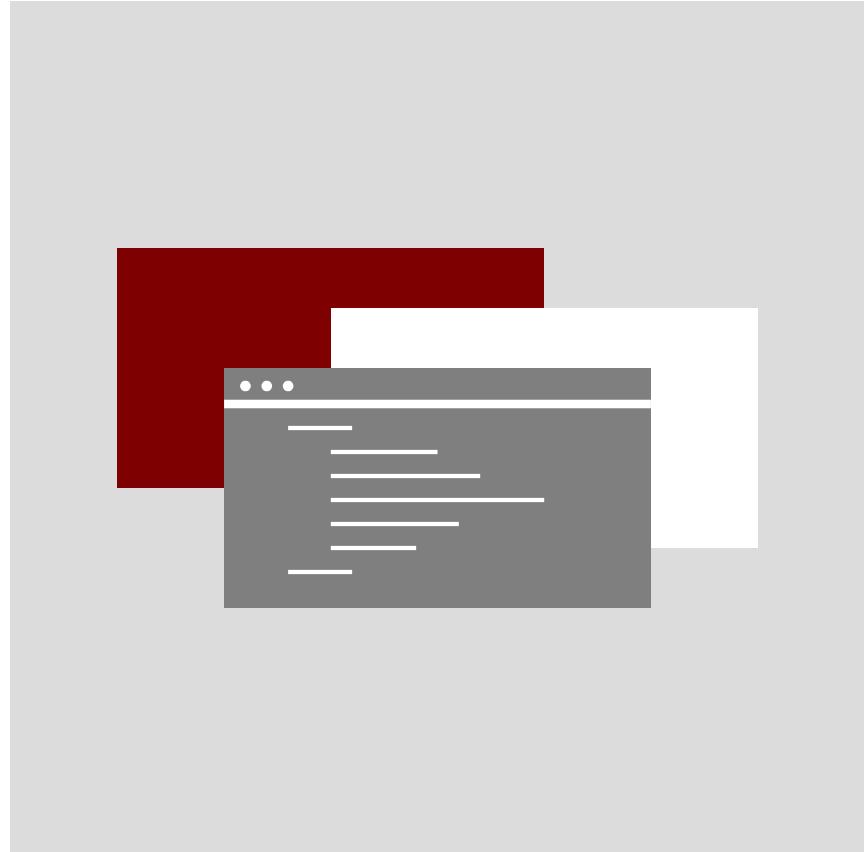


decksh

a little language for decks



Anthony Starks
@ajstarks

A language is any mechanism to express intent, and the input to many programs can be viewed profitably as statements in a language. This column is about those “little languages.”

Jon Bentley, Little Languages, Communications of the ACM, August 1986

Deck



a Go package for presentations

Percent Grid

decksh → deck markup

SVG
PDF
PNG

```
deck
  slide "rgb(250,250,250)" "black"
    ctext "Deck elements" 50 90 5
    image "follow.jpg" 70 50 640 480 50
    blist 10 75 3
      li "text, image, list"
      li "rect, ellipse, polygon"
      li "line, arc, curve"
    elist

    gy10
    rect 15 gy 8 6           "rgb(127,0,0)"
    ellipse 27.5 gy 8 6      "rgb(0,127,0)"
    line 50 gy 60 gy
    curve 80 gy 95 30 90 gy
    arc 70 gy 10 8 0 180 0.1 "rgb(0,0,127)"
    polygon "37 37 45" "13 7 10" "rgb(0,0,127)"

    opts="-fulldeck=f -textsize 1 - xlabel=2 -barwidth 1.5"
    dchart -left 10 -right 42 -top 42 -bottom 25 opts AAPL.d
  eslide
edeck
```

```
<deck>
<sslide bg="rgb(250,250,250)" fg="black">
<text align="c" xp="50" yp="90" sp="5">Deck elements</text>
<image name="follow.jpg" xp="70" yp="50" width="640" height="480" scale="50" />
<list type="bullet" xp="10" yp="75" sp="3">
<li>text, image, list</li>
<li>rect, ellipse, polygon</li>
<li>line, arc, curve</li>
</list>
<rect xp="15" yp="10" wp="8" hp="6" color="rgb(127,0,0)" />
<ellipse xp="27.5" yp="10" wp="8" hp="6" color="rgb(0,127,0)" />
<line xp1="50" yp1="10" xp2="60" yp2="10" />
<curve xp1="80" yp1="10" xp2="95" yp2="30" xp3="90" yp3="10" />
<arc xp="70" yp="10" wp="10" hp="8" a1="0" a2="180" sp="0.1" color="rgb(0,0,127)" />
<polygon xc="37 37 45" yc="13 7 10" color="rgb(0,0,127)" />
<text xp="26.00" yp="45.60" sp="1.50" align="center" wp="0.00" font="sans" opacity="100.00" color="black" type="">>AAPL Volume</text>
<line xp1="10.00" yp1="25.00" xp2="10.00" yp2="37.46" sp="1.50" opacity="100.00" color="lightsteelblue" />
<text xp="10.00" yp="38.46" sp="0.75" align="center" wp="0.00" font="sans" opacity="100.00" color="rgb(127,0,0)" type="">>679.9</text>
<text xp="10.00" yp="23.00" sp="0.80" align="center" wp="0.00" font="sans" opacity="100.00" color="rgb(75,75,75)" type="">>2017-09-01</text>
<line xp1="12.91" yp1="25.00" xp2="12.91" yp2="34.24" sp="1.50" opacity="100.00" color="lightsteelblue" />
<text xp="12.91" yp="35.24" sp="0.75" align="center" wp="0.00" font="sans" opacity="100.00" color="rgb(127,0,0)" type="">>504.3</text>
...
</slide>
</deck>
```

