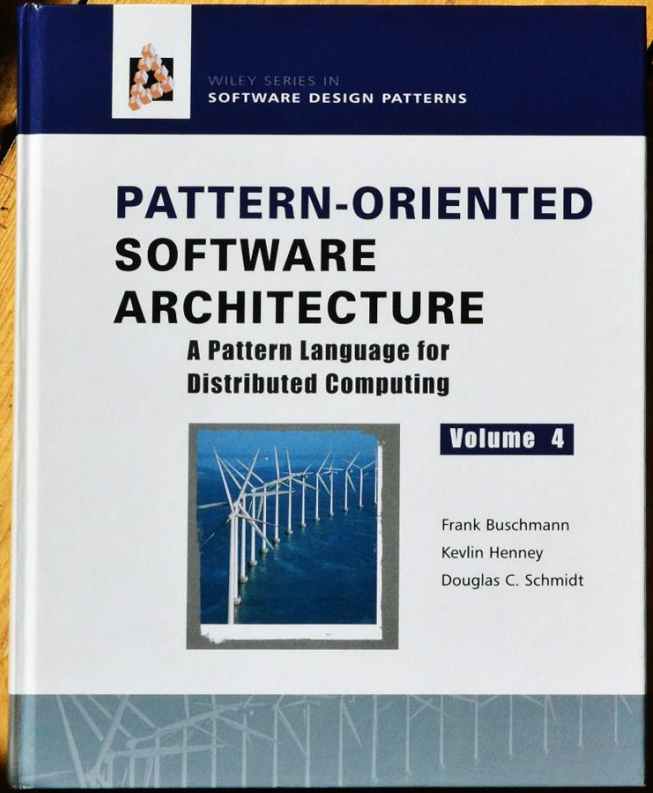
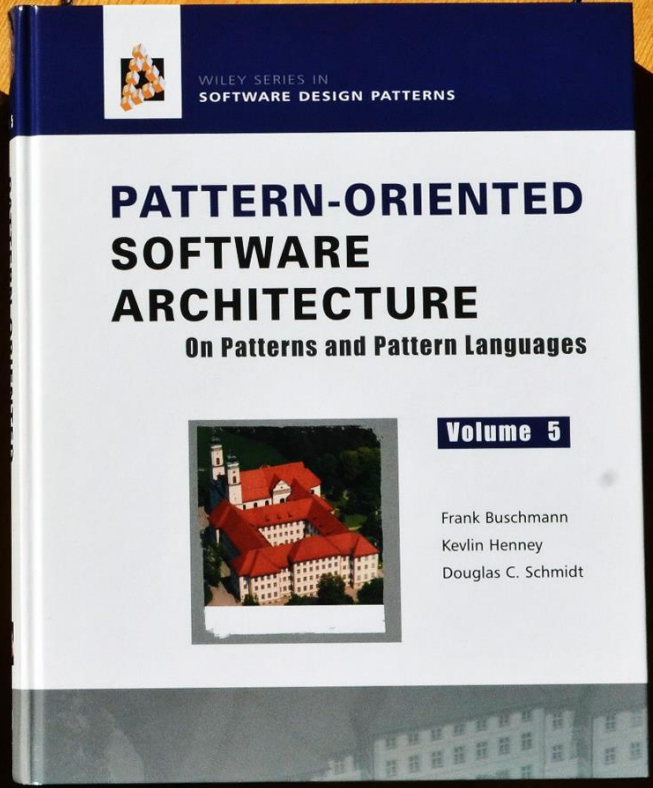
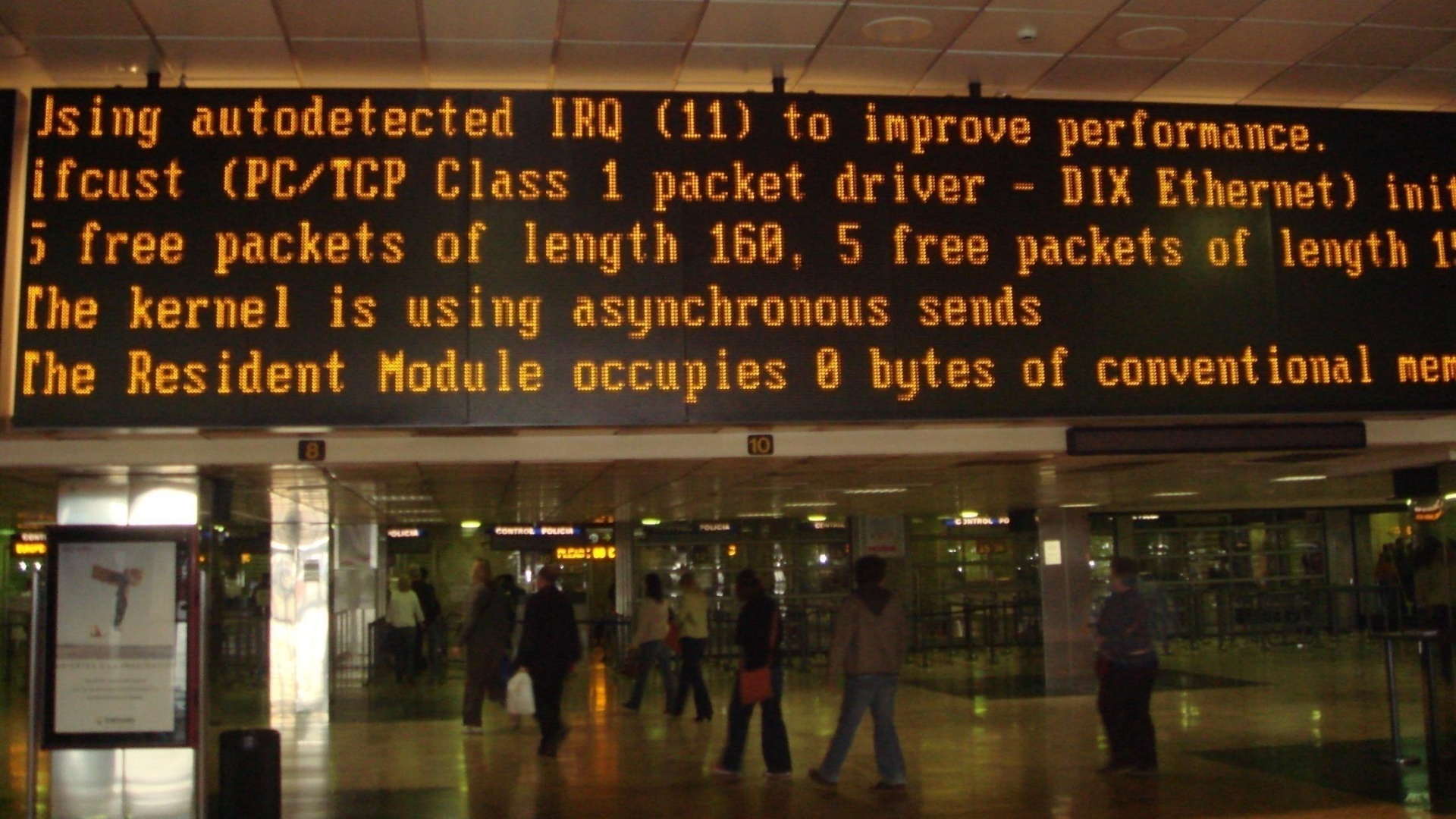
The Error of Our Ways
@KevlinHenney


