

"Always code as if the guy who ends up maintaining your code will be a violent psychopath who knows where you live."

JOHN WOODS.



@riverglide



@andypalmer



@antonymarciano



@jmrtn



@pro_cessor





Ψ

INFORMATIK

Keine Naturwissenschaft

**EINSTELLUNGSÄHNLICHKEIT
KORRELIERT POSITIV MIT DER
INTERPERSONELLEN ANZIEHUNG**

GLEICH UND GLEICH
EINSTELLUNGSÄHNLICHKEIT
KORRELIERT POSITIV MIT DER
INTERPERSONELLEN ANZIEHUNG
GESELLT SICH GERN

**DIE GRAVITATIONSBEDINGTE
VERTIKALE DISLOKATION
MALIFORMER AGRARPRODUKTE
AUS DER POSITION IHRER
BIO-GENESE ERFOLGT IN
DER REGEL PROXITRUNKIAL**

DER APFEL FÄLLT NICHT

DIE GRAVITATIONSBEDINGTE

VERTIKALE DISLOKATION

MALIFORMER AGRARPRODUKTE

AUS DER POSITION IHRER

BIO-GENESE ERFOLGT IN

DER REGEL PROXITRUNKIAL

WEIT VOM STAMM

Wir schreiben für die
M A S C H I N E
anstatt für uns.



S

Open –
Closed
Principle

Liskov
Substitution
Principle

Interface
Segregation
Principle


Dependency
Inversion
Principle



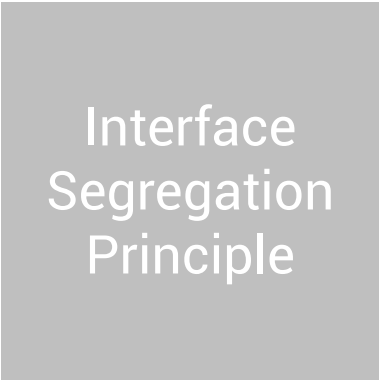
S



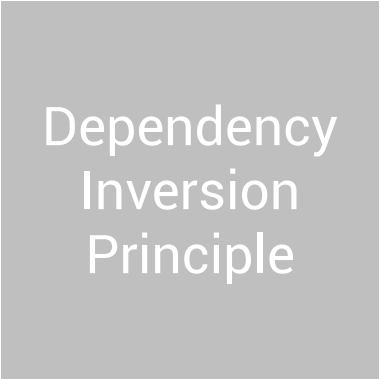
O



Liskov
Substitution
Principle



Interface
Segregation
Principle



Dependency
Inversion
Principle

The image displays the acronym 'SOLID' for the SOLID design principles. Each letter is contained within a square. 'S', 'O', and 'L' are in blue squares, while 'I' is in an orange square. 'D' is represented by a grey square containing the text 'Dependency Inversion Principle'. 'I' is represented by a grey square containing the text 'Interface Segregation Principle'.

S

O

L

Interface
Segregation
Principle

Dependency
Inversion
Principle

The image displays the acronym 'SOLID' in a row of four squares. The first three squares (S, O, L) are blue with white text, and the fourth square (I) is orange with white text.

S

O

L

I

Dependency
Inversion
Principle

S

O

L

I

D

S

O

L

I

D

S

O

L

I

D

Release-
Reuse
Equivalency
Principle

Common
Reuse
Principle

Common
Closure
Principle

Acyclic
Dependency
Principle

Stable
Abstractions
Principle

Stable
Dependencies
Principle

S

O

L

I

D

RR

Common
Reuse
Principle

Common
Closure
Principle

Acyclic
Dependency
Principle

Stable
Abstractions
Principle

Stable
Dependencies
Principle

S

O

L

I

D

RR

CR

Common
Closure
Principle

Acyclic
Dependency
Principle

Stable
Abstractions
Principle

Stable
Dependencies
Principle

S

O

L

I

D

RR

CR

CC

Acyclic
Dependency
Principle

Stable
Abstractions
Principle

Stable
Dependencies
Principle

S

O

L

I

D

RR

CR

CC

AD

Stable
Abstractions
Principle

Stable
Dependencies
Principle

S

O

L

I

D

RR

CR

CC

AD

SA

Stable
Dependencies
Principle

S

O

L

I

D

RR

CR

CC

AD

SA

SD

S

O

L

I

D

RR

CR

CC

AD

SA

SD

Tell, don't ask

DRY

KISS

YAGNI

S

O

L

I

D

RR

CR

CC

AD

SA

SD

Tell, don't ask

DRY

KISS

YAGNI

S

O

L

I

D

RR

CR

CC

AD

SA

SD

Tell, don't ask

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O

L

I

D

RR

CR

CC

AD

SA

SD

Tell, don't ask

DRY

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YAGNI

S

O

L

I

D

RR

CR

CC

AD

SA

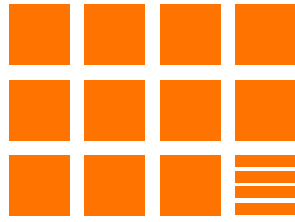
SD

Tell, don't ask

DRY

KISS

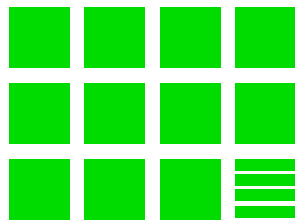
YAGNI



Machine

SEPARATION

Domain



??

EMPATHIE

Von Person zu Person

**EMPATHY IS THE CAPACITY TO
THINK AND FEEL ONESELF INTO
THE INNER LIFE OF ANOTHER
PERSON**

Heinz Kohut
Psychoanalyst

HALTET EIN

Da kommt noch mehr!