Deck elements

- text,image,list
- rect,ellipse,polygon
- line,arc,curve

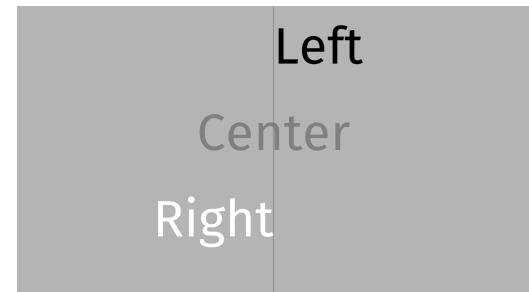
A screenshot of a presentation slide titled "Deck elements". The slide contains a list of three types of deck elements: text, image, list; rect, ellipse, polygon; and line, arc, curve. Below the list are icons representing each element type: a red square for rect, a green oval for ellipse, a blue triangle for triangle, a black line for line, a blue arc for arc, and a blue curve for curve. To the right of the icons is a small image of a bicycle leaning against a wall with the words "FOLLOW YOUR DREAMS" written on it.

```
// hello world
deck
    slide "black" "white"
        ctext "hello, world" 50 25 10
        circle 50 0 100 "blue"
    eslide
edeck
```

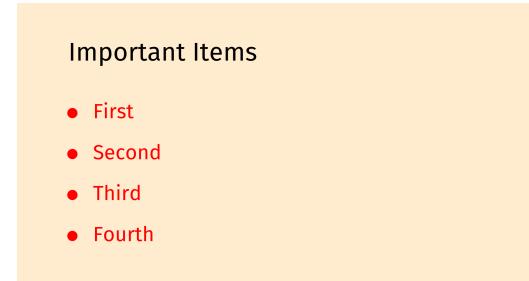
hello, world

deck

```
// text alignment
slide "rgb(180,180,180)"
    text "Left" 50 80 10 "sans" "black"
    ctext "Center" 50 50 10 "sans" "gray"
    etext "Right" 50 20 10 "sans" "white"
    vline 50 0 100 0.2 "black" 20
eslide
```



```
// list
slide "blanchedalmond" "black"
    text "Important Items" 10 80 5
    blist 10 60 4 "sans" "red"
        li "First"
        li "Second"
        li "Third"
        li "Fourth"
    elist
eslide
```



```
// picture with text annotation
slide
    quote="Tony Stark was able to build this in a cave. With a box of scraps!"
    image "cave.jpg" 50 50 1920 1080 100 "https://youtu.be/MtnTtvuv8Aw"
    rect 70 60 40 40 "black" 40
    textblock quote 45 70 45 5 "sans" "white"
eslide
```



edeck

Running decksh

`decksh`

read from `stdin`, write to `stdout`

`decksh in.dsh`

read from file, write to `stdout`

`decksh -o out.xml`

read from `stdin`, write to file

`decksh -o out.xml in.dsh`

read from file, write to file

`chmod +x in.dsh; ./in.dsh`

executable deck with `#!/path/to/decksh`

The image shows a desktop interface with three main windows:

- Code Editor (Top Left):** A window titled "hw.dsh" showing DeckSh code. The code defines a slide with a black background, white text, and a blue circle. It also includes a slide section and an end-deck section.
- Terminal (Bottom Left):** A terminal window with the following history:

```
$ decksh hw.dsh|pdf
$ open f.pdf
$
```
- PDF Viewer (Top Right):** A window titled "f.pdf (1 page)" displaying a single slide. The slide has a black background and features a large, semi-transparent blue circle. Inside the circle, the text "hello, world" is written in a large, white, sans-serif font.

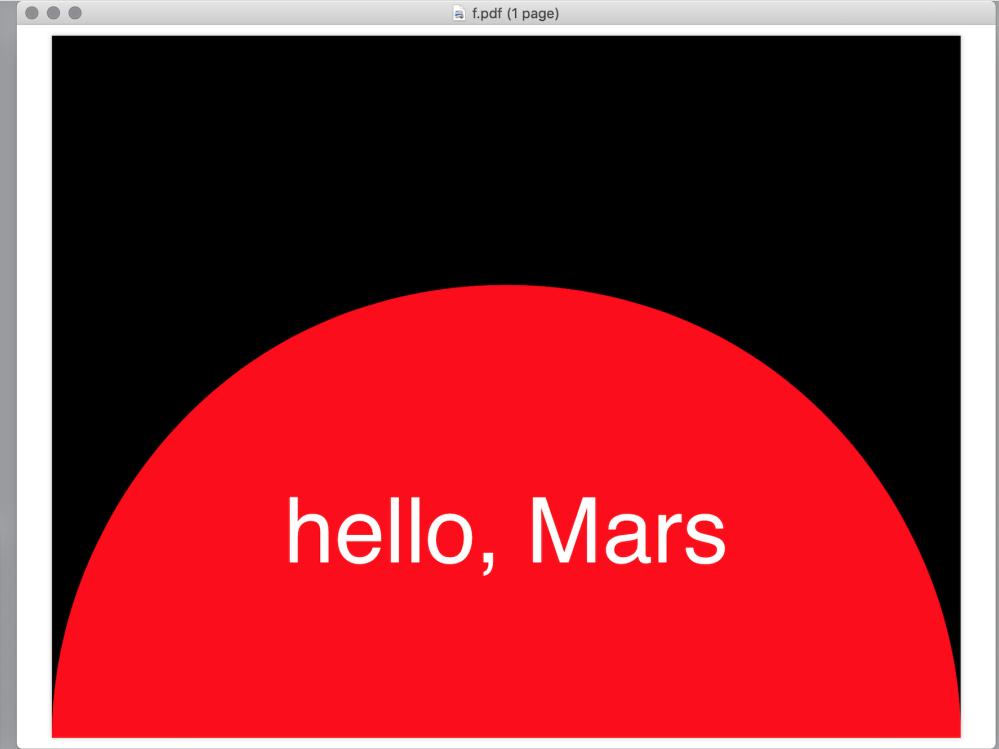
```
hw.dsh
```

Free Mode

```
// hello world
deck
    slide "black" "white"
        ctext "hello, Mars" 50 25 10
        circle 50 0 100 "red"
    eslide
edeck
```

```
L: 8 C: 1      decksh  Unicode (UTF-8)  Unix (LF)  Saved: 2/8/19, 8:36:24 PM  112 / 19 / 8  177%
code — bash — 72x5
```

```
$ decksh hw.dsh|pdf
$ open f.pdf
$ decksh hw.dsh|pdf
$
```