WILEY SERIES IN
SOFTWARE DESIGN PATTERNS
PATTERN-ORIENTED SOFTWARE ARCHITECTURE
A Pattern Language for Distributed Computing
Volume 4
Frank Buschmann
Kevlin Henney
Douglas C. Schmidt


WILEY SERIES IN
SOFTWARE DESIGN PATTERNS
PATTERN-ORIENTED SOFTWARE ARCHITECTURE
On Patterns and Pattern Languages
Volume 5
Frank Buschmann
Kevlin Henney
Douglas C. Schmidt

Kevlin Henney 编
李军 译 吕骏 审校
電子工業出版社
O'REILLY
オライリー・ジャパン
97
Collective Wisdom
from the Experts
97 Things Every
Programmer
Should Know
O'REILLY
Edited by Kevlin Henney


Jsing autodetected IRQ (11) to improve performance.
ifcust (PC/TCP Class 1 packet driver - DIX Ethernet) init
5 free packets of length 160, 5 free packets of length 1
The kernel is using asynchronous sends
The Resident Module occupies 0 bytes of conventional mem

PCI device listing ...
Bus No. Device No. Func No. Vendor/Device Class Device Class
0 7 1 1106 0571 0101 IDE Cntrlr
Using
ifcust
5 free
The ke
The Re
EUROPEAN UNION ONLY

Our Reply

31 December 1969

Your feedback will be used to improve Facebook. Thanks for taking the time to make a report.

0000420002107603560O

EXPEDITED PARCEL
COLIS ACCÉLÉRÉS

2

CANADA POST / POSTES CANADA

From / Exp.:

$retAdd.getFirstName().toUpperCase()

$retAdd.getAddressLine1().toUpperCase()

$retAdd.getCity().toUpperCase() $retAdd.getState().toUpperCase() $retAdd.g

$retAdd.getDayPhone()

Payer / Facturé à:

7307904

Method of Payment /
Mode de paiement:

To / Dest.:

@tackline

Follow

Arriving in Bologna, I saw a @KevlinHenney screen. Whilst queueing to leave Ancona another appeared as I waited.

2:05 PM - 25 Jul 2016

3 2

https://twitter.com/tackline/status/757562488363843584

Gitte Klitgaard
@NativeWired

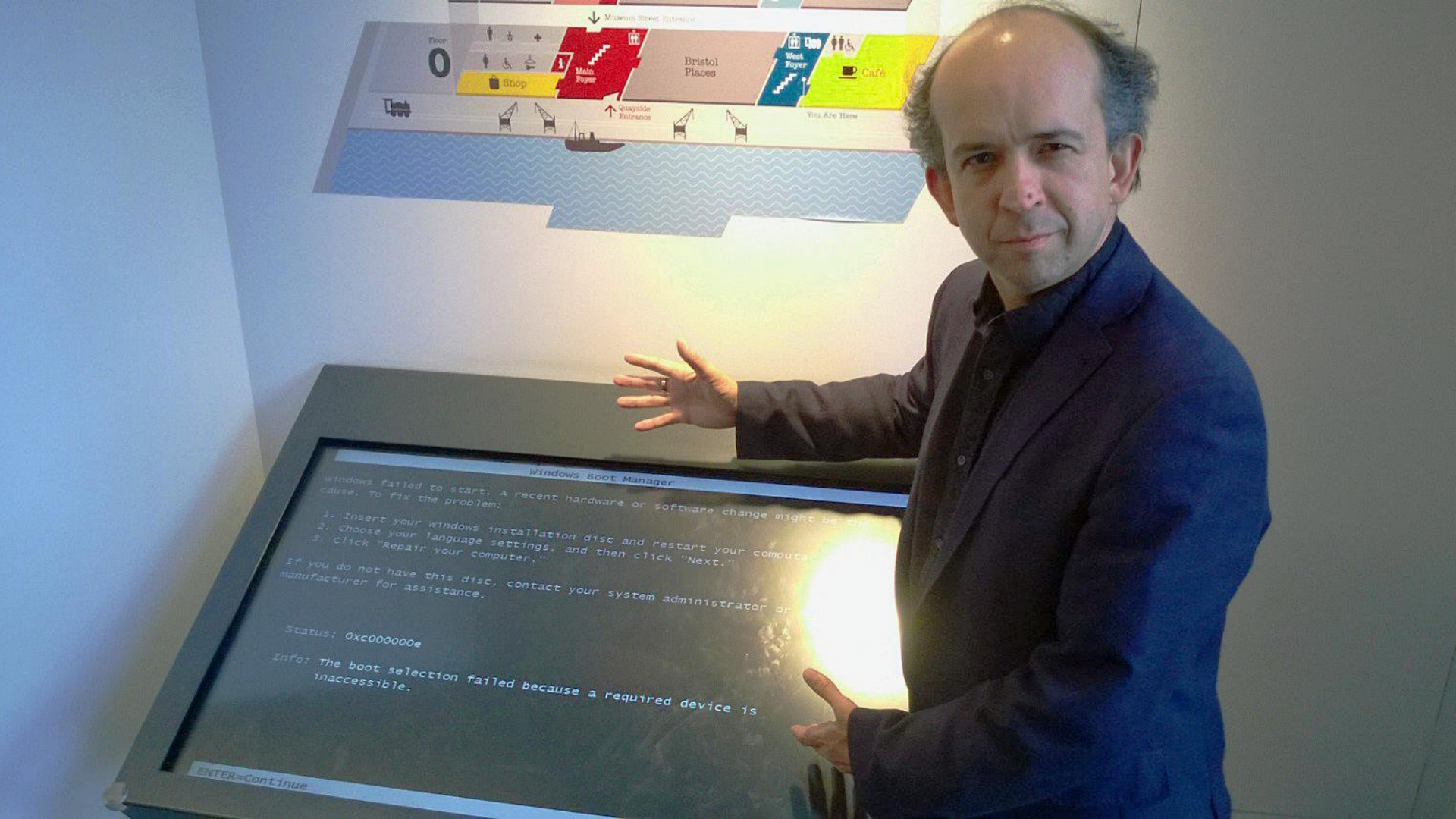
Follow

A @KevlinHenney at Copenhagen airport :)