Simple First

Paradigm-
Commitment

Abstraction
Segregation

Domain
Relationship

Listening
and
Learning

Languages

Binary
Dependency

Domain
Language

Shared
Under-
standing

Eloquence

Patterns
aren't
solutions

Weasel Word
Removal

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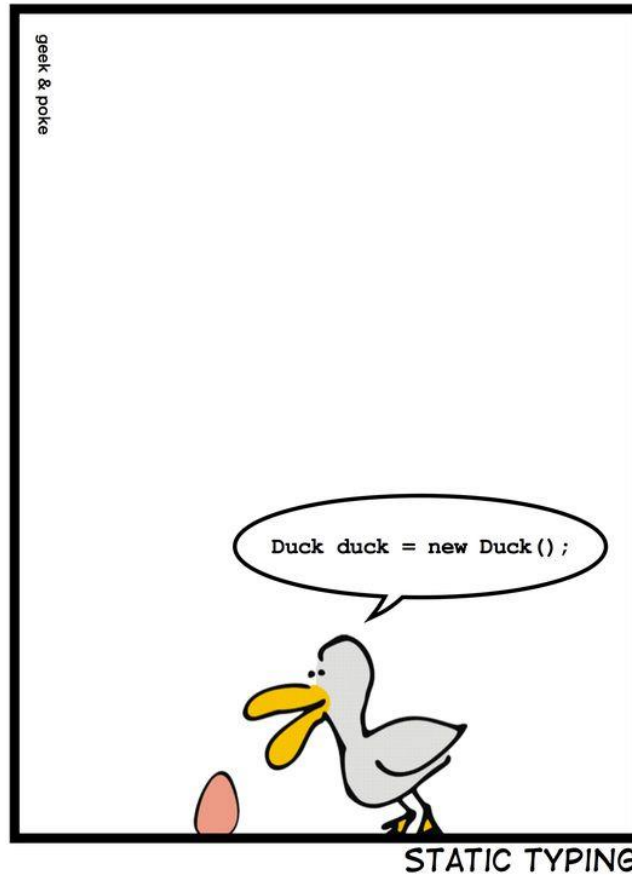
Weasel Word
Removal

Simple First!

ERST MAL EINFACH

Richtig schwer!

SIMPLY EXPLAINED



C#

```
Duck duck = new Duck();
```

Python

```
duck = Duck()
```

C# - DRY

```
var duck = new Duck();
```

Es steht ein
ZUG.UN.GLÜCK
bevor

Tell.

DON'T ASK

Or: The Law of Demeter

Plöck 34 · Heidelberg
Tel.: 06221/603331
www.russzopf.de



mit **demeter** Sortiment

```
if(Customer.Email.Address.Value.IsValid)
{
    Send(Customer.Email.Address, message);
}
```

```
if(Customer.IsEmailValid())  
{  
    Send(Customer.Email.Address, message);  
}
```

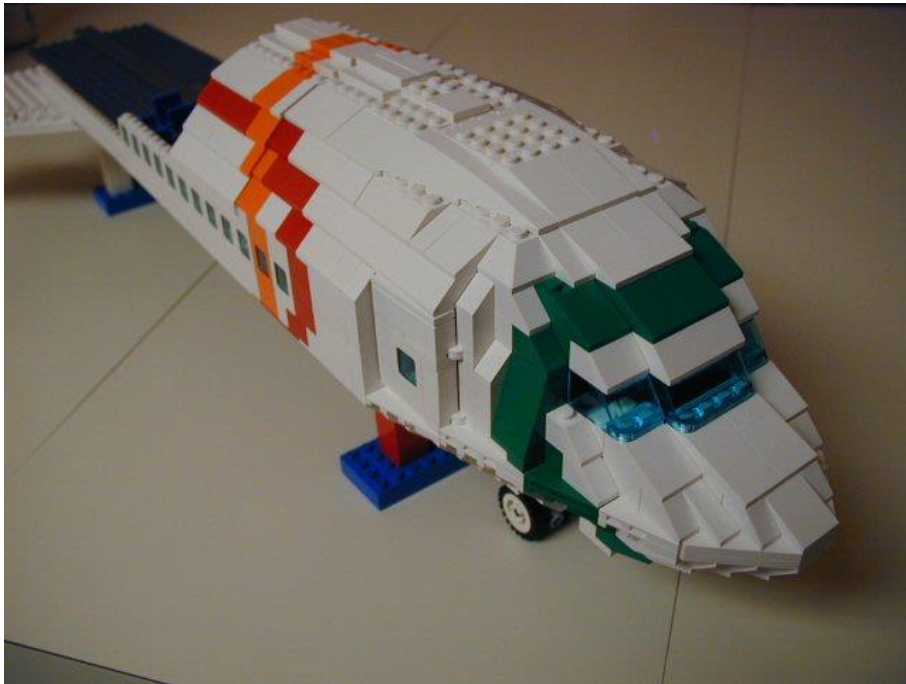
```
Customer.Send(message)
```

```
Message.SendTo(Customer)
```

**DON'T LET A STRANGER TOUCH
YOUR PRIVATES**



SIZE & REUSE



Keine
ÜBERRASCHUNGEN
Was erwartest du?

A problem has been detected and windows has been shut down to prevent damage to your computer.

The end-user manually generated the crashdump.

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

Technical information:

*** STOP: 0x000000E2 (0x00000000,0x00000000,0x00000000,0x00000000)

Beginning dump of physical memory

Physical memory dump complete.

Contact your system administrator or technical support group for further assistance.

NULLOBJEKTE

SPÜRE DEINEN CODE

*Man sieht nur mit dem Herzen
gut*

```
public void Execute(MainViewModel mainViewModel)
{
    mainViewModel.Done = () => Break(mainViewModel);
    mainViewModel.StartCounter();
}
```