Keywords and arguments

text "string....." x y n [font][color][op]

text "hello, world" 80 50 2 hello, world

text "hello, world" 80 40 2 "serif" hello, world

text "hello, world" 80 30 2 "serif" "red" hello, world

text "hello, world" 80 20 2 "serif" "red" 50 hello, world

Keywords

Structure

deck
edeck
slide
eslide
canvas
text
ctext
etext
textblock
textfield
textcode

Text

Lists

list
blist
nlist
li
elist

Graphics and Arrows

rect
square
ellipse
circle
polygon
arc
curve
line
hline
vline
arrow
crarrow
clarrow
cuarrow
cdarrow

Images

image
cimage

Charts

dchart
legend

Loop

for
efor

Data

data
edata

Variables and Assignments

```
x=10                                // number assignment  
y=20  
factor=2  
what="hello world"                   // string assignment  
  
size=x/factor                        // assignment with binop  
text what x y size                  // text "hello world" 10 20 5  
  
y-=10                                // assignment operation  
size+=factor                         // assignment op, substitute  
text what x y size                  // text "hello world" 10 10 7  
  
for v=0 100 5                         // loop from 0 to 100 by 5  
    line 100 v 0 v 0.1 "blue"        // blue horizontal lines  
    line v 100 v 0 0.1 "red"        // red vertical lines  
efor
```

Text

hello world

text

x y size [font] [color] [op] [link]

The quick brown fox
jump over the lazy
dog

textblock

"text" x y width size [font] [color] [op] [link]

hello world

ctext

x y size [font] [color] [op] [link]

This is the contents
of a file

textfield

"file" x y size [font] [color] [op] [sp]

hello world.

etext

x y size [font] [color] [op] [link]

```
package main  
  
import "fmt"  
  
func main() {  
    fmt.Println("hello, world")  
}
```

textcode

"filename" x y width size [color]

Lists

One

- One

I. One

Two

- Two

2. Two

Three

- Three

3. Three

Four

- Four

4. Four

list

x y size [font] [color] [opacity] [spacing]

blist

x y size [font] [color] [opacity] [spacing]

nlist

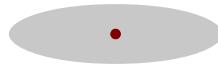
x y size [font] [color] [opacity] [spacing]

Graphics



rect

$x \ y \ w \ h \ [color] \ [op]$



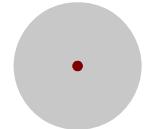
ellipse

$x \ y \ w \ h \ [color] \ [op]$



square

$x \ y \ w \ [color] \ [opacity]$



circle

$x \ y \ w \ [color] \ [op]$



polygon

$"xc" \ "yc" \ [color] \ [op]$



arc

$x \ y \ w \ h \ al \ a2 \ [lw] \ [color] \ [op]$



curve

$x1 \ y2 \ x2 \ y2 \ x3 \ y3 \ [color] \ [op]$



hline

$x \ y \ len \ [lw] \ [color] \ [op]$



vline

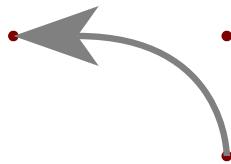
$x \ y \ len \ [lw] \ [color] \ [op]$

Arrows



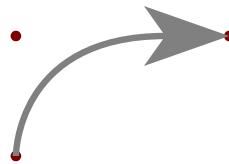
arrow

x1 y1 x2 y2 [linewidth] [aw] [ah] [color] [op]



lcarrow

x1 y1 x2 y2 x3 y3 [lw] [aw] [ah] [color] [op]



rcarrow

...



ucarrow

...



dcarrow

...

Images



image

"file" x y w h [scale] [link]