2:11 PM - 7 Feb 2017

4 5

https://twitter.com/NativeWired/status/828939258475999232


Floor
0
Shop
1
Main Foyer
Bristol Places
West Foyer
Café
Quayside Entrance
You Are Here
Windows Boot Manager
Windows failed to start. A recent hardware or software change might be
cause. To fix the problem:
1. Insert your windows installation disc and restart your computa
2. Choose your language settings, and then click "Next."
3. Click "Repair your computer."
If you do not have this disc, contact your system administrator or
manufacturer for assistance.
Status: 0xc000000e
Info: The boot selection failed because a required device is
inaccessible.
ENTER=Continue

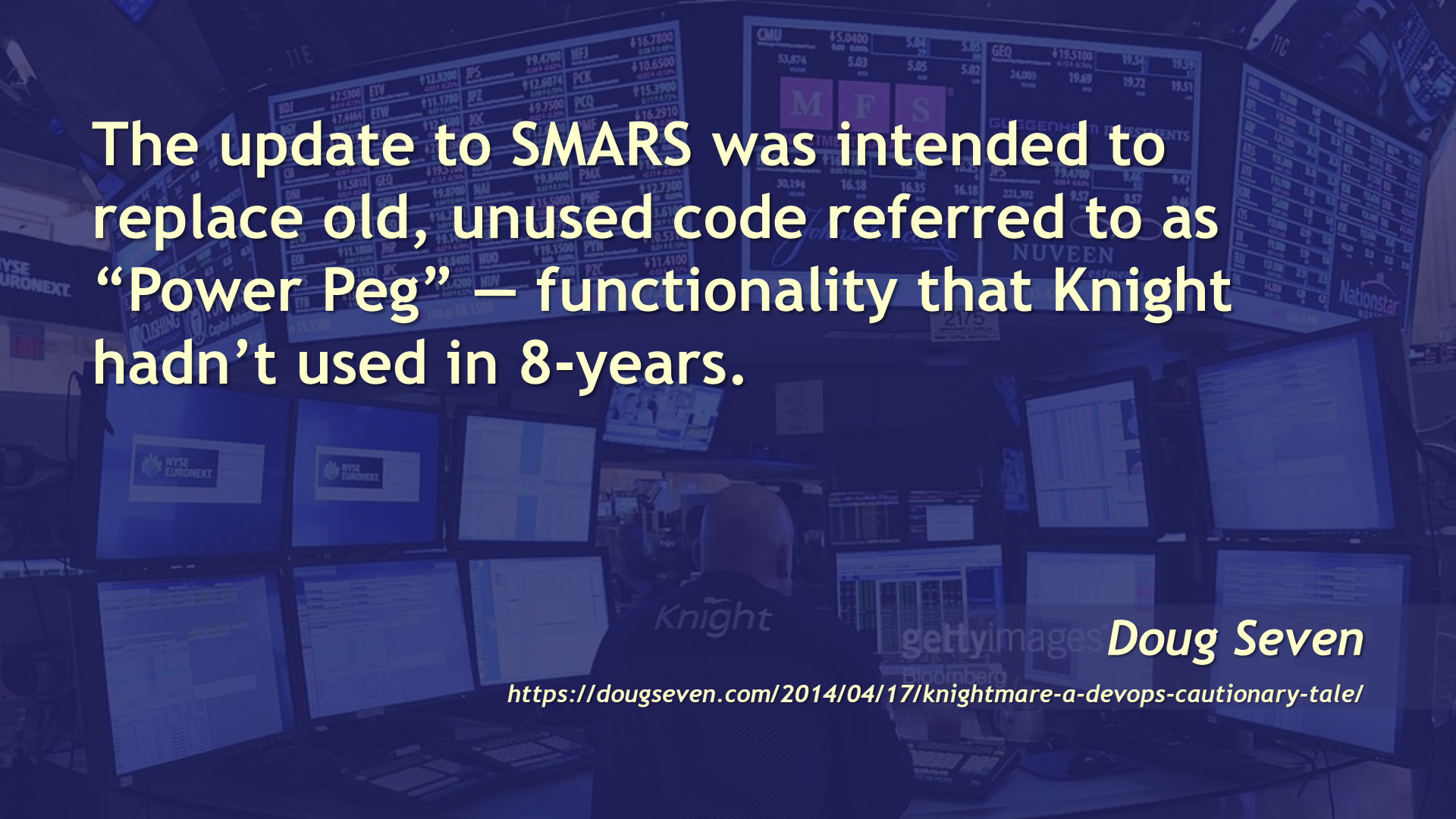
Payment method

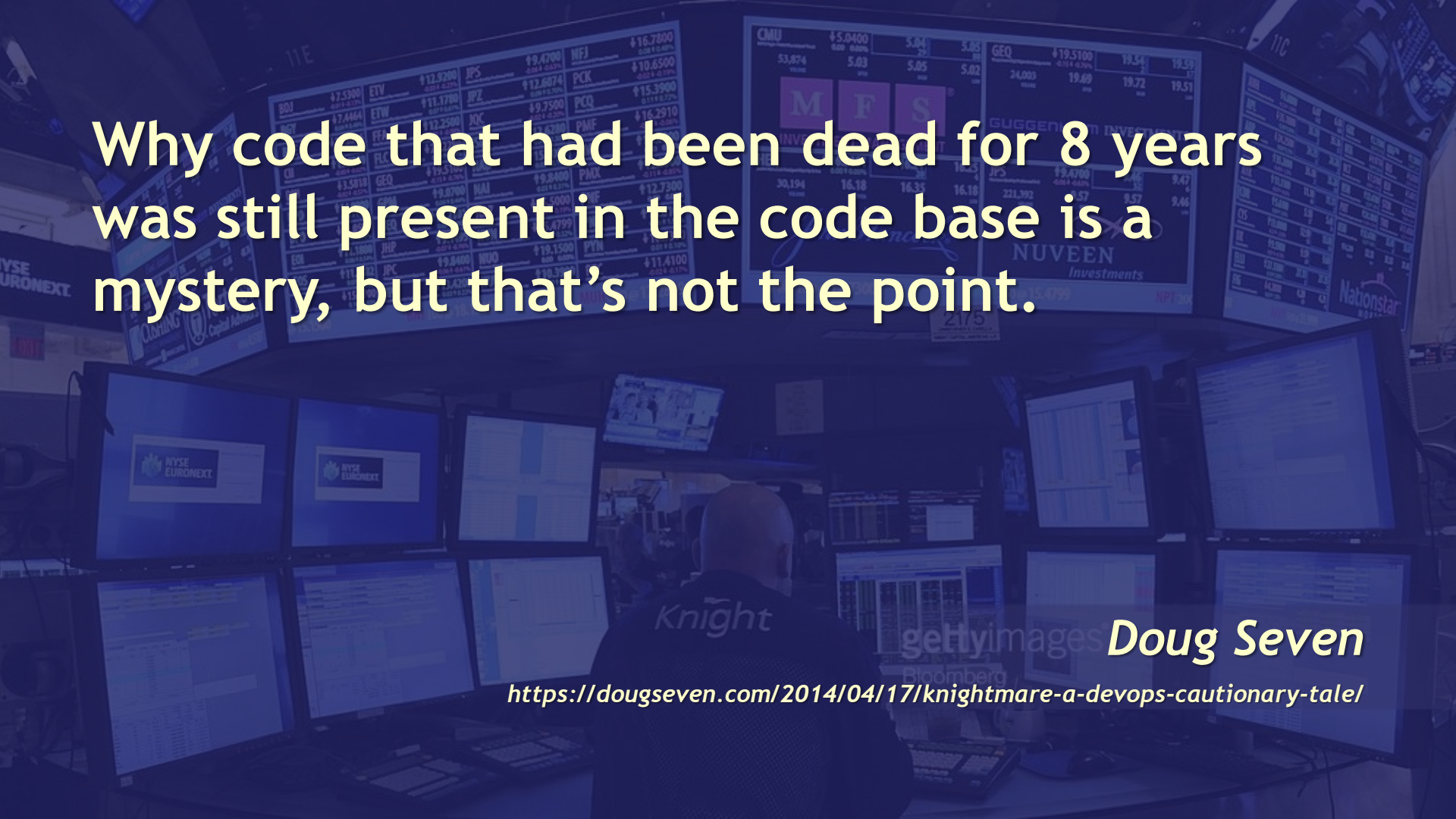
Cash | Card | PayPal

You cannot pay by PayPal for orders over £0.00. Please select another payment method.

MFS
INVESTMENT MANAGEMENT
GUGGENHEIM INVESTMENTS
John Hancock
NUVEEN
Investments
Tortoise
Capital Advisors
2175
NYSE EURONEXT
Knight
gettyimages
Bloomberg

Knight Capital Group realized a $460 million loss in 45 minutes.
Doug Seven
https://dougseven.com/2014/04/17/knightmare-a-devops-cautionary-tale/


The update to SMARS was intended to replace old, unused code referred to as “Power Peg” — functionality that Knight hadn’t used in 8-years.
Doug Seven
https://dougseven.com/2014/04/17/knightmare-a-devops-cautionary-tale/


Why code that had been dead for 8 years was still present in the code base is a mystery, but that’s not the point.
Doug Seven
https://dougseven.com/2014/04/17/knightmare-a-devops-cautionary-tale/

The code that that was updated repurposed an old flag that was used to activate the Power Peg functionality.
Doug Seven
https://dougseven.com/2014/04/17/knightmare-a-devops-cautionary-tale/

In the first 45 minutes the market was open the Power Peg code received and processed 212 parent orders. As a result SMARS sent millions of child orders into the market resulting in 4 million transactions against 154 stocks for more than 397 million shares.
Doug Seven
https://dougseven.com/2014/04/17/knightmare-a-devops-cautionary-tale/

Cité
de
l'espace
esa
esa
cnes
cnes

The failure resulted in a loss of more than US$370 million.

http://en.wikipedia.org/wiki/Cluster_(spacecraft)

```
                                                G_M_INFO_DERIVE(T_ALG.E_DON))
      if L_M_DON_32 > 32767 then
         P_M_DERIVE(T_ALG.E_DON) := 16#7FFF#;
      elsif L_M_DON_32 < -32768 then
         P_M_DERIVE(T_ALG.E_DON) := 16#8000#;
      else
         P_M_DERIVE(T_ALG.E_DON) := UC_16S_EN_16NS(
            TDB.T_ENTIER_16S(L_M_DON_32));
      end if;

      P_M_DERIVE(T_ALG.E_DOE) := UC_16S_EN_16NS (TDB.T_ENTIER_16S
