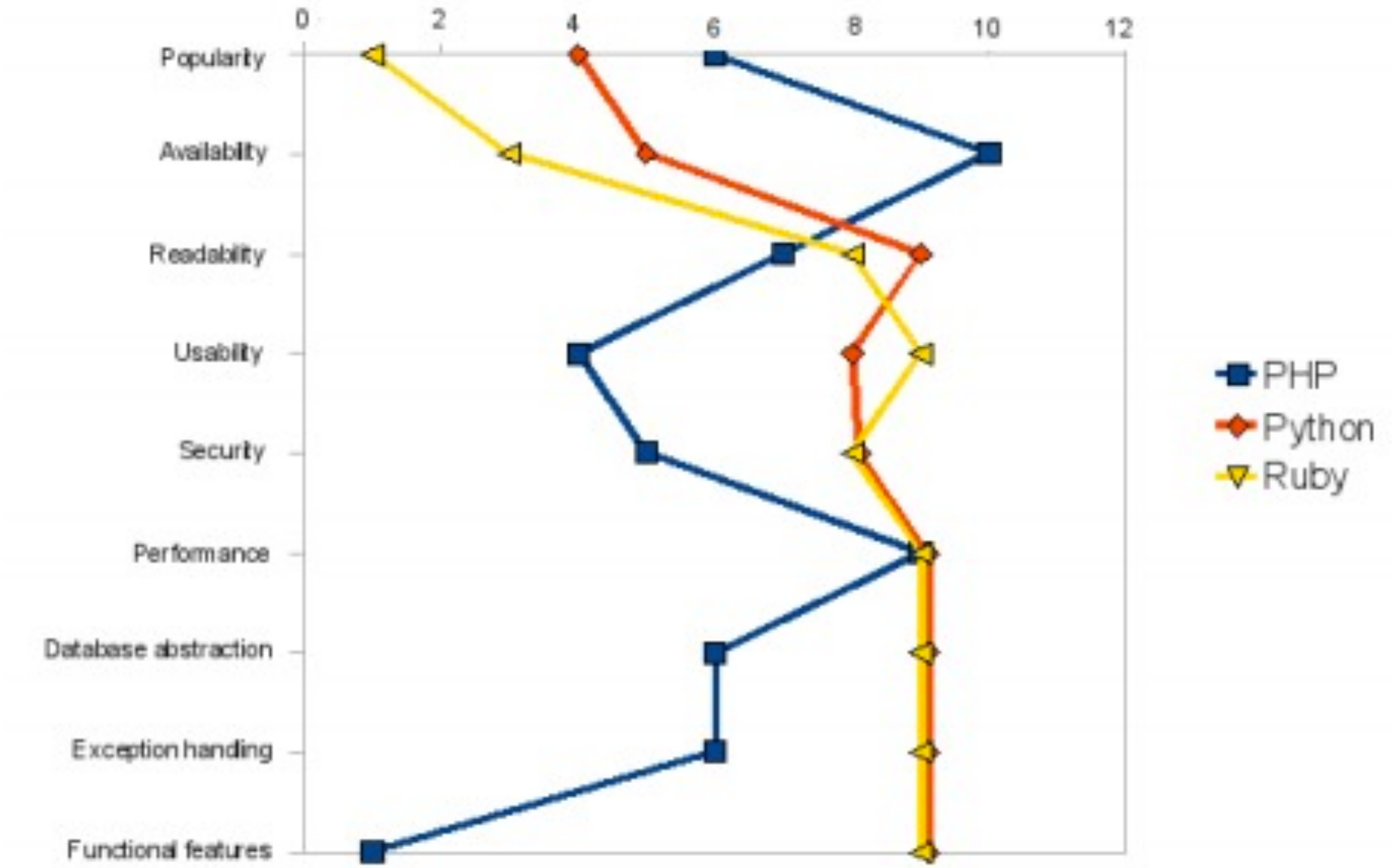
Step 4: Start Building an Application

- railscasts.com
- ruby.railstutorial.org
- ruby5.envylabs.com

Comparison

- What is the best language/framework pair?