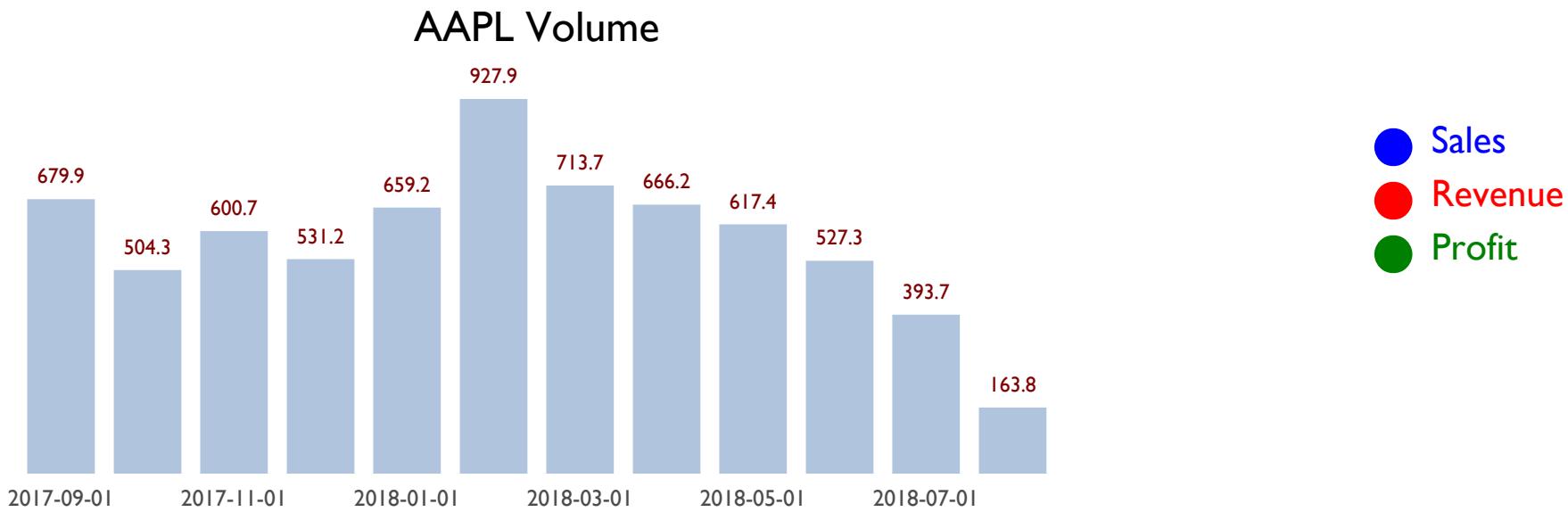


Up in the clouds

cimage

"file" "caption" x y w h [scale] [link]

Charts



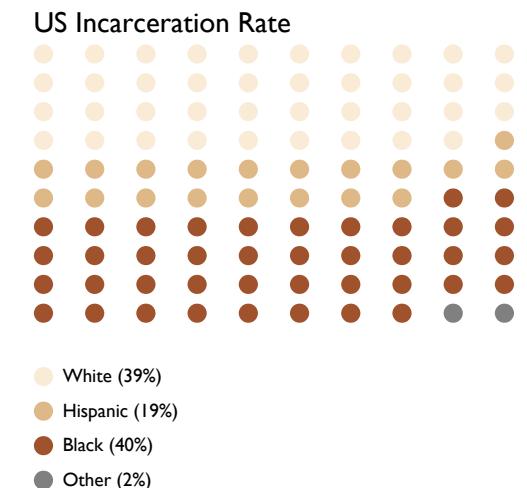
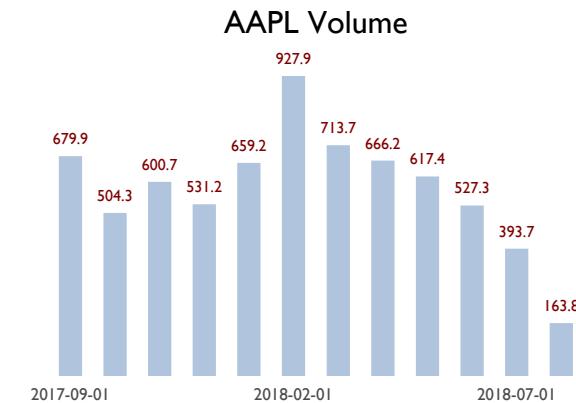
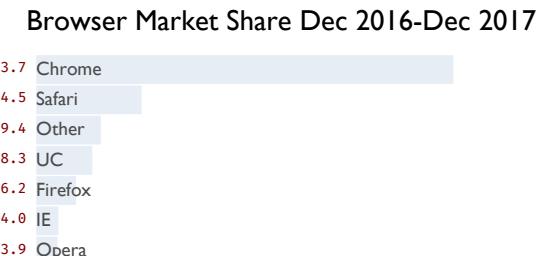
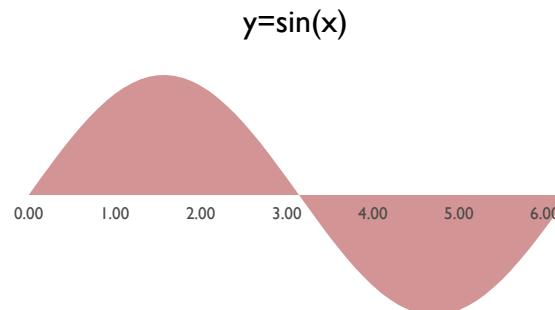
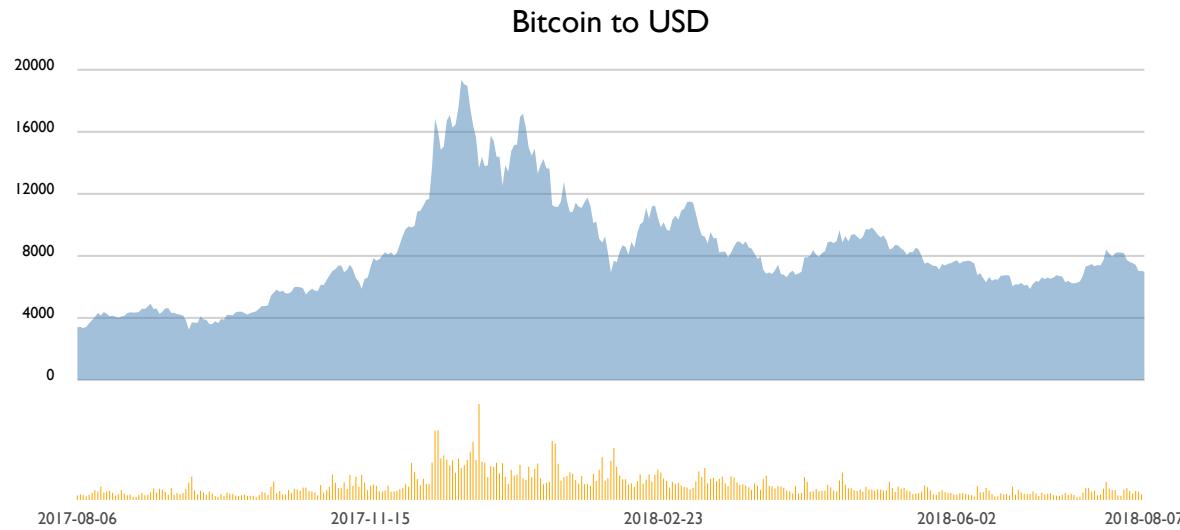
dchart