                                                 ((1.0/C_M_LSB_DOE) *
                                                 G_M_INFO_DERIVE(T_ALG.E_DOE)

      L_M_BV_32 := TDB.T_ENTIER_32S ((1.0/C_M_LSB_BV) *
                                                G_M_INFO_DERIVE(T_ALG.E_BV));
      if L_M_BV_32 > 32767 then
         P_M_DERIVE(T_ALG.E_BV) := 16#7FFF#;
      elsif L_M_BV_32 < -32768 then
         P_M_DERIVE(T_ALG.E_BV) := 16#8000#;
      else
         P_M_DERIVE(T_ALG.E_BV) := UC_16S_EN_16NS(TDB.T_ENTIER_16S(L_M
      end if;

      P_M_DERIVE(T_ALG.E_BH) := UC_16S_EN_16NS (TDB.T_ENTIER_16S
                                                ((1.0/C_M_LSB_BH) *
                                                G_M_INFO_DERIVE(T_ALG.E_BH)))
   end LIRE_DERIVE;
--$finprocedure
```

Schiaparelli's Inertial Measurement Unit (IMU) went about its business of calculating the lander's rotation rate. For some reason, the IMU calculated a saturation-maximum period that persisted for one second longer than what would normally be expected at this stage.

When the IMU sent this bogus information to the craft's navigation system, it calculated a negative altitude.

http://gizmodo.com/a-crazy-miscalculation-doomed-the-sciaparelli-lander-1789319670

That fateful miscalculation set off a cascade of despair, triggering the premature release of the parachute and the backshell, a brief firing of the braking thrusters, and activation of the on-ground systems as if Schiaparelli had already reached the surface.

This all happened while the vehicle was still two miles (3.7 km) above ground.

http://gizmodo.com/a-crazy-miscalculation-doomed-the-sciaparelli-lander-1789319670

Simple Testing Can Prevent Most Critical Failures

An Analysis of Production Failures in Distributed Data-Intensive Systems

https://www.usenix.org/system/files/conference/osdi14/osdi14-paper-yuan.pdf

Almost all catastrophic failures are the result of incorrect handling of non-fatal errors explicitly signalled in software.

https://www.usenix.org/system/files/conference/osdi14/osdi14-paper-yuan.pdf

A majority of the production failures (77%) can be reproduced by a unit test.

https://www.usenix.org/system/files/conference/osdi14/osdi14-paper-yuan.pdf

Testing Is the Engineering Rigor of Software Development

Neal Ford

S-Programs

P-Programs

E-Programs

Meir M Lehman

"Programs, Life Cycles, and Laws of Software Evolution"

S-Programs

Programs whose function is formally defined by and derivable from a specification.

Meir M Lehman

"Programs, Life Cycles, and Laws of Software Evolution"

P-Programs

Despite the fact that the problem to be solved can be precisely defined, the acceptability of a solution is determined by the environment in which it is embedded.