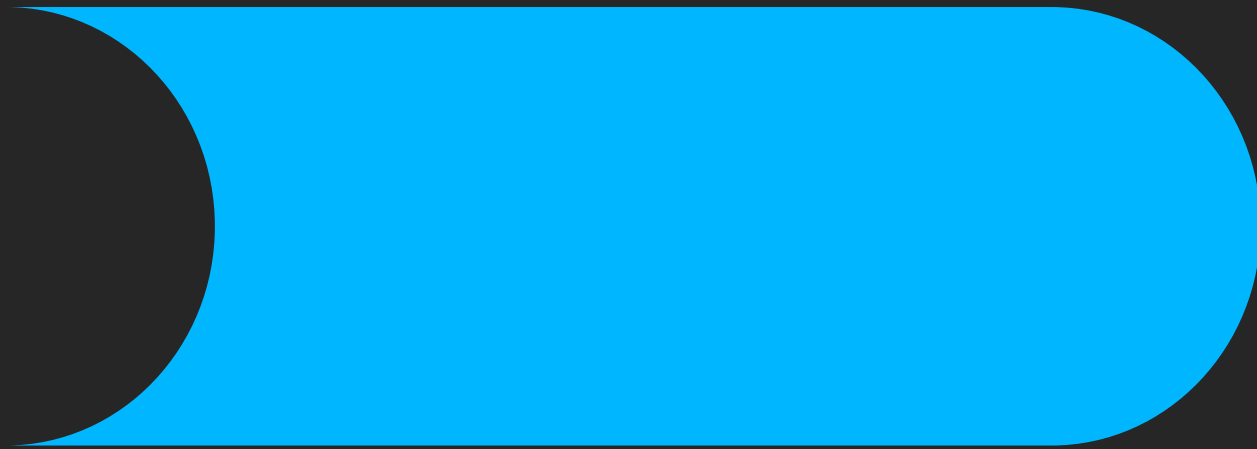
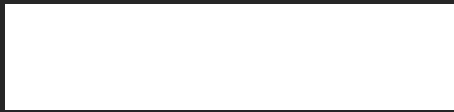
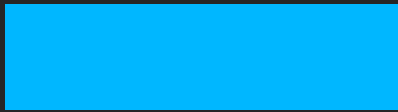
```
public void Break(MainViewModel model)
{
    model.Color = 0x00DBFF.Rgb().Brush();
    model.TimeLeft = 5.Minutes();
    model.Done = () => Work(model);
    model.StartCounter();
}
```

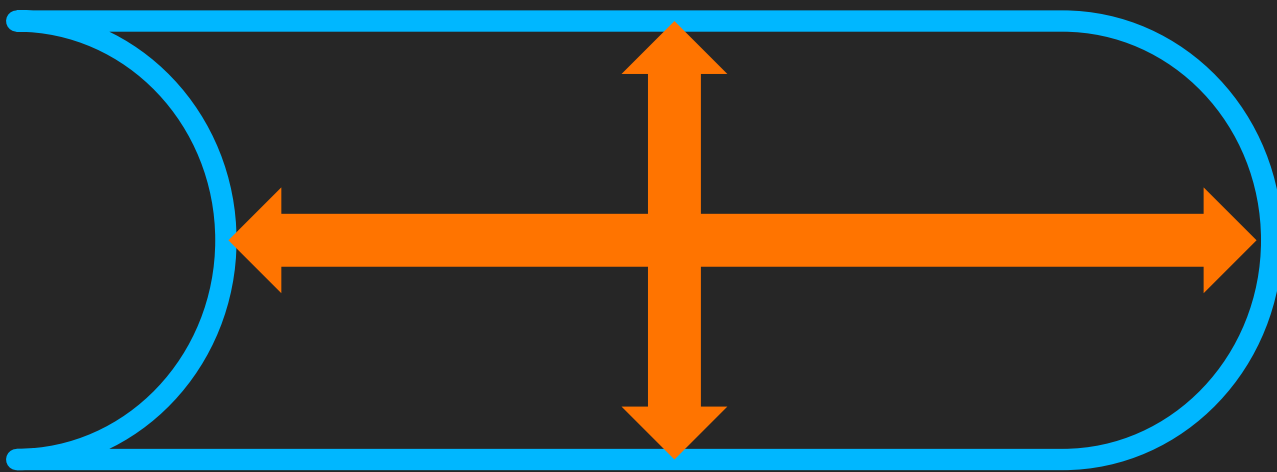
```
public void Work(MainViewModel model)
{
    model.Color = 0x00DB00.Rgb().Brush();
    model.TimeLeft = 25.Minutes();
    model.Done = () => Break(model);
    model.StartCounter();
}
```

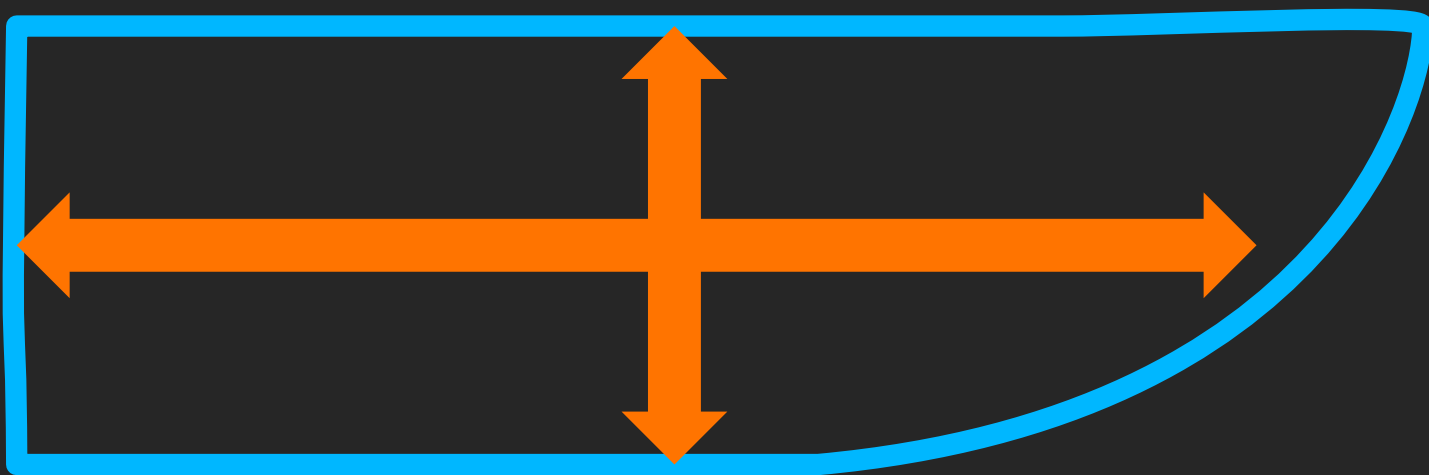
```
public void Execute(MainViewModel mainViewModel)
{
    mainViewModel.Done = () => Break(mainViewModel);
    mainViewModel.StartCounter();
}
```