[args]

legend

x y size [font] [color]

dchart: charts for deck



```

deck
slide "rgb(250,250,250)" "black"
  ctext "Deck elements" 50 90 5
  image "follow.jpg"    70 50 640 480 50
  blist 10 75 3
    li "text, image, list"
    li "rect, ellipse, polygon"
    li "line, arc, curve"
  elist

  gy=10
  rect 15 gy 8 6           "rgb(127,0,0)"
  ellipse 27.5 gy 8 6      "rgb(0,127,0)"
  line 50 gy 60 gy
  curve 80 gy 95 30 90 gy
  arc 70 gy 10 8 0 180 0.1 "rgb(0,0,127)"
  polygon "37 37 45" "13 7 10" "rgb(0,0,127)"

  opts="-fulldeck=f -textsize 1 -xlabel=2 -barwidth 1.5"
  dchart -left 10 -right 42 -top 42 -bottom 25 opts AAPL.d
eslide
edeck

```

Deck elements

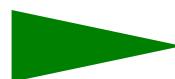
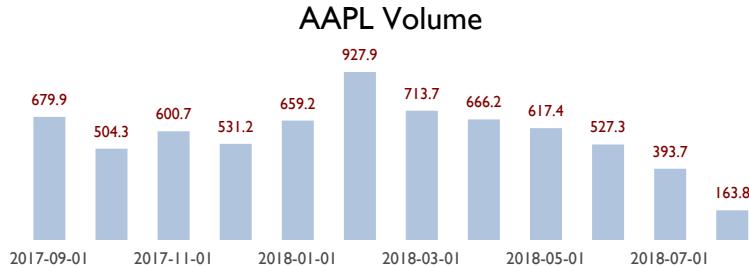
- text, image, list
- rect, ellipse, polygon
- line, arc, curve



decksh example.dsh | pdf

Deck elements

- text, image, list
- rect, ellipse, polygon
- line, arc, curve

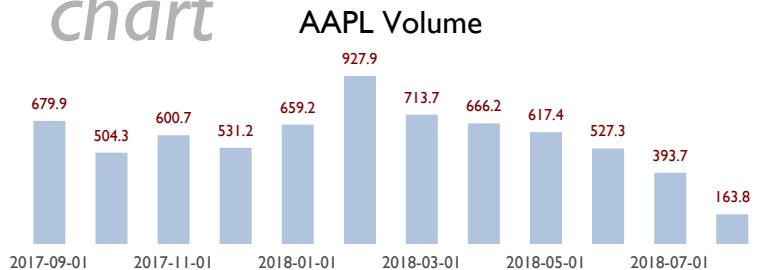


text Deck elements

list

- text, image, list
- rect, ellipse, polygon
- line, arc, curve

chart



rect



ellipse



polygon



image



line



arc



curve



Examples



Anthony J. Starks

Art + Code



+1 908.548.3403



ajstarks@gmail.com



@ajstarks



github.com/ajstarks



speakerdeck.com/ajstarks

```

deck
  mx=50      // midpoint
  tx=30      // text left
  ix=20      // image left
  ts=10      // base text size
  ss=ts*0.85 // sub-head text size
  cs=ts*0.55 // contact info text size
  ly=58      // line y

  slide "white" "rgb(100,100,100)"
    image "starx.png"           mx 87 512 512 7.5
    ctext "Anthony J. Starks"   mx 70 ts "sans" "black"
    ctext "Art + Code"         mx 62 ss "sans" "maroon"
    line ix ly 80 ly 0.3 "maroon"

    image "phone.png"          ix 50 1200 1200 1.2
    image "email.png"          ix 40 1200 1200 1.2
    image "twitter.png"        ix 30 1200 1200 1.2
    image "github.png"         ix 20 120 120 10
    image "sd.png"             ix 10 512 512 2.5

    text "+1 908.548.3403"     tx 49 cs
    text "ajstarks@gmail.com"   tx 39 cs
    text "@ajstarks"            tx 29 cs
    text "github.com/ajstarks"  tx 19 cs
    text "speakerdeck.com/ajstarks" tx 9 cs

  eslide
edeck

```



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```

deck
  mx=50      // midpoint
  tx=30      // text left
  ix=20      // image left
  ts=10      // base text size
  ss=ts*0.85 // sub-head text size
  cs=ts*0.55 // contact info text size
  ly=58      // line y

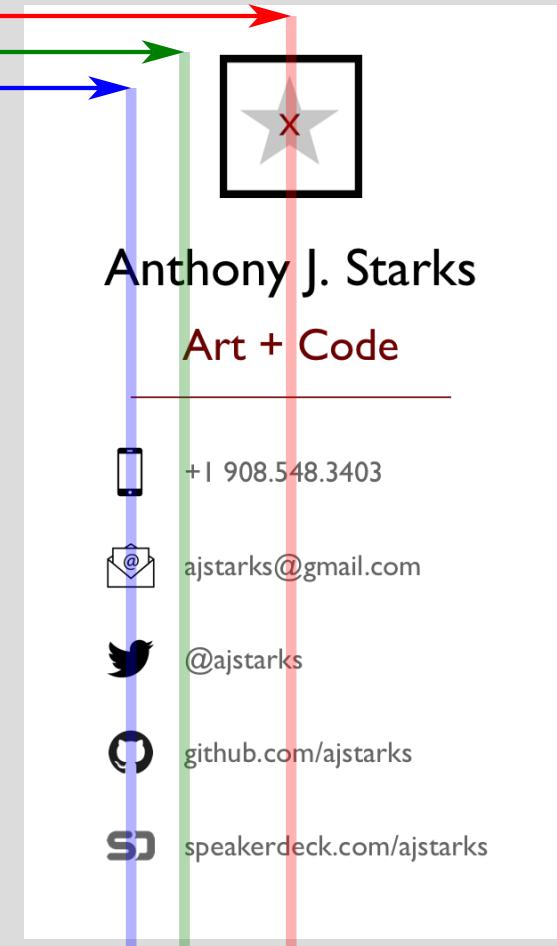
  slide "white" "rgb(100,100,100)"
    image "starx.png"           mx 87 512 512 7.5
    ctext "Anthony J. Starks"   mx 70 ts "sans" "black"
    ctext "Art + Code"          mx 62 ss "sans" "maroon"
    line ix ly 80 ly 0.3 "maroon"