Comparison


0
2
4
6
8
10
12
Popularity
Availability
Readability
Usability
Security
Performance
Database abstraction
Exception handling
Functional features
PHP
Python
Ruby

PHP vs Ruby vs Python: Language

Ruby	PHP	Python
Versatility	Readability	Designed for web development. Harder to read :(

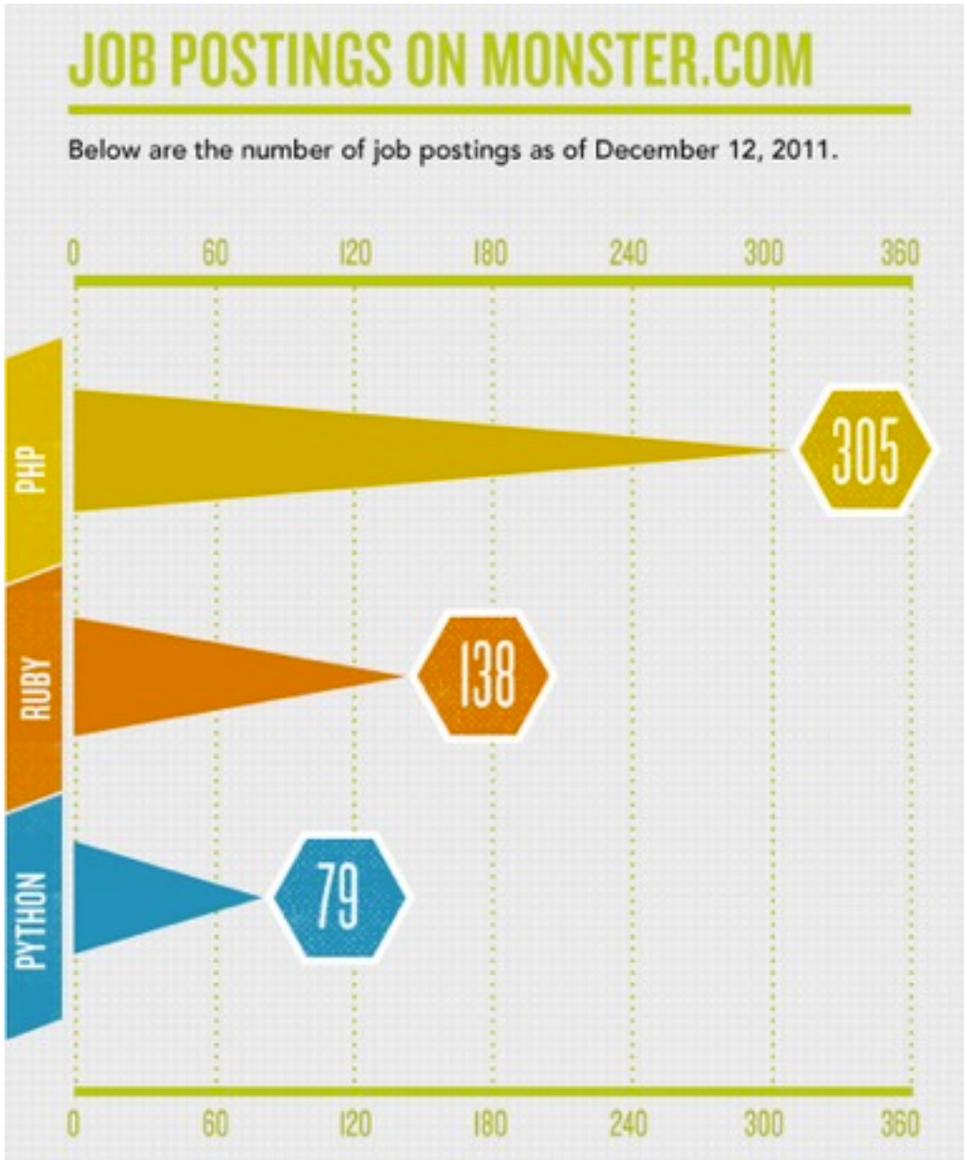
PHP vs Ruby vs Python: Language

	Ruby	PHP	Python
Enjoyability	Elegant, powerful: minimizes confusion	Classic Approach: Extensive Documentation	Perfect for beginners.
Ease of Learning	Hardest	Medium	Easy easy easy

PHP vs Ruby vs Python: Companies

Ruby	PHP	Python
Square		Pinterest
TWITTER	WIKIPEDIA	YOUTUBE
HULU	UDEMY	GOOGLE
GROUPON	FACEBOOK	Instagram Fast beautiful photo sharing
YELLOW PAGES™		