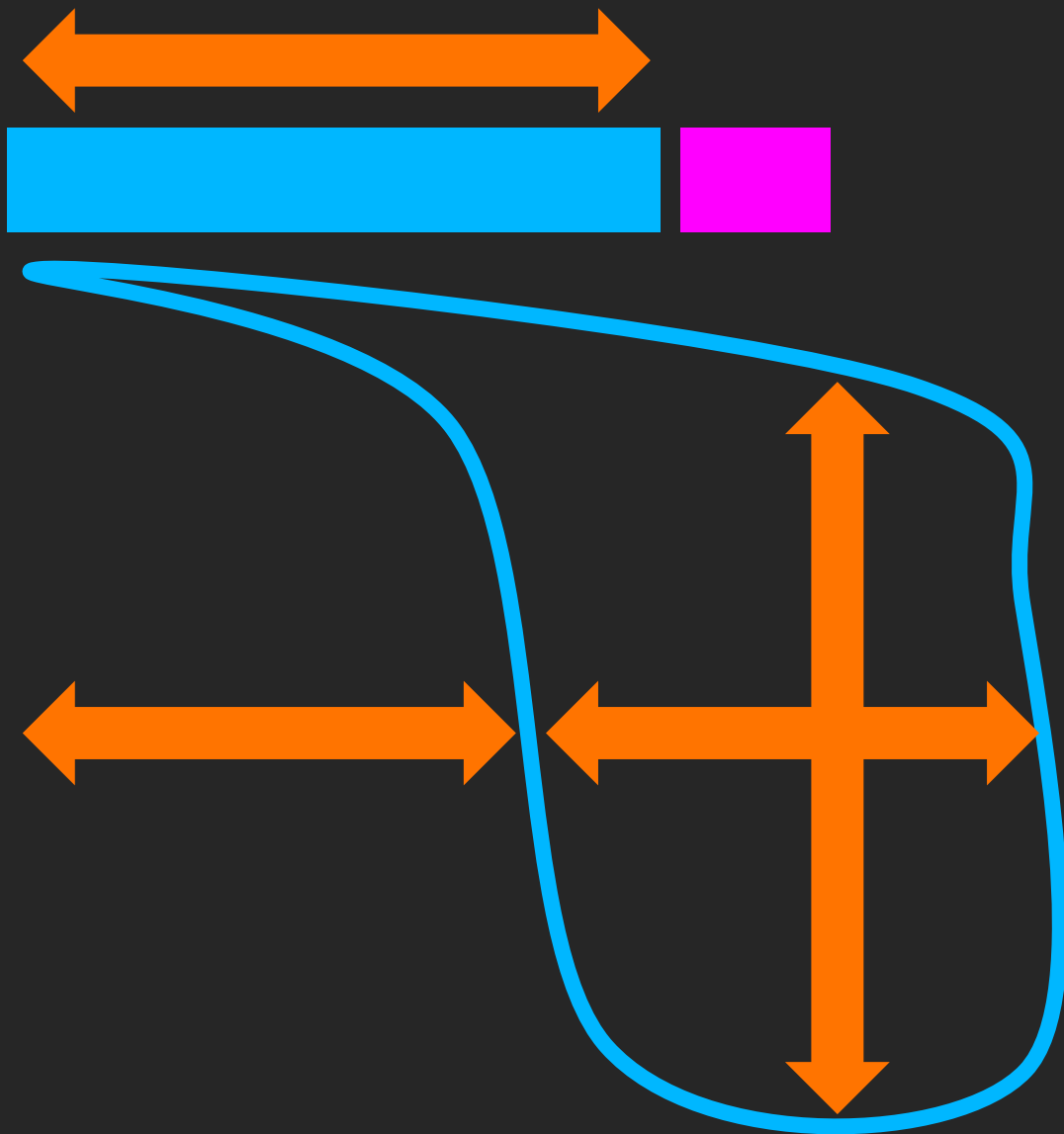
```
public void Break(MainViewModel model)
{
    model.Color = 0x00DBFF.Rgb().Brush();
    model.TimeLeft = 5.Minutes();
    model.Done = () => Work(model);
    model.StartCounter();
}
```

```
public void Work(MainViewModel model)
{
    model.Color = 0x00DB00.Rgb().Brush();
    model.TimeLeft = 25.Minutes();
    model.Done = () => Break(model);
    model.StartCounter();
}
```









```
def filter(markup):
    return add_twitter_names(markup)

def add_twitter_names(markup):
    pattern = "@(\\w+)"
    url = "https://twitter.com/"
    link = "<a href='%s\\1'>@\\1</a>" % url
    replacement = link
    return re.sub(pattern, replacement, markup)

def home(entries):
    markup = create_page(entries)
    markup = filter(markup)
    return markup

def main():
    entries = Entries()
    if len(argv) > 1:
        date = argv[1]
        entries = entries.written_on(date)
    print home(entries)
```

Die einfachste
METRIK
für die C-Familie

SIGNATURE SURVEY

Datei (<loc>): { ; }

```
ExitWindowsFlags.cs (17): ;{{{}}
FullScreen.cs (10): {{{;}}}
HexToColorExtension.cs (30): ;{{{;}};{;}}
Hibernate.cs (23): ;{{{}}{;};;}}
ICanBeSelected.cs (10): ;;{{{}}
ICanStartAndStop.cs (12): ;{{{;};;}}
IExecute.cs (10): ;;{{{}}
IHaveGotTheTime.cs (9): ;{{{;}}
IntToTimespanExtension.cs (26): ;{{{;}};{;}}
InvisibilityConverter.cs (20): ;;;{{{;}};}}
IShutdownTheSystem.cs (7): {{;}}
IWindowsFunctions.cs (9): {{{;}}
KeyExtension.cs (17): ;{{{;}};}}
Lock.cs (20): ;{{{}}{;}}
LogOff.cs (21): ;{{{}}{;};}}
MainViewModel.cs (103): ;;;;{{{;};;};;};{{{;}}{;}}{;}}{;}}{;}}{;}}{;};;};;};{;};{;};{;};{;};}}
MainWindow.xaml.cs (42): ;;;;{{{;};;};{{{;}};};;}}
MenuItemExtension.cs (17): ;;;{{{;}}}}
MouseWheelGesture.cs (56): ;{{{}}{;};{{{;}}}{;}}{;}}{;}}{;}}{;};;};;}}
MutuallyExclusiveCheckBoxes.cs (42): ;;{{{;}}{;};;};{;}}{;}}
PlaySound.cs (23): ;;;;{{{;}};}}
PomodoroTimer.cs (33): ;;;{{{;}}{;};;};;}}
RegisterShutdownEvent.cs (12): ;{{{;}}
RegisterTimeoutEvent.cs (23): ;{{{;}}{;}}
ResetTimer.cs (21): ;;;{{{;}}{;}}
Restart.cs (21): ;{{{}}{;}}
RestartTimer.cs (21): ;;;{{{;}}{;}}
SetColor.cs (37): ;{{{;};;};;}}
SetTime.cs (18): ;;;{{{;}}{;}}
Shutdown.cs (21): ;{{{}}{;}}
ShutdownReason.cs (47): ;{{{}}
Sleep.cs (23): ;{{{}}{;};;}}
Start.cs (10): {{{;}}
Stop.cs (10): {{{;}}
TimeSpanExtensions.cs (12): ;{{{;}}
Toggle.cs (13): ;{{{;}}
ViewCommand.cs (15): ;;;{{{;}}{;}}
ViewModel.cs (39): ;;;{{{;}}{;}}{;};;}}
ViewModelBaseWeasel.cs (29): ;;;{{{;};;}}
VisibilityConverter.cs (20): ;;;{{{;}}{;}}
Wheel.xaml.cs (20): ;;;{{{;}}{;}}
WheelDirection.cs (9): {{{}}
```

```
LogOff.cs (21): ;{{{}}{;;}}}  
MainViewModel.cs (103): ;;;{{;;;};{;;}{{};{};}{{};{};}{{};{};}}  
MainWindow.xaml.cs (42): ;;;{{{};};{};};{;;};{;;}}  
MenuItemExtension.cs (17): ;;;{{{;}}}} }  
MouseWheelGesture.cs (56): ;{{{}}{;;}{{{}};}} {{{}};}} {{{}};}} {{{}};}} {;;;  
MutuallyExclusiveCheckBoxes.cs (42): ;{{{}};{};};{;;};{};{};}}
```