    image "phone.png"          ix 50 1200 1200 1.2
    image "email.png"          ix 40 1200 1200 1.2
    image "twitter.png"        ix 30 1200 1200 1.2
    image "github.png"         ix 20 120 120 10
    image "sd.png"              ix 10 512 512 2.5

    text "+1 908.548.3403"     tx 49 cs
    text "ajstarks@gmail.com"   tx 39 cs
    text "@ajstarks"            tx 29 cs
    text "github.com/ajstarks"  tx 19 cs
    text "speakerdeck.com/ajstarks" tx 9 cs

  eslide
edeck

```



```

deck
  mx=50      // midpoint
  tx=30      // text left
  ix=20      // image left
  ts=10      // base text size
  ss=ts*0.85 // sub-head text size
  cs=ts*0.55 // contact info text size
  ly=58      // line y

  slide "white" "rgb(100,100,100)"
    image "starx.png"           mx 87 512 512 7.5
    ctext "Anthony J. Starks"   mx 70 ts "sans" "black"
    ctext "Art + Code"         mx 62 ss "sans" "maroon"
    line ix ly 80 ly 0.3 "maroon"

    image "phone.png"          ix 50 1200 1200 1.2
    image "email.png"          ix 40 1200 1200 1.2
    image "twitter.png"        ix 30 1200 1200 1.2
    image "github.png"         ix 20 120 120 10
    image "sd.png"             ix 10 512 512 2.5

    text "+1 908.548.3403"     tx 49 cs
    text "ajstarks@gmail.com"   tx 39 cs
    text "@ajstarks"            tx 29 cs
    text "github.com/ajstarks"  tx 19 cs
    text "speakerdeck.com/ajstarks" tx 9 cs

  eslide
edeck

```



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Art + Code

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@ajstarks

github.com/ajstarks

speakerdeck.com/ajstarks

```
deck
  mx=25          // midpoint
  tx=62          // text left
  ix=57          // image left
  ts=6           // base text size
  ss=ts*0.85    // sub-head text size
  cs=ts*0.50    // contact info text size
  lx=50          // line x

  slide "white" "rgb(100,100,100)"
    image "starx.png"           mx 75 512 512 7.5
    ctext "Anthony J. Starks"   mx 35 ts "sans" "black"
    ctext "Art + Code"         mx 22 ss "sans" "maroon"
    line lx 90 lx 10 0.3 "maroon"

    image "phone.png"          ix 80 1200 1200 1.2
    image "email.png"          ix 65 1200 1200 1.2
    image "twitter.png"        ix 50 1200 1200 1.2
    image "github.png"         ix 35 120 120 10
    image "sd.png"             ix 20 512 512 2.5