Meir M Lehman

"Programs, Life Cycles, and Laws of Software Evolution"

E-Programs

Programs that mechanize a human or societal activity.

The program has become a part of the world it models, it is embedded in it.

Meir M Lehman

"Programs, Life Cycles, and Laws of Software Evolution"

101 Things I Learned
in Architecture School
Matthew Frederick

Always design a thing by considering it in its next larger context.

Eliel Saarinen

How one developer just broke Node, Babel and thousands of projects in 11 lines of JavaScript

Code pulled from NPM – which everyone was using

Careful, careful ... Don't fumble this like the JS world (Credit: Claus Rebler)

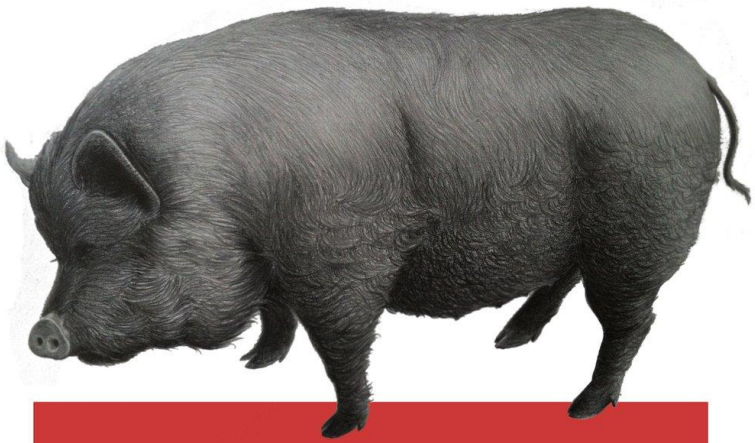
23 Mar 2016 at 01:24, Chris Williams 1322

Updated Programmers were left staring at broken builds and failed installations on Tuesday after someone toppled the Jenga tower of JavaScript.

A couple of hours ago, Azer Koçulu unpublished more than 250 of his modules from NPM, which is a popular package manager used by JavaScript projects to install dependencies.

http://www.theregister.co.uk/2016/03/23/npm_left_pad_chaos/

Code written by some stranger on the internet is always perfect



Taking on Needless Dependencies

Fragile Development Guide

O RLY?

@ThePracticalDev

```
function leftpad (str, len, ch) {
  str = String(str);

  var i = -1;

  if (!ch && ch !== 0) ch = ' ';

  len = len - str.length;

  while (++i < len) {
    str = ch + str;
  }

  return str;
}
```

http://www.theregister.co.uk/2016/03/23/npm_left_pad_chaos/

```
var cache = [
  '',
  ' ',
  '  ',
  '   ',
  '    ',
  '     ',
  '      ',
  '       ',
  '        ',
  '         '
];

function leftPad (str, len, ch) {
  // convert `str` to `string`
  str = str + '';
  // `len` is the `pad`'s length now
  len = len - str.length;
  // doesn't need to pad
  if (len <= 0) return str;
  // `ch` defaults to `' '`
  if (!ch && ch !== 0) ch = ' ';
  // convert `ch` to `string`
  ch = ch + '';
  // cache common use cases
  if (ch === ' ' && len < 10) return cache[len] + str;
  // `pad` starts with an empty string
  var pad = '';
  // loop
  while (true) {
    // add `ch` to `pad` if `len` is odd
    if (len & 1) pad += ch;
    // divide `len` by 2, ditch the remainder
    len >>= 1;
    // "double" the `ch` so this operation count grows logarithmically on `len`
    // each time `ch` is "doubled", the `len` would need to be "doubled" too
    // similar to finding a value in binary search tree, hence O(log(n))
    if (len) ch += ch;
    // `len` is 0, exit the loop
    else break;
  }
  // pad `str`!
  return pad + str;
}
```

https://github.com/stevemao/left-pad/blob/master/index.js

```
function leftpad(content, length, pad) {
  content = String(content)
  pad = String(pad || pad === 0 ? pad : ' ')[0]
  var left = Math.max(length - content.length, 0)
  return pad.repeat(left) + content
}
```

```
test({
    "Padding an empty string to a length of 0 results in an empty string":
        () => assert(leftpad("", 0, "X") === ""),
    "Padding a non-empty string to a shorter length results in the same string":
        () => assert(leftpad("foobar", 3, "X") === "foobar"),
    "Padding a non-empty string to a negative length results in the same string":
        () => assert(leftpad("foobar", -3, "X") === "foobar"),
    "Padding a non-empty string to its length results in the same string":
        () => assert(leftpad("foobar", 6, "X") === "foobar"),
    "Padding to a longer length with a single character fills to the left":
        () => assert(leftpad("foobar", 8, "X") === "XXfoobar"),
    "Padding to a longer length with surplus characters fills using only first":
        () => assert(leftpad("foobar", 10, "XY") === "XXXXfoobar"),
    "Padding to a longer length with an empty string fills with space":
        () => assert(leftpad("foobar", 8, "") === "  foobar"),
    "Padding to a longer length with no specified fill fills with space":
        () => assert(leftpad("foobar", 9) === "   foobar"),
    "Padding to a longer length with integer 0 fills with 0":
        () => assert(leftpad("foobar", 7, 0) === "0foobar"),
    "Padding to a longer length with single-digit integer fills with digit":
        () => assert(leftpad("foobar", 10, 1) === "1111foobar"),
    "Padding to a longer length with multiple-digit integer fills with first digit":
        () => assert(leftpad("foobar", 10, 42) === "4444foobar"),
    "Padding to a longer length with negative integer fills with -":
        () => assert(leftpad("foobar", 8, -42) === "--foobar"),
    "Padding a non-string uses string representation":
        () => assert(leftpad(4.2, 5, 0) === "004.2")
})
```

```
function assert(condition) {
    if(!condition)
        throw { name: "AssertionError", message: "assertion failed" }
}
function testPasses(toTry) {
    try {
        toTry()
        return true
    } catch (failure) {
        return false
    }
}
function report(testName, passed) {
    document.write(testName.fontcolor(passed ? "green" : "red") + "<br>")
}
function test(testCases) {
    for (var testName in testCases)
        if (testCases.hasOwnProperty(testName))
            report(testName, testPasses(testCases[testName]))
}
```