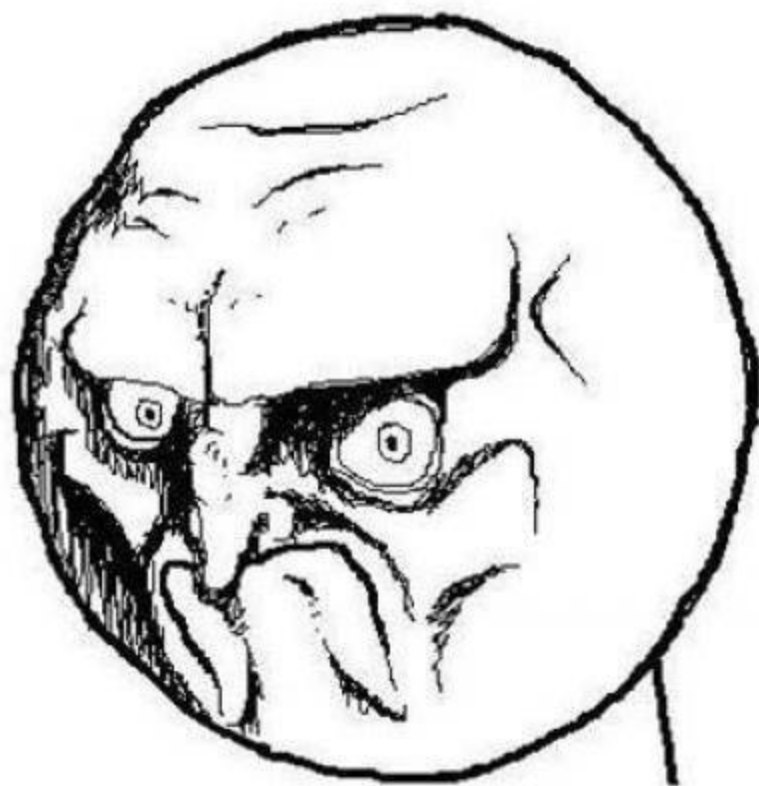
Code
PHILOSOPHIE
Und Maximen


```
>>> import this
```

**IF THE IMPLEMENTATION IS HARD
TO EXPLAIN, IT'S A BAD IDEA.**

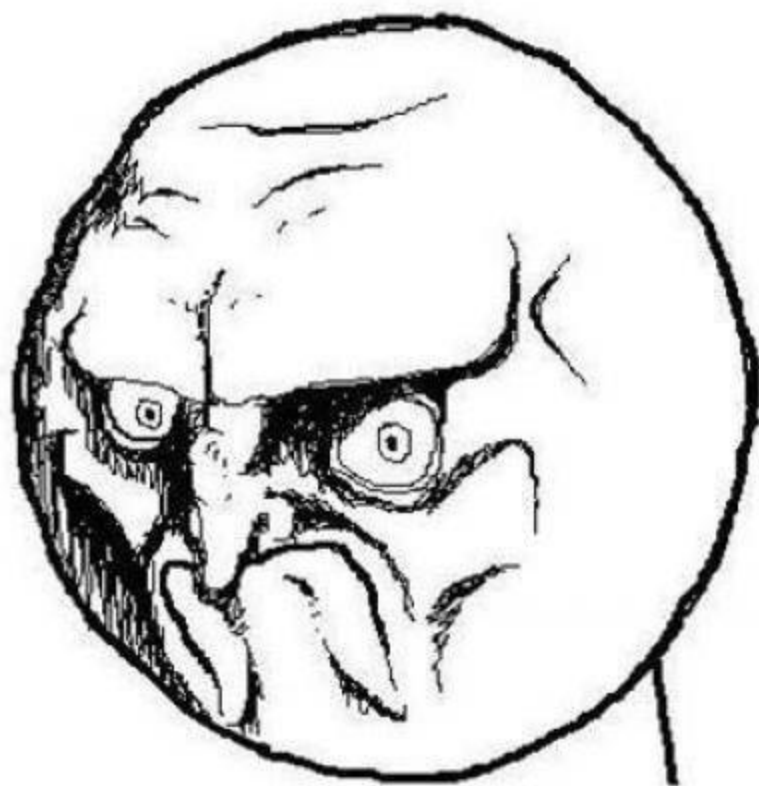
Richtig
ZUHÖREN
und dabei lernen!

**WIR BRAUCHEN EINEN
AUTOMOCKER.**



NO.