    text "+1 908.548.3403"     tx 79 cs
    text "ajstarks@gmail.com"   tx 64 cs
    text "@ajstarks"            tx 49 cs
    text "github.com/ajstarks"  tx 34 cs
    text "speakerdeck.com/ajstarks" tx 19 cs
  eslide
edeck
```



Anthony J. Starks

Art + Code



+1 908.548.3403



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@ajstarks

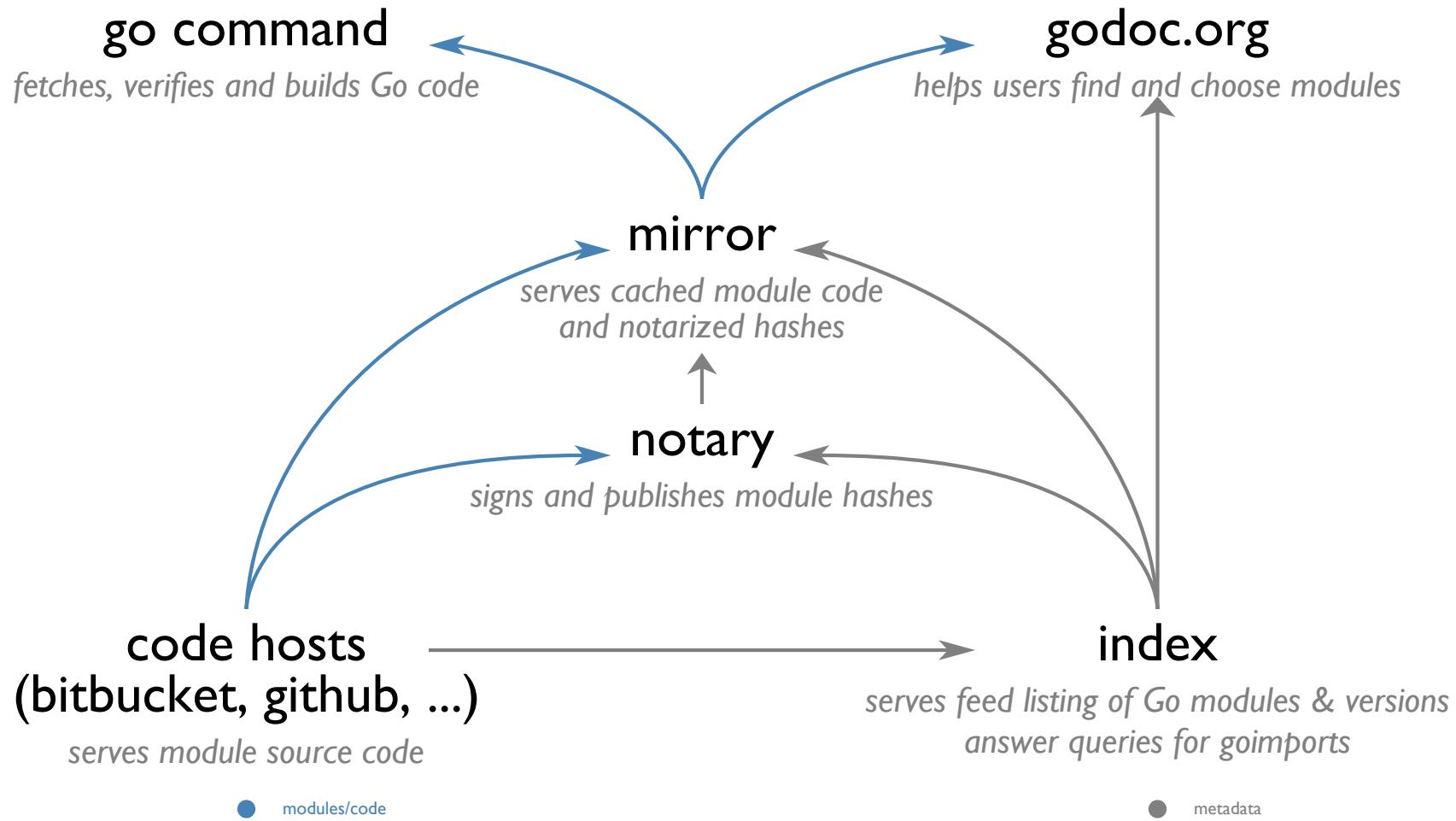


github.com/ajstarks



speakerdeck.com/ajstarks

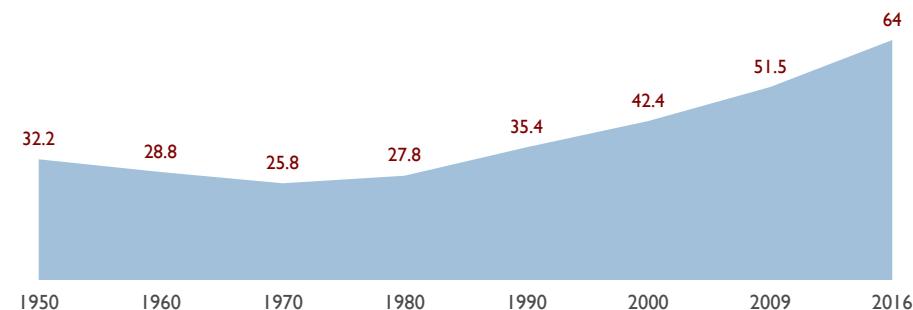
Go Module Information Flows



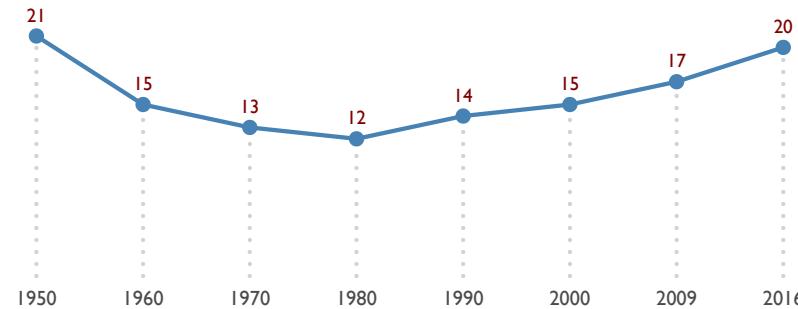
A record 64 million Americans live in multigenerational households

The number and share of Americans living in multi- generational family households have continued to rise, despite improvements in the U.S. economy since the Great Recession. In 2016, a record 64 million people, or 20% of the U.S. population, lived with multiple generations under one roof, according to a new Pew Research Center analysis of census data.

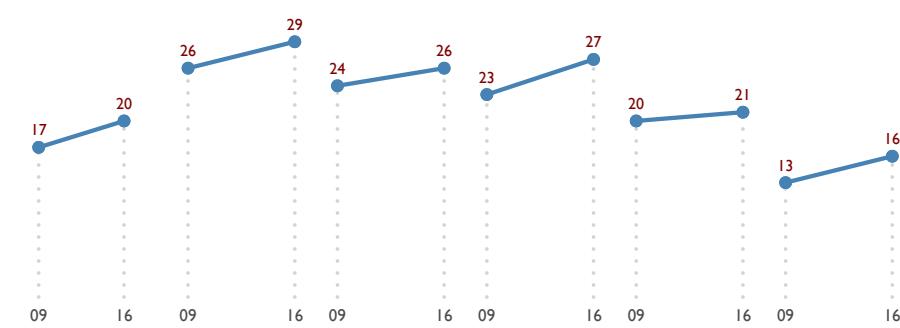
Multigenerational households (millions)



% of Americans in multigenerational households



Total Asian Black Hispanic Other White





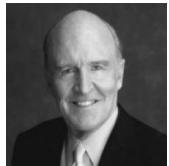
Pichai



Nadella



Cook

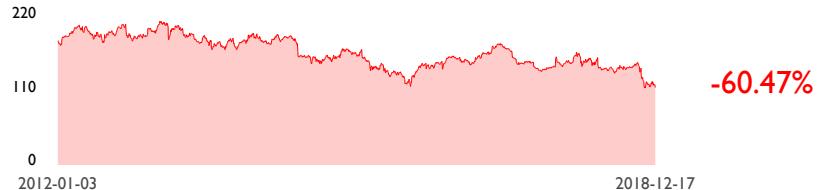


