



*VSR://edu/2016/evs/*

# 09 – Server-side development

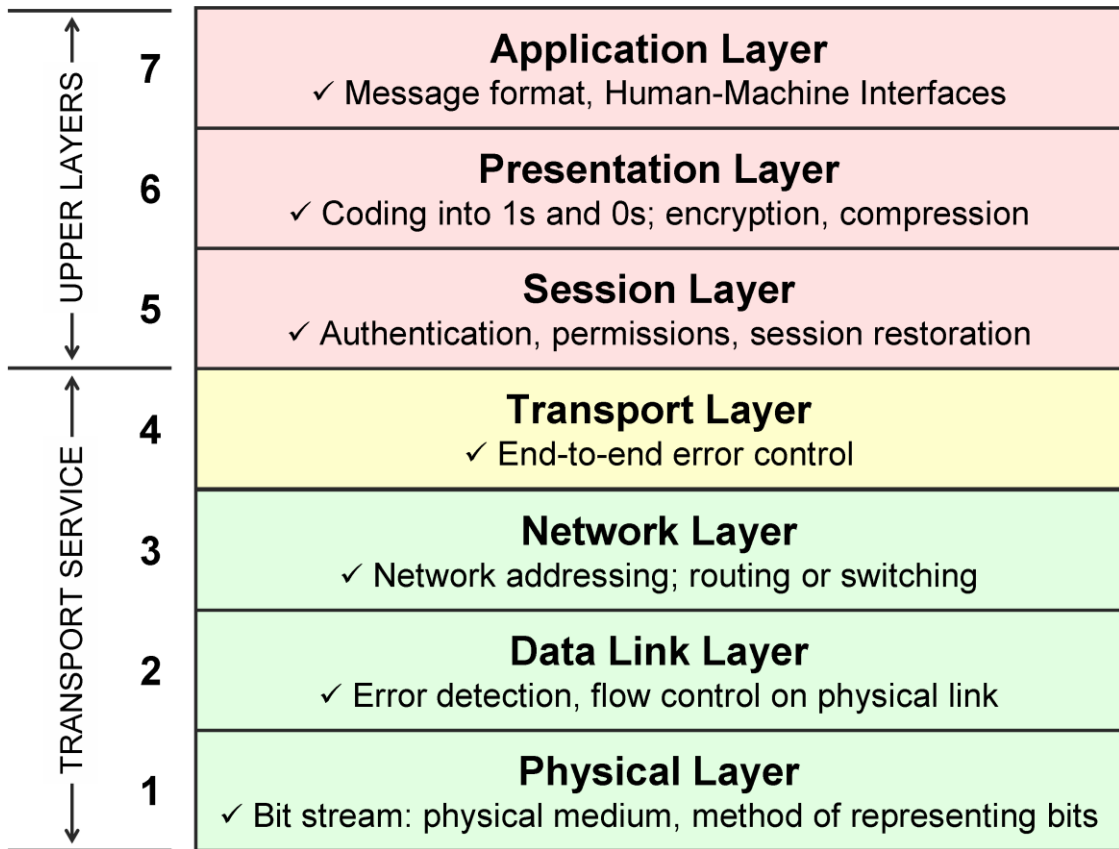
*//// Design of Distributed Systems*

*////////////////////////////////////*

**Dipl.-Inf. André Langer**

*VSR.Informatik.TU-Chemnitz.de*

# 1 Repetition



Source: <http://nhprice.com/wp-content/uploads/2013/03/1-tutorial-osi-7-layer-model1.gif>

# Secure Socket on Server-side

```
import socket, ssl
```

```
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
```

```
s.bind(("", 10028))
```

```
s.listen(5)
```

```
while True:
```

```
    stdconn, fromaddr = s.accept()
```

```
    secureconn = ssl.wrap_socket(stdconn, server_side=True,  
                                certfile="server.crt", keyfile="server.key")
```

```
    doSomething(secureconn)
```

```
    secureconn.close()
```