**DIESE KLASSE IST SCHWER ZU
TESTEN.**

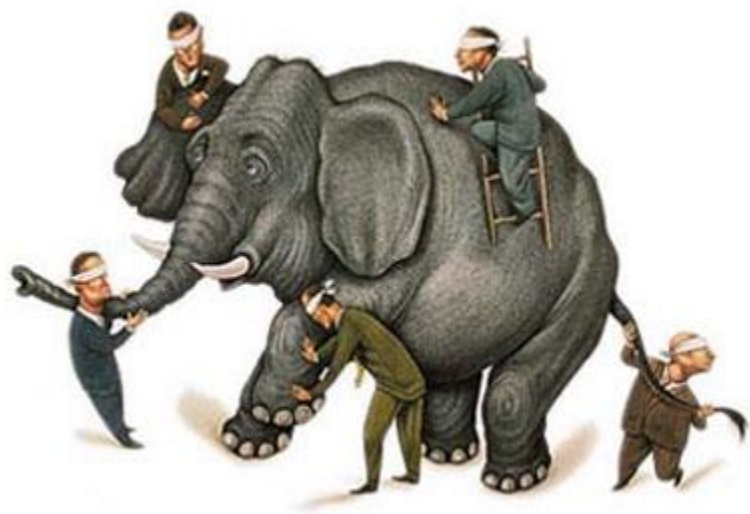


NO.

Shared Understanding

DAS GLEICHE SAGEN

vom selben Elefanten



Simple First

Paradigm-
Commitment

Abstraction
Segregation

Domain
Relationship

Listening
and
Learning

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Shared
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standing

Eloquence

Patterns
aren't
solutions

Weasel Word
Removal

Unabhängig von der Sprache

IM PARADIGMA BLEIBEN

Und es verstehen

OBJEKTE

FUNKTIONEN

RELATIONEN

DOKUMENTE

Polyglott SPRACHEN

*C#, F#, Prolog, Io, Haskell, Brainfuck, Python, Ruby,
Javascript, Lisp, Smalltalk, C++, C, Java, Groovy, Scala,
Clojure, Perl, R*

<https://github.com/cessor/refactoring>

```
private static TimeSpan Transform(this IEnumerable<int> digits)
{
    int result = 0;
    var r = digits.ToList();
    for (int j = 0; j < r.Count; j++)
    {
        int i = (int)Math.Pow(60, j / 2);
        int rTimesI = r[r.Count - j - 1] * i;

        result += (j % 2 == 1)
                    ? rTimesI * 10
                    : rTimesI;
    }
    return TimeSpan.FromSeconds(result);
}
```



```
private static TimeSpan Transform(this IEnumerable<int> digits)
{
    var secondsPerUnit = new [] { 1,10,60,600,3600,36000 };

    return digits
        .Reverse()
        .Zip(secondsPerUnit, (digit, unit) => digit * unit)
        .Sum()
        .Seconds();
}
```

“You can call it beautiful
code when the code also
makes it look like the
language was made for the
problem”

WARD CUNNINGHAM.

Quicksort

```
public class
{
    public static int[] Sort(int[] array)
    {
        int[] a = new int[array.Length];
        array.CopyTo(a, 0);
        Sort(0, array.Length - 1, ref a);
        return a;
    }

    private static void Sort(int links, int rechts, ref int[] daten)
    {
        if (links >= rechts) return;
        int teiler = Divide(links, rechts, ref daten);
        Sort(links, teiler - 1, ref daten);
        Sort(teiler + 1, rechts, ref daten);
    }

    private static int Divide(int left, int right, ref int[] data)
    {
        int leftpos = left;
        int rightpos = right - 1;
        int pivot = data[right];

        do {
            while (data[leftpos] <= pivot && leftpos < right) leftpos++;
            while (data[rightpos] >= pivot && rightpos > left) rightpos--;
            if (leftpos >= rightpos) continue;
            Swap(leftpos, rightpos, ref data);

        } while (leftpos < rightpos);

        if (data[leftpos] > pivot) {
            Swap(leftpos, right, ref data);
        }
        return leftpos;
    }

    private static void Swap(int left, int right, ref int[] data)
    {
        int z = data[left];
        data[left] = data[right];
        data[right] = z;
    }
}
```

```
let rec quicksort (list:int list) =  
  match list with  
  | [] -> []  
  | head::tail ->  
    let smaller,larger = List.partition (fun y -> y <= head) tail  
    quicksort smaller @ [head] @ quicksort larger
```

“Clean code reads like well-written **prose**”

GRADY BOOCH

Gesprochene,
NATÜRLICHE
Sprache

```
var date = new DateTime (2012, 4, 14, 16, 32, 18, 500);
```

```
var start = 14.April(2012).At(8.PM());
```

```
var end = 8.Hours().Later(start);
```


Eloquenz

SPRACHFERTIGKEIT

Eine Sprache richtig sprechen

**WENN DU MIR ERKLÄREN KANNST,
WAS DA PASSIERT, WIESO STEHT
DAS DA DANN NICHT?**

```
[Test]
public void ShouldConvertAnEvenNumberOfDigitsToATimespan()
{
    // Arrange
    var bytes = new byte[] { 0, 0, 1, 5, 0, 5 };
    var expected = new TimeSpan(0, 0, 15, 5, 0);

    // Act
    var actual = Transform(bytes);

    // Assert
    actual.Should().Equal(expected);
}
```

```
When.IType(1, 5, 0, 5).And()  
  
    .TransformTheDigits()  
  
    .Then().TheResult().Should().Equal(  
        15.Minutes().And(5.Seconds())  
    );
```

ShouldConvertASmallerListWithAnEvenCountOfDigits : Passed

When I type: 1, 5, 0, 5, and transform the digits
Then the result should be 00:15:05

Simple First

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Weasel Word
Removal

Trennen von Einzelheiten
ABSTRAKTION
in Domäne und Maschine

```
for int i=0;  
GetCustomer
```


Ist etwas

EXCEPTION*ell,*

Wenn du es erwartest?





Beschwerden

COMPLAINTS

Wenn ein Problem besteht



Entschuldigung

APOLOGIES

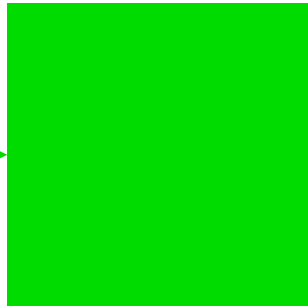
Wenn es verzeihbar ist

$$x = 1 + 2$$

BINÄRE ABHÄNGIGKEIT

Meist reicht das.