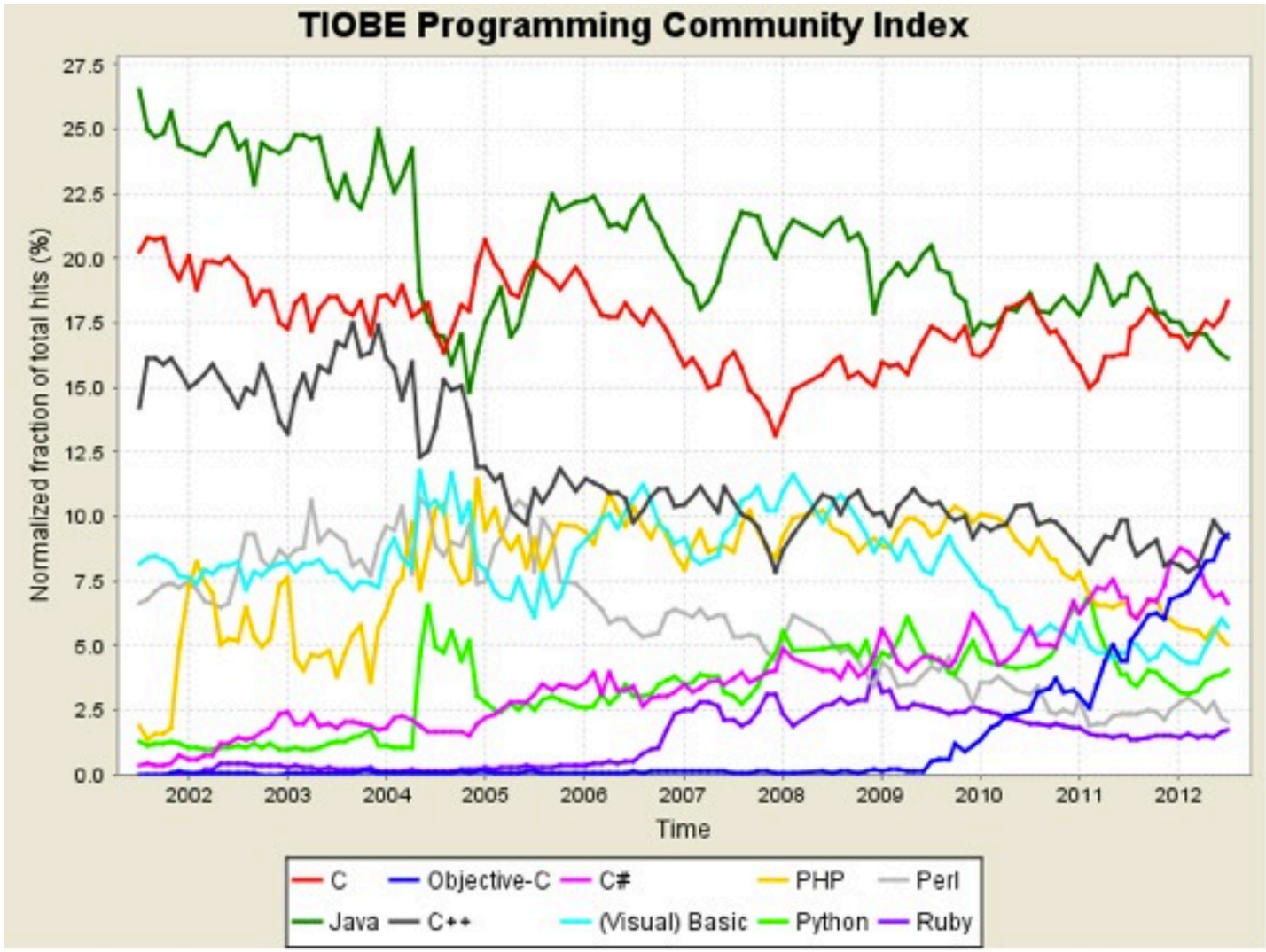
PHP vs Ruby vs Python: Will I be hired?