Padding an empty string to a length of 0 results in an empty string

Padding a non-empty string to a shorter length results in the same string

Padding a non-empty string to a negative length results in the same string

Padding a non-empty string to its length results in the same string

Padding to a longer length with a single character fills to the left

Padding to a longer length with surplus characters fills using only first

Padding to a longer length with an empty string fills with space

Padding to a longer length with no specified fill fills with space

Padding to a longer length with integer 0 fills with 0

Padding to a longer length with single-digit integer fills with digit

Padding to a longer length with multiple-digit integer fills with first digit

Padding to a longer length with negative integer fills with -

Padding a non-string uses string representation

Padding an empty string to a length of 0 results in an empty string

Padding a non-empty string to a shorter length results in the same string

Padding a non-empty string to a negative length results in the same string

Padding a non-empty string to its length results in the same string

Padding to a longer length with a single character fills to the left

Padding to a longer length with surplus characters fills using only first

Padding to a longer length with an empty string fills with space

Padding to a longer length with no specified fill fills with space

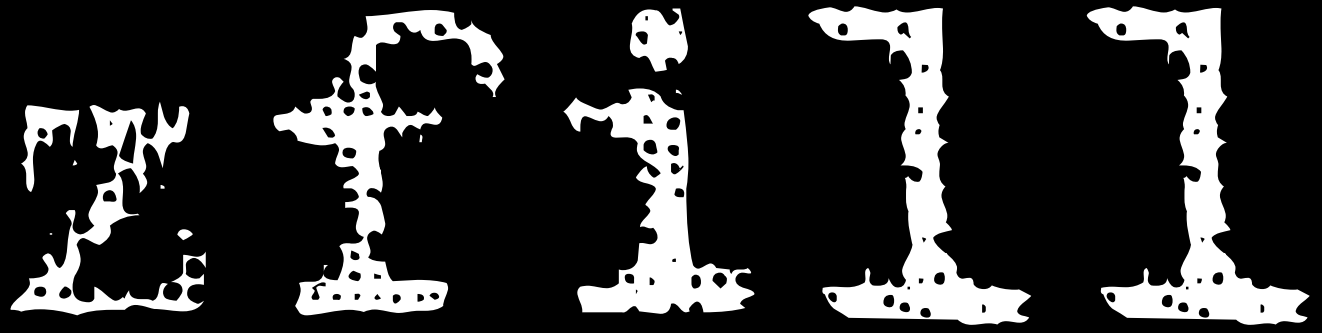
Padding to a longer length with integer 0 fills with 0

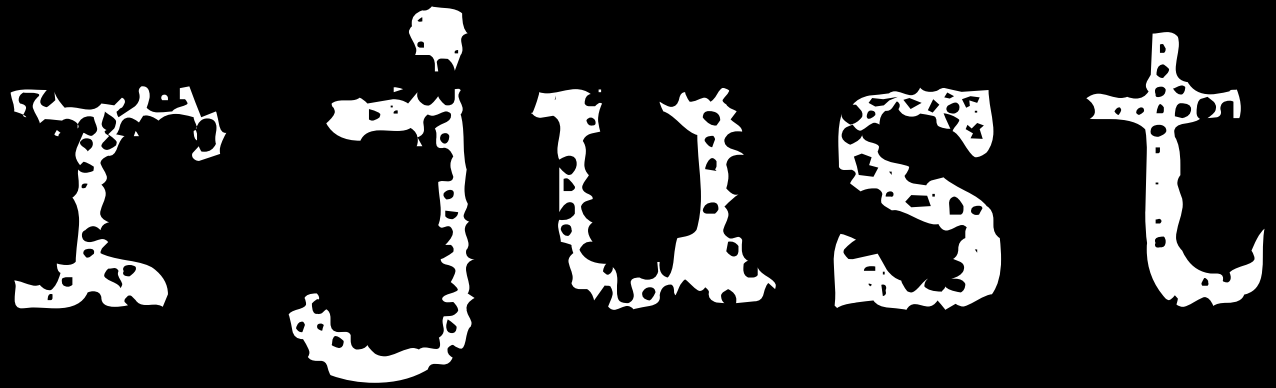
Padding to a longer length with single-digit integer fills with digit

Padding to a longer length with multiple-digit integer fills with first digit

Padding to a longer length with negative integer fills with -

Padding a non-string uses string representation


still


Trust

I have yet to see any problem, however complicated, which, when you looked at it in the right way, did not become still more complicated.

Anderson's Law

I would therefore like to posit that computing's central challenge, "How not to make a mess of it", has not been met.

Edsger W Dijkstra

Most of our systems are much more complicated than can be considered healthy, and are too messy and chaotic to be used in comfort and confidence.

Edsger W Dijkstra

Software faults raise questions about the validity of brain studies

http://arstechnica.com/science/2016/07/algorithms-used-to-study-brain-activity-may-be-exaggerating-results/

Cluster identification algorithms frequently assign activity to a region when none is likely to be present.

How frequently? Up to 70 percent of the time, depending on the algorithm and parameters used.

http://arstechnica.com/science/2016/07/algorithms-used-to-study-brain-activity-may-be-exaggerating-results/

A bug that has been sitting in the code for 15 years showed up during this testing.

The fix for the bug reduced false positives by more than 10 percent.

http://arstechnica.com/science/2016/07/algorithms-used-to-study-brain-activity-may-be-exaggerating-results/

On two occasions I have been asked, —
"Pray, Mr. Babbage, if you put into the machine wrong figures, will the right answers come out?"

I am not able rightly to apprehend the kind of confusion of ideas that could provoke such a question.

Charles Babbage

People tend to forget that even the most elegantly crafted spreadsheet is a house of cards, ready to collapse at the first erroneous assumption.

Steven Levy

A Spreadsheet Way of Knowledge

https://backchannel.com/a-spreadsheet-way-of-knowledge-8de60af7146e

In August 1984, the Wall Street Journal reported that a Texas-based oil and gas company had fired several executives after the firm lost millions of dollars in an acquisition deal because of "errors traced to a faulty financial analysis spread sheet model."

Steven Levy

A Spreadsheet Way of Knowledge

https://backchannel.com/a-spreadsheet-way-of-knowledge-8de60af7146e

Gene name errors are widespread in the scientific literature

http://genomebiology.biomedcentral.com/articles/10.1186/s13059-016-1044-7

The spreadsheet software Microsoft Excel, when used with default settings, is known to convert gene names to dates and floating-point numbers.

http://genomebiology.biomedcentral.com/articles/10.1186/s13059-016-1044-7

A programmatic scan of leading genomics journals reveals that approximately one-fifth of papers with supplementary Excel gene lists contain erroneous gene name conversions.

http://genomebiology.biomedcentral.com/articles/10.1186/s13059-016-1044-7

Essex and McKitrick present an example that purports to show that whether you use the arithmetic or some other mean can affect whether or not you find a [global] warming trend.