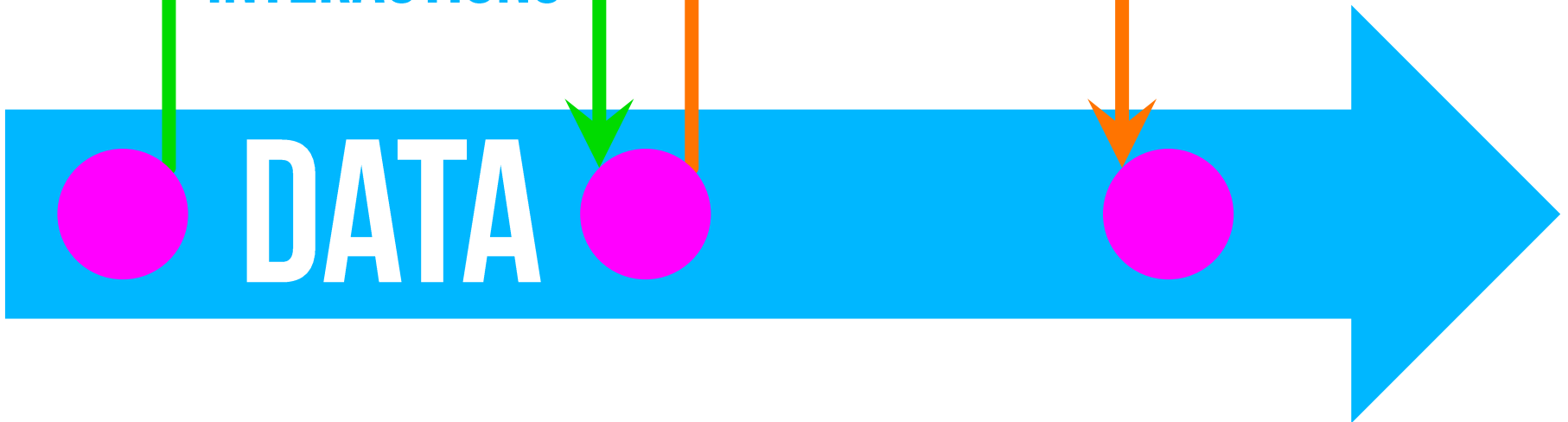
**DEPENDENT-ON
COMPONENTS**



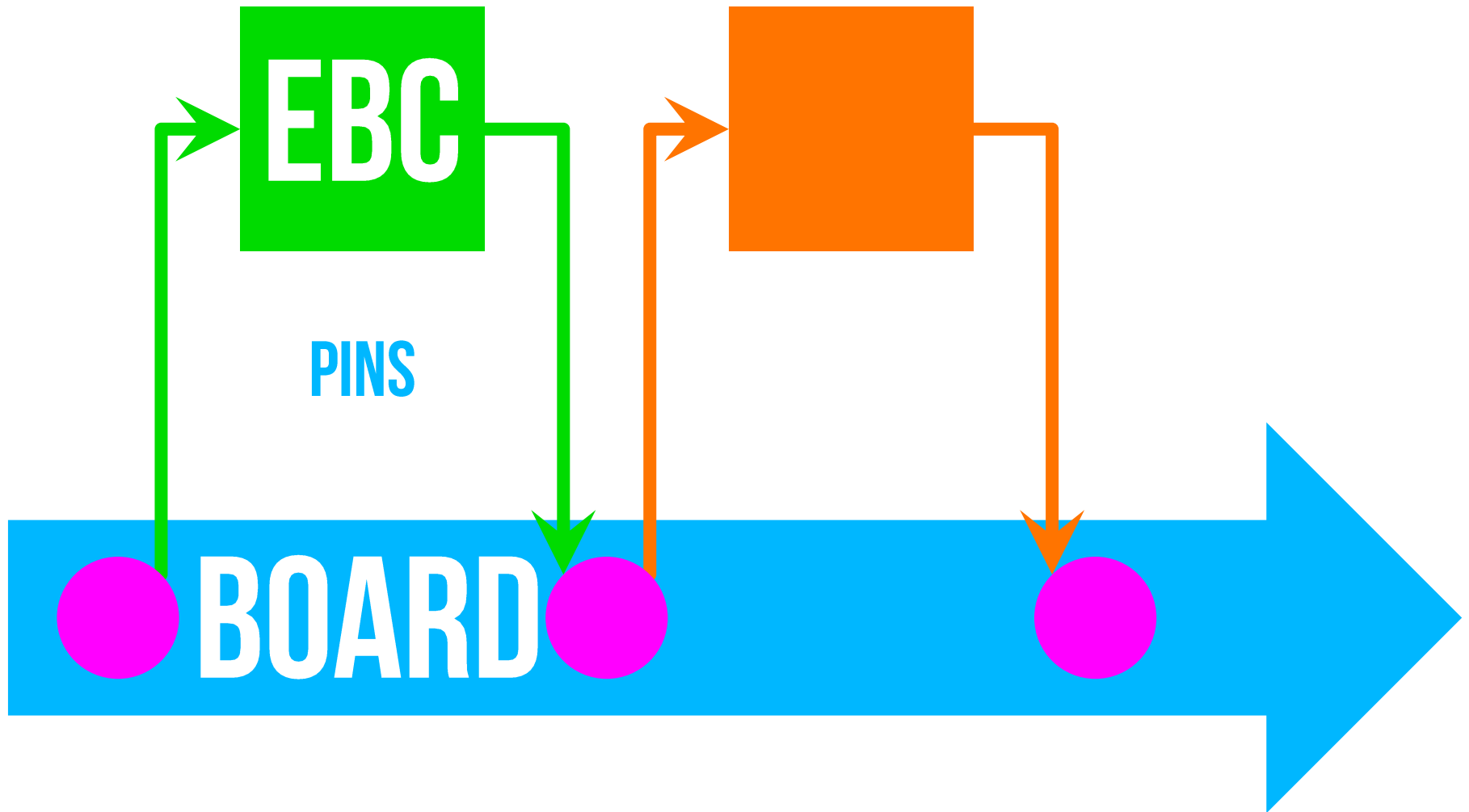
INTERACTIONS



DATA



EVENT BASED COMPONENTS



Imports
Parameter
Binäre Bäume

Design Patterns

ENTWURFSMUSTER

Sind keine Lösung



<https://twitter.com/#!/jmrtn>

<http://jmrtn.com/notes/2012/02/17/design-patterns.html>

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Wenn du darüber sprichst...