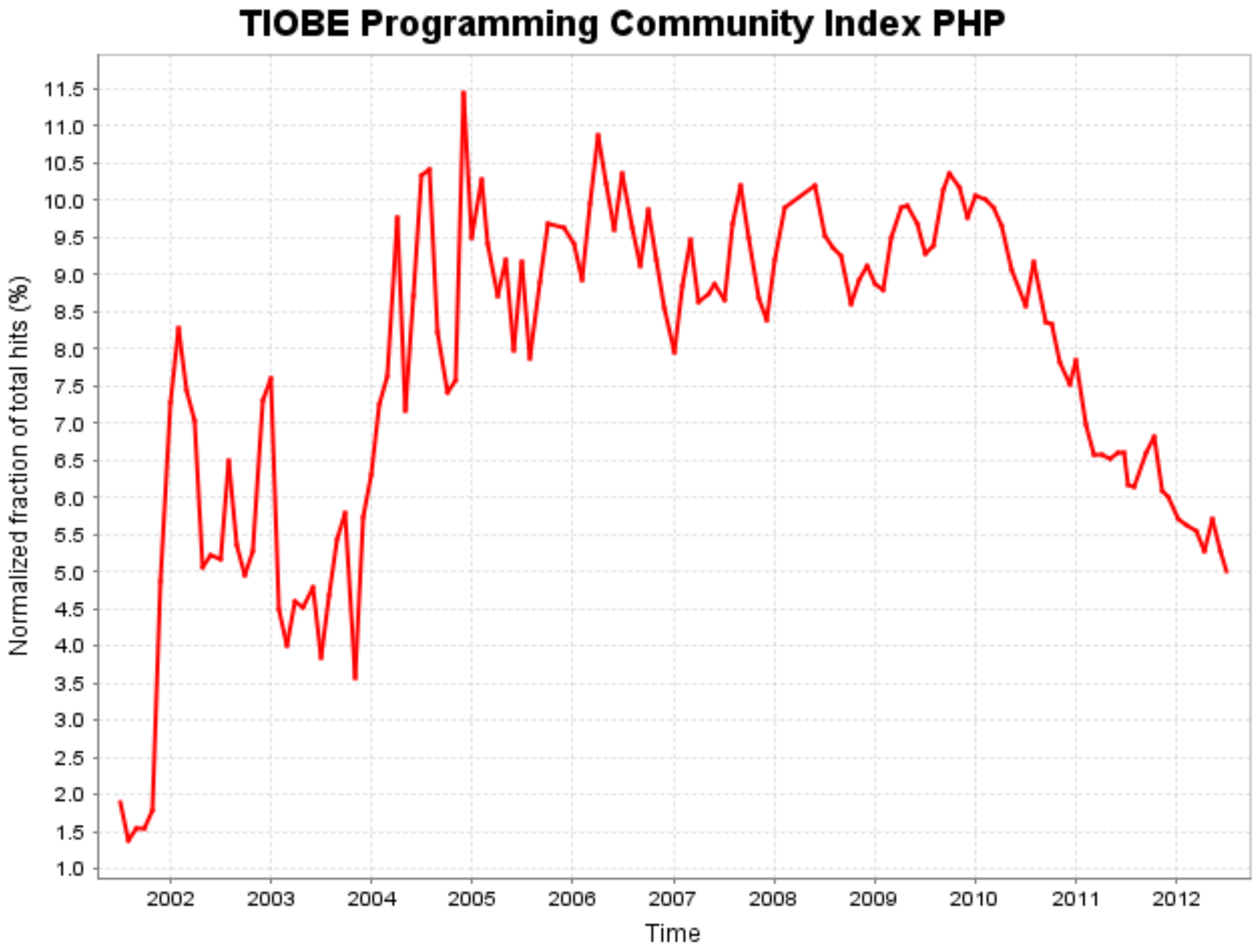
PHP vs Ruby vs Python: Community

	Ruby on Rails	Django
Number of questions on StackOverflow	16915	8965

PHP vs Ruby vs Python: Community



Fall of PHP?


TIOBE Programming Community Index PHP
Normalized fraction of total hits (%)
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Time

Conclusions

Which technologies to use?

- Hosting: Heroku, Bluehost etc
- Framework: Rails, Django, CakePHP etc
- Database: MySQL, Postgres, Moomba etc
- Frontend: Twitter Bootstrap, jQuery

- **Language: Scala**
- **Web Framework: Lift**
- **Database: MongoDB**
- **Frontend: jQuery**
- **App Server: Jetty**
- Hosting: Amazon EC2
- Search: Solr
- Email: SendGrid
- Queuing: Kestrel
- Etc: FogBugz, Git, CIJoe, ReviewBoard

- **Languages: Python, some C, and a little bit of TCL**
- **Web Framework: Tornado**
- **Databases: MySQL, Tokyo Cabinet, and MongoDB**
- **Frontend: JQuery**
- **App Server: AOLserver**
- Hosting: NTT and Amazon EC2
- Volatile Data Stores: Memcache, MemoryFly

- **Languages: Ruby, Javascript**
- **Web Frameworks: Rails, Sinatra, node.js**
- **Database: Postgres, Redis**
- **Frontend: Sass, Haml, jQuery**
- **Services: Twilio, Heroku**
- Tools: RSpec, Git, Github, Pivotal Tracker

- **Languages: Python, Javascript**
- **Web Frameworks: Pylons, Custom (LiveNode), Thrift**
- **Database: MySQL**
- **Frontend: JQuery**
- **Server: Paste (the default for Pylons), Tornado**
- **Services: Amazon EC2 and S3**
- Tools: Git

Additional Resources

github
SOCIAL CODING

Basics Languages Frameworks Comparison **Conclusions**

Bootstrap, from Twitter

Simple and flexible HTML, CSS, and Javascript for popular user interface components and interactions.

Hosting