Tim Lambert

http://scienceblogs.com/deltoid/2004/05/20/mckitrick3/

$$x_{\mathrm{rms}} = \sqrt{\frac{1}{n}\left(x_1^2 + x_2^2 + \cdots + x_n^2\right)}$$

```
26)^2+(273.15+G26)^2+(273.15+F26)^2+(273.15+E26)^2+(273.15+D26)^2+(273.15+C26)^2+(273.15+B26)^2))^0.5-273.15

=(0.1*((273.15+K27)^2+(273.15+J27)^2+(273.15+I27)^2+(273.15+H27)^2+(273.15+G27)^2+(273.15+F27)^2+(273.15+E27)^2+(273.15+D27)^2+(273.15+C27)^2+(273.15+B27)^2))^0.5-273.15

=(0.1*((273.15+K28)^2+(273.15+J28)^2+(273.15+I28)^2+(273.15+H28)^2+(273.15+G28)^2+(273.15+F28)^2+(273.15+E28)^2+(273.15+D28)^2+(273.15+C28)^2+(273.15+B28)^2))^0.5-273.15

=(0.1*((273.15+K29)^2+(273.15+J29)^2+(273.15+I29)^2+(273.15+H29)^2+(273.15+G29)^2+(273.15+F29)^2+(273.15+E29)^2+(273.15+D29)^2+(273.15+C29)^2+(273.15+B29)^2))^0.5-273.15

=(0.1*((273.15+K30)^2+(273.15+J30)^2+(273.15+I30)^2+(273.15+H30)^2+(273.15+G30)^2+(273.15+F30)^2+(273.15+E30)^2+(273.15+D30)^2+(273.15+C30)^2+(273.15+B30)^2))^0.5-273.15

=(0.1*((273.15+K31)^2+(273.15+J31)^2+(273.15+I31)^2+(273.15+H31)^2+(273.15+G31)^2+(273.15+F31)^2+(273.15+E31)^2+(273.15+D31)^2+(273.15+C31)^2+(273.15+B31)^2))^0.5-273.15
```

```
Public Function RMS(values As range)
    Dim square, total, count
    total = 0
    count = 0
    For Each cell In values.Cells
        square = (cell.Value + 273.15) ^ 2
        total = total + square
        count = count + 1
    Next
    RMS = (total / count) ^ 0.5 - 273.15
End Function
```

When they calculated the trend they found an overall cooling trend of 0.17 degree Celsius per decade.

Tim Lambert

http://scienceblogs.com/deltoid/2004/05/20/mckitrick3/

I looked at their graphs and something seemed wrong to me.

Some stations had missing values.

Tim Lambert

http://scienceblogs.com/deltoid/2004/05/20/mckitrick3/

```
=AVERAGE(B28:K28)
```

When calculating the root mean square they treated the missing values as if they were measurements of 0 degrees.

Tim Lambert

http://scienceblogs.com/deltoid/2004/05/20/mckitrick3/

```
Public Function RMS(values As range)
    Dim square, total, count
    total = 0
    count = 0
    For Each cell In values.Cells
        square = (cell.Value + 273.15) ^ 2
        total = total + square
        count = count + 1
    Next
    RMS = (total / count) ^ 0.5 - 273.15
End Function
```

```
Public Function RMS(values As range)
    Dim square, total, count
    total = 0
    count = 0
    For Each cell In values.Cells
        If Not IsEmpty(cell) Then
            square = (cell.Value + 273.15) ^ 2
            total = total + square
            count = count + 1
        End If
    Next
    RMS = (total / count) ^ 0.5 - 273.15
End Function
```

Harvard University economists Carmen Reinhart and Kenneth Rogoff have acknowledged making a spreadsheet calculation mistake in a 2010 research paper, "Growth in a Time of Debt", which has been widely cited to justify budget-cutting.

http://www.bloomberg.com/news/articles/2013-04-18/faq-reinhart-rogoff-and-the-excel-error-that-changed-history

The correction is substantial: the paper said that countries with 90% debt ratios see their economies shrink by 0.1%. Instead, it should have found that they grow by 2.2%.

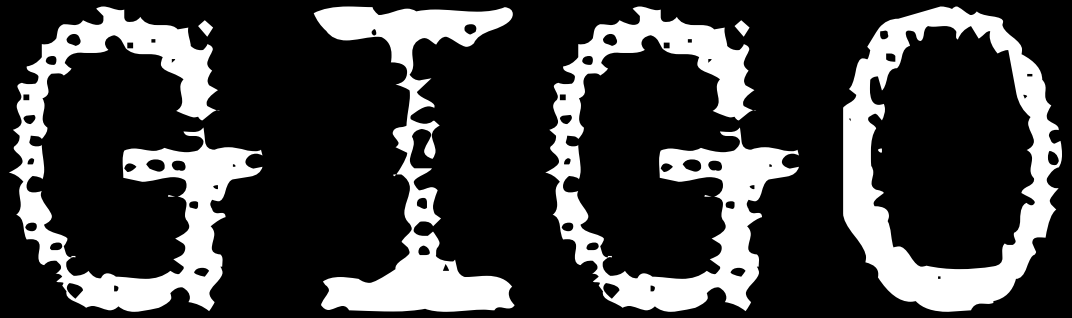
https://www.theguardian.com/politics/2013/apr/18/uncovered-error-george-osborne-austerity

With spreadsheets, the danger is not so much that incorrect figures can be fed into them as that "garbage" can be embedded in the models themselves.

Steven Levy

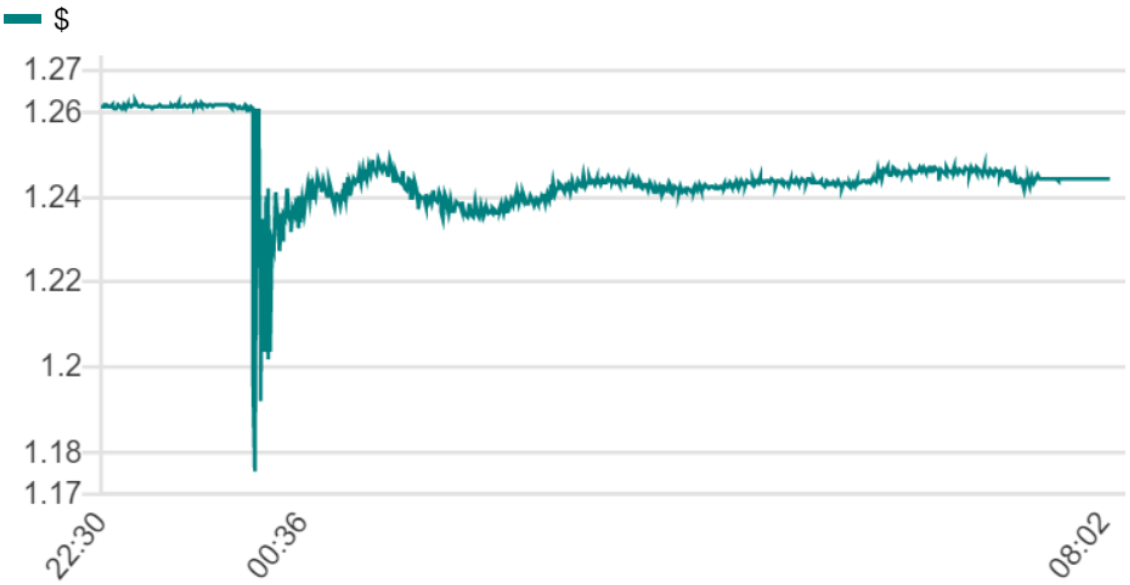
A Spreadsheet Way of Knowledge

https://backchannel.com/a-spreadsheet-way-of-knowledge-8de60af7146e


GIGO

Sterling flash crash

£/$, 6-7 October



Source: Bloomberg

BBC

The pound has dived on Asian markets with automated trading being blamed for the volatility.

http://www.bbc.co.uk/news/business-37582150

Digital devices tune out small errors while creating opportunities for large errors.