# Secure Socket on Client-side

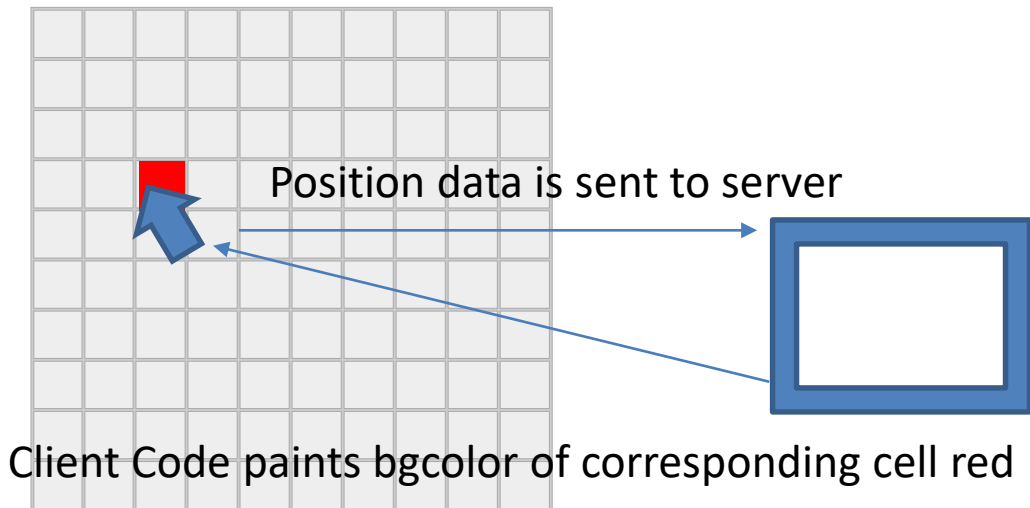
```
import socket, ssl
```

```
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)  
s.connect(('localhost', 10028))
```

```
ssl_sock = ssl.wrap_socket(s, ca_certs="server.crt",  
                           cert_reqs=ssl.CERT_REQUIRED)  
ssl_sock.write("boo!")
```

```
ssl_sock.close()
```

# Questions to Homework 8?



# 2 Server-Side Coding

# In order to build a website, you need knowledge in...

Marketing

Design

Client-Side Code

Browser

Server-Side Code

Web Server

Databases

OS

Management

SEO SEM Support  
UI/UX Design Responsive Photoshop  
HTML5 CSS JavaScript XML  
Bootstrap jQuery AngularJS Cordova  
IE, Chrome, Firefox DOM AJAX MobileDev  
Webservices Architecture OOP  
PHP ASP.NET Java Python nodeJS  
Sockets Load Balancing Caching  
Apache IIS Security Protocols  
MySQL MS SQL Oracle NoSQL  
Linux Windows Server Storage  
Routing DNS Devices  
Git / SVN Tooling Documentation



# Why is Server-Side Programming necessary at all?

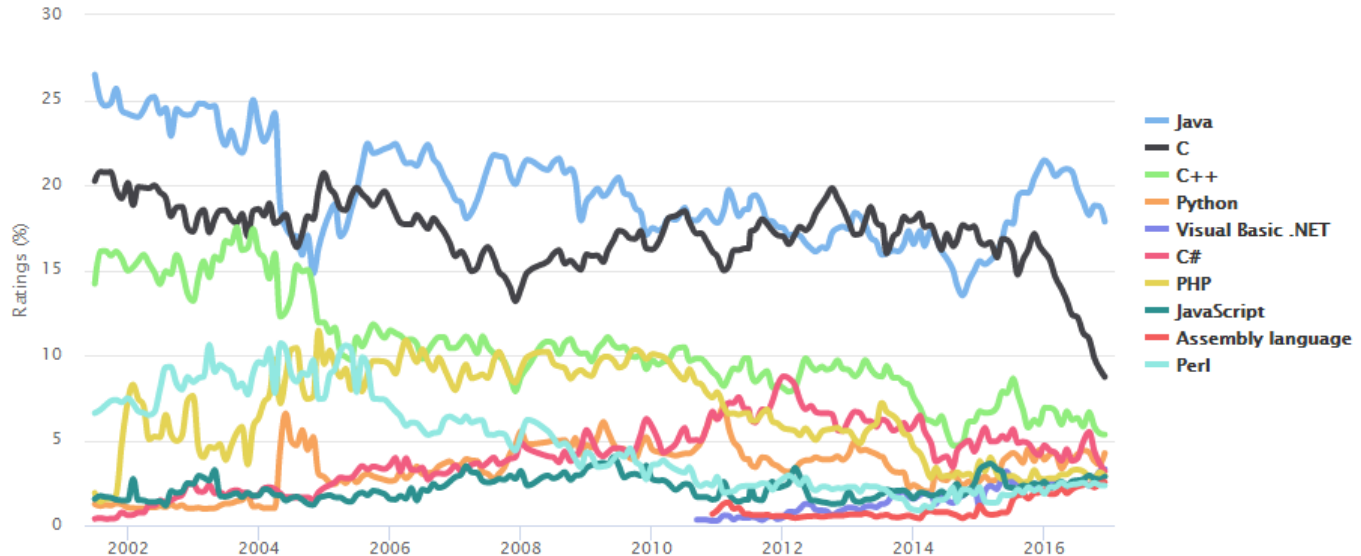
- App Code Hiding
- Complexer Business Logic
- Direct Access to Backend systems
- Better Security Control
- Overcome Browser Restrictions
- Browser Compatibility