DOMÄNENBEZUG

...ist es wahrscheinlich wichtig

WAR STORIES

Also ich hab da...

“Also ich hab da so ne
Software”

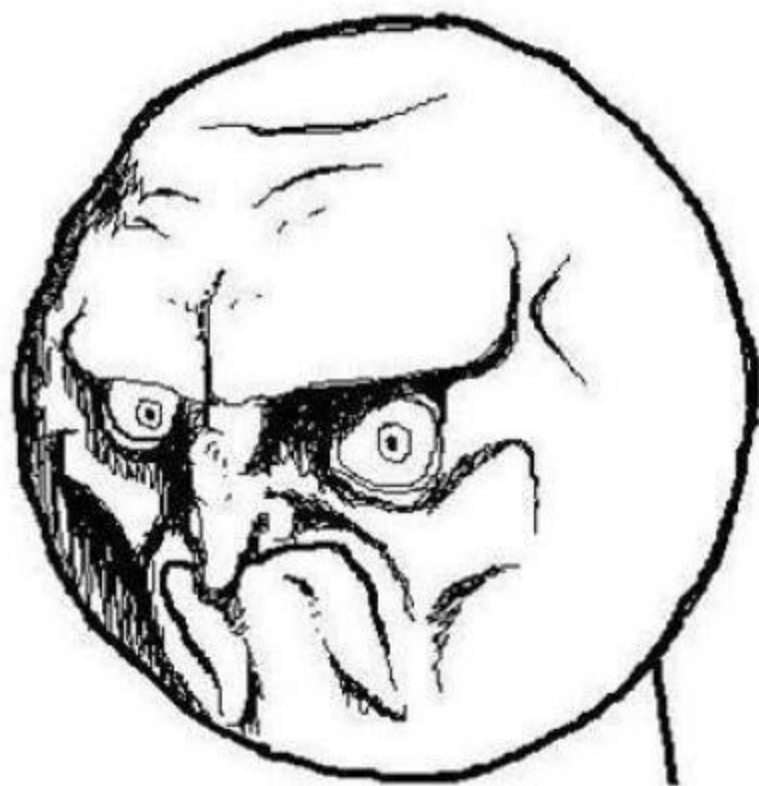
“Also ich hab da so ne
Software, die bearbeitet so
Bilder.”

“Also ich hab da so ne
Software, die bearbeitet so
Bilder. Aber ich hab da so
zwei viel zu große Klassen.”

“Also ich hab da so ne Software, die bearbeitet so Bilder. Aber ich hab da viel zu große Klassen. Und ich reiche da so ein **Bytearray** rum.”

“Also ich hab da so ne Software, die bearbeitet so Bilder. Aber ich hab da viel zu große Klassen. Und ich reiche da so ein Bytearray rum. Und das wird dann von allen bearbeitet.”

“Also ich hab da so ne Software, die bearbeitet so Bilder. Aber ich hab da viel zu große Klassen. Und ich reiche da so ein Bytearray rum. Und das wird dann von allen bearbeitet. Das ist schon ziemlich kompliziert...”



NO.

PROGRAMMER



Y U NO OBJECT ORIENT?

BILDER
SIND KEINE BYTEARRAYS

**EMAIL ADRESSEN
SIND KEINE STRINGS**

TINY TYPES

**DINGE MÜSSEN
NICHT KÖNNEN
ABER SIE KÖNNEN**

SEIN

Email

InvalidEmail

POLYMORPHISMEN

TYPEN

Ubiquitous Language

DOMÄNENSPRACHE

Gegen Babylonische Sprachverwirrung

SYSTEMISCHE METAPHER

KLARE NAMEN

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Removal

Never Touch a
RUNNING
System

Never Change a
RUNNING
System

Always run a
CHANGING
System

BLIND MEN AND THE ELEPHANT

JOHN GODFREY SAXE

It was six men of Indostan
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.

The *First* approached the
Elephant,
And happening to fall
Against his broad and sturdy side,
At once began to bawl:
"God bless me!—but the Elephant
Is very like a wall!"

The *Second*, feeling of the tusk,
Cried: "Ho!—what have we here
So very round and smooth and
sharp?

To me 't is mighty clear
This wonder of an Elephant
Is very like a spear!"

The *Third* approached the animal,
And happening to take
The squirming trunk within his
hands,
Thus boldly up and spake:
"I see," quoth he, "the Elephant
Is very like a snake!"

The *Fourth* reached out his eager
hand,
And felt about the knee.
"What most this wondrous beast
is like
Is mighty plain," quoth he;
"'Tis clear enough the Elephant
Is very like a tree!"

The *Fifth*, who chanced to touch
the ear,
Said: "E'en the blindest man
Can tell what this resembles
most;
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"

The *Sixth* no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
"I see," quoth he, "the Elephant
Is very like a rope!"

And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly
in the right,
And all were in the wrong!

So, oft in theologic wars
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an Elephant
Not one of them has seen!



Blue
Rgb,
0,183,255



Orange,
Rgb,
255,116,0



Green,
Rgb
0,219,0



Magenta,
#FF00FF



Light Gray,
Rgb,
191,191,191

Dark Gray,
Rgb,
64,64,64

The blind men and the elephant

http://en.wikisource.org/wiki/The_poems_of_John_Godfrey_Saxe/The_Blind_Men_and_the_Elephant

Elephant

<http://inquiry111westminster.wikispaces.com/Blind%20men%20and%20an%20elephant>

Inspired by and using the fonts suggested at

<http://www.labnol.org/software/tutorials/advice-select-best-fonts-for-powerpoint-presentation-slides/3355/>

Duck Duck Duck

<http://geekandpoke.typepad.com/geekandpoke/2012/03/static-typing.html>

Rapist

<http://rasmussenanders.blogspot.de/2011/03/catholic-priests-raping-nuns.html>

Bundeswehr

http://www.bmlv.gv.at/download_archiv/photos/inlandseinsatz/images/hochwasser_august_26.jpg

Complaints

<http://wayne.usschesapeake.org/wp-content/uploads/2011/06/Shout.png>

Apologies

<http://www.5lovelanguages.com/learn-the-languages/the-five-languages-of-apology/>

Signature Survey

<http://c2.com/doc/SignatureSurvey/>