Earl Wiener

Michael Hendrix @michael_hendrix · 7m

My Uber driver describing how drivers coordinate to engineer surge prices...

Michael Hendrix @michael_hendrix · 5m

Say, a big event finishes. Drivers know this. So, they shut off apps in unison.

Michael Hendrix @michael_hendrix · 5m

Algorithm responds w/ surge pricing b/c of artificial fall in supply. Then drivers turn on the app and snap up rides at the higher fare.

Move fast and break things

Facebook is harming our democracy

http://www.vox.com/new-money/2016/11/6/13509854/facebook-politics-news-bad

NOT #INFOR THIS?
REGISTER TO VOTE ON THE
.ENDUM NOW!
WWW.
WEAREEUROPE.
ORG.UK

Casey Newton
@CaseyNewton

Facebook is now in the awkward position of having to explain why they think they drive purchase decisions but not voting decisions

2:55 AM - 11 Nov 2016 · Bernal Heights, San Francisco

6,917 9,955

https://twitter.com/CaseyNewton/status/796909159174127616

We show, via a massive (N = 689,003) experiment on Facebook, that emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness.

http://www.pnas.org/content/111/24/8788.full

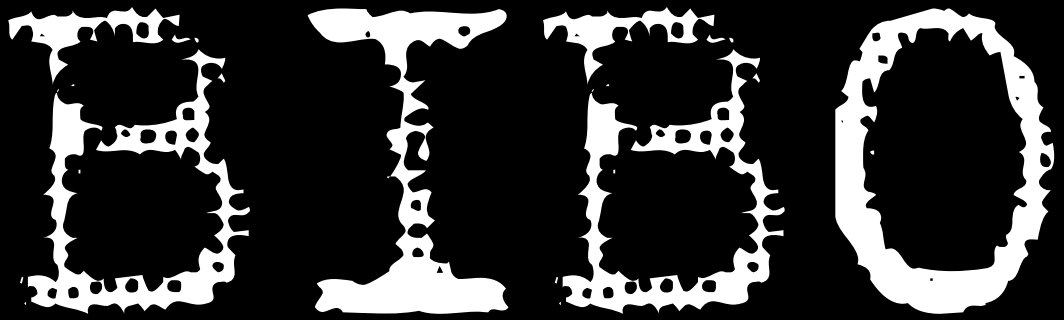
A/B testing

Tom Steinberg

24 June ·

I am actively searching through Facebook for people celebrating the Brexit leave victory, but the filter bubble is SO strong, and extends SO far into things like Facebook's custom search that I can't find anyone who is happy *despite the fact that over half the country is clearly jubilant today* and despite the fact that I'm *actively* looking to hear what they are saying.

https://www.facebook.com/tom.steinberg.503/posts/10157028566365237


BIBO

Algorithms such as the one that powers Facebook's news feed are designed to give us more of what they think we want.

https://www.theguardian.com/media/2016/jul/12/how-technology-disrupted-the-truth

The digital advertising model doesn't currently discriminate between true or not true, just big or small.

https://www.theguardian.com/media/2016/jul/12/how-technology-disrupted-the-truth

Facebook makes billions of editorial decisions every day.

The fact that these decisions are being made by algorithms rather than human editors doesn't make Facebook any less responsible for the harmful effect on its users and the broader society.

http://www.vox.com/new-money/2016/11/6/13509854/facebook-politics-news-bad

Adam Jacot de Boinod
I NEVER KNEW THERE WAS A WORD FOR IT
'Very funny'
STEPHEN FRY
A Romp through Some of the Most
WORDSWORTH REFERENCE
The Wordsworth Book of Intriguing Words
The insomniac's dictionary of the outrageous, odd and unusual
Paul Hellweg
REFERENCE
CONCISE OXFORD DICTIONARY OF
English
mology
T. F. HOAD
word origins
the language report
Joie de vivre n.
COMPILED BY
A COMPREHENSIVE WORD-FINDING DICTIONARY
Chambers
BILL
BRYSON
TROUBLESOME WORDS
'Combines the virtues of a first-class work of reference with the pleasure of a good read' The Times
FULLY REVISED AND UPDATED
Oxford
Samuel Johnson's
LOCK
COLLINS
REFERENCE DICTIONARY
MATHEMATICS
E.J. BOROWSKI AND J.M. BORWEIN
JEFFREY KACIRK
AUTHOR OF Forgotten English
WORDS
BOTHER ME
/ WordFriday

mechanocracy, *noun*

- Government or control of society by machines, or a state or other association of people run in such a way.
- The idea of machine rule brings to mind robots, but the term refers more broadly to the wide-scale automation of governance and social management through software.

https://www.facebook.com/WordFriday/posts/1048841271870496

mechanocracy, *noun*

- The scheduling, allocation and management of work in this way already exists, e.g., Amazon's Mechanical Turk and Uber, as does the evaluation and judgement of status and access, e.g., credit-rating systems, and the shaping of our online experience and consequent choices and echo chambers via various algorithms and deep learning systems, e.g., Facebook and Google.

https://www.facebook.com/WordFriday/posts/1048841271870496

mechanocracy, *noun*

- A positive view of mechanocracy is that it has the potential to be free of human bias and interests, optimised for the betterment of humanity. There is evidence, however, that the emerging mechanocracy may not be so benign, falling far short of a utilitarian ideal, open to the distortion of public discourse and democracy.

https://www.facebook.com/WordFriday/posts/1048841271870496

As mankind relies more and more on the software that controls the computers that in turn guide society, it becomes crucial that people control absolutely the programs and the processes by which they are produced, throughout the useful life of the program.

Meir M Lehman

"Programs, Life Cycles, and Laws of Software Evolution"

We shape our algorithms and afterwards our algorithms shape us.
https://twitter.com/KevlinHenney/status/778141768734822400