 Which development languages exist?

# Top Programming Languages in general

TIOBE Programming Community Index

Source: [www.tiobe.com](http://www.tiobe.com)



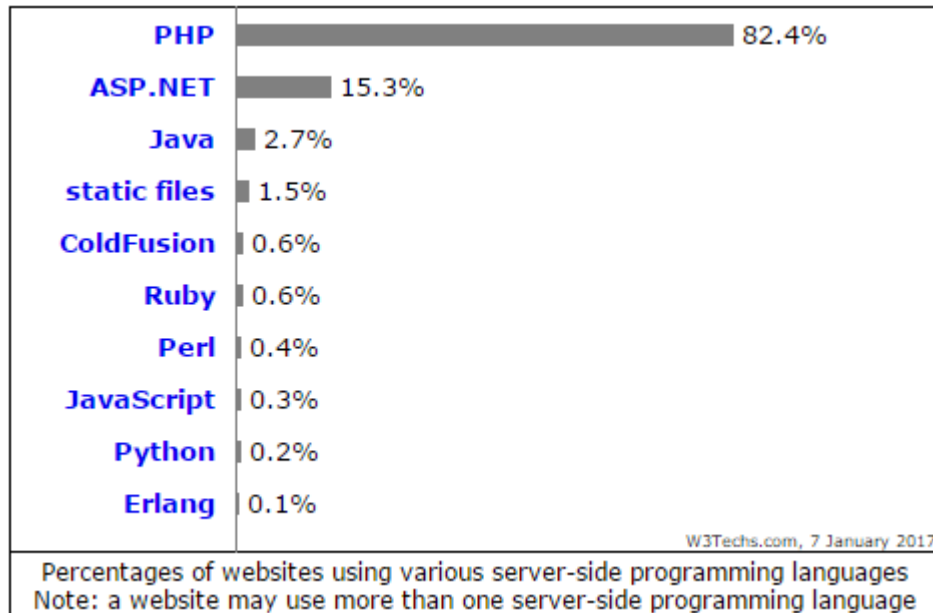
# Top Programming Languages in general

Dec 2016	Dec 2015	Change	Programming Language	Ratings	Change
1	1		Java	17.856%	-3.12%
2	2		C	8.726%	-7.73%
3	3		C++	5.335%	-0.61%
4	4		Python	4.239%	-0.19%
5	7	⬆	Visual Basic .NET	3.302%	+0.91%
6	5	⬇	C#	3.171%	-0.94%
7	6	⬇	PHP	2.919%	+0.13%
8	8		JavaScript	2.862%	+0.50%
9	11	⬆	Assembly language	2.539%	+0.61%
10	9	⬇	Perl	2.338%	+0.13%

# Web Programming Languages

- [ASP](#) (\*.asp)
- [ASP.NET](#) (\*.aspx, \*.cshtml)
- [ColdFusion](#) ML (\*.cfm)
- [Go](#) (\*.go)
- [Haskell](#) (\*.hs)
- [Java](#) (\*.jsp)
- [JavaScript](#) (NodeJS) (\*.js)
- [Lasso](#) (\*.lasso)
- [Lua](#) (\*.lp \*.op \*.lua)
- [Perl](#) (\*.cgi, \*.ipl, \*.pl)
- [PHP](#) (\*.php)
- [Python](#) (Flask, Django, Pyramid) (\*.py)
- [R](#) (\*.rhtml)
- [Ruby](#) (on Rails) (\*.rb, \*.rbw)

# Top Web Programming Languages



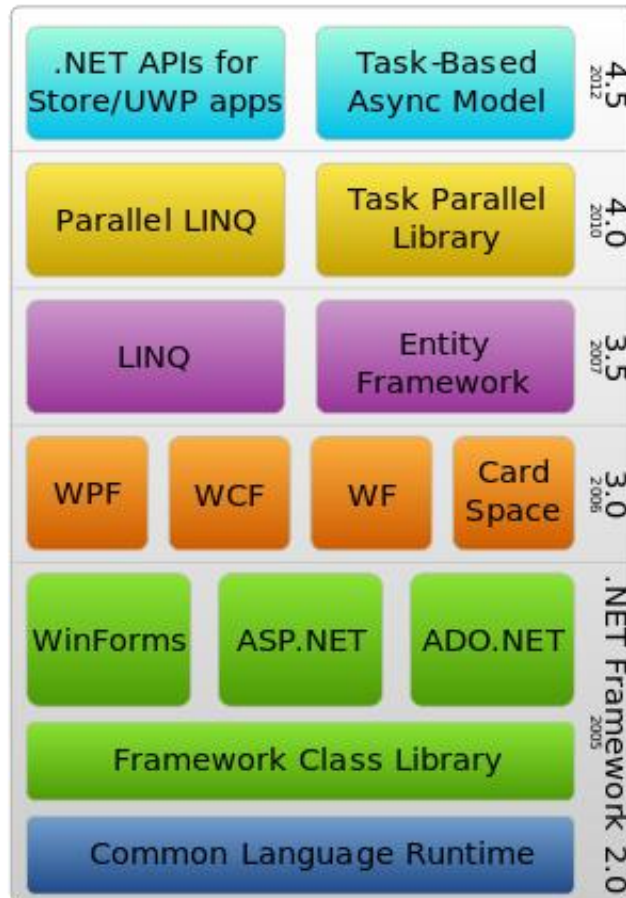


ASP.NET



# The .NET Framework

- Runtime Environment + Collection of Classes, APIs and Services
- Primary Objective: Development and Execution of Applications based on different programming languages and platforms
- We will focus on Web Development with the .NET framework and C#



# ASP.NET

- is a Web Application Framework within .NET
- Offer class functionalities that are available for all web applications
- ASP.NET was released in 2002 as a successor to Classic ASP
- ASP.NET pages are normally written in C# or VB
- ASP.NET 4.6 is the latest official version of ASP.NET.
- ASP.NET 5 was expected to be an important redesign of ASP.NET
- However, the development of ASP.NET 5 was stopped in favor of [ASP.NET Core](#)

# Development Platform

- Originally only for Windows Platforms (.NET Framework)
- ASP.NET Core now also supports Linux/Mac (.NET Core)

# Development Environments

- MS Visual Studio IDE
- MS Visual Studio Code
- WebMatrix

# ASP.NET Web App Models

- ASP.NET Web Forms
- ASP.NET Web Pages
- ASP.NET MVC
  
- ASP.NET Webservices
- ASP.NET Web API

3.1

# Web Forms

# ASP.NET Web Forms

- Traditional approach since ASP.NET 1.0
- Component-based Framework
- event driven application model
- not part of .NET Core





**Write an ASP.NET WebForm  
that outputs the name entered  
in a TextBox**

3.2

# Web Pages

# ASP.NET Web Pages

- Single Page application model
- Similar to scripting with  
ASP / JSP / PHP
- Razor syntax
- part of .NET Core



**Write an ASP.NET Website that  
outputs the name entered in a  
TextBox**

3.3

# MVC

# ASP.NET MVC

- Model View Controller application model
  - Separation of data model, user-interface and business logic
  - Promotes code reuse and automated testing
- Also part of .NET Core



Write an ASP.NET MVC Application  
that outputs a provided name  
multiple times on a website

# 4

## ToDo



# Next week, we will talk about ASP.NET Webservices



Please bring again a **laptop**  
with you with a preinstalled  
Microsoft **Visual Studio**  
Community 2015



VSR

# Thank You!

**André Langer@informatik.tu-chemnitz.de**

*VSR.Informatik.TU-Chemnitz.de*