Welch





Rometty



The first woman to lead IBM, Rometty shifted IBM away from shrinking businesses such as computers and operating system software, and into higher-growth areas like artificial intelligence. Her tenure has also been met by fierce criticism relating to executive compensation bonuses, layoffs, outsourcing, and presiding over 24 consecutive quarters of revenue decline.



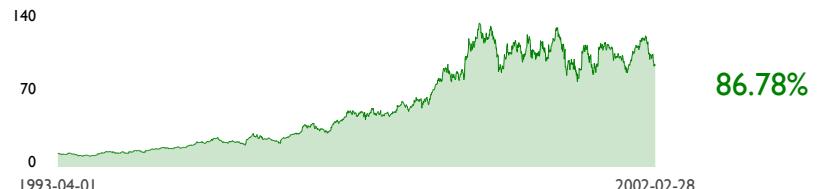
Palmisano



Palmisano's mandate was to move into new unique businesses with high profit margins and potential for innovation. This included purchasing PWC Consulting in 2002, so that IBM could go beyond selling computers and software and help customers use technology to solve business challenges in areas such as marketing, procurement and manufacturing.



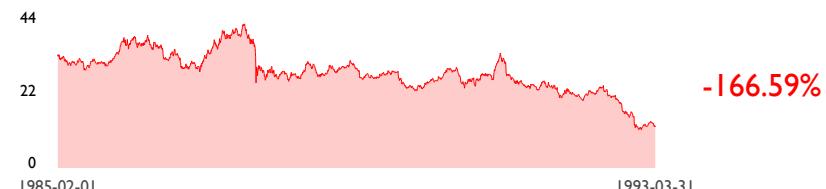
Gerstner



Gerstner's choice to keep the company together was the defining decision of his tenure, as these gave IBM the capabilities to deliver complete IT solutions to customers. Services could be sold as an add-on to companies that had already bought IBM computers, while barely profitable pieces of hardware were used to open the door to more profitable deals.

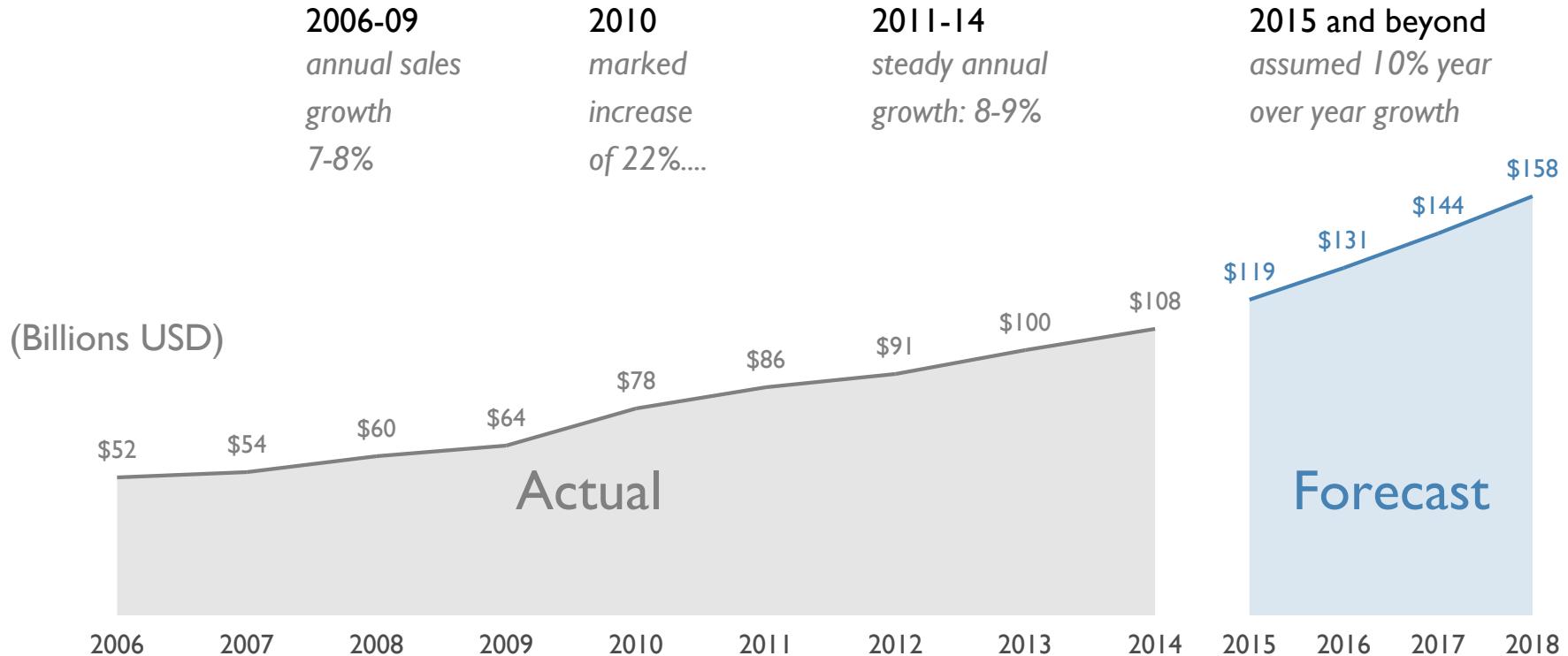


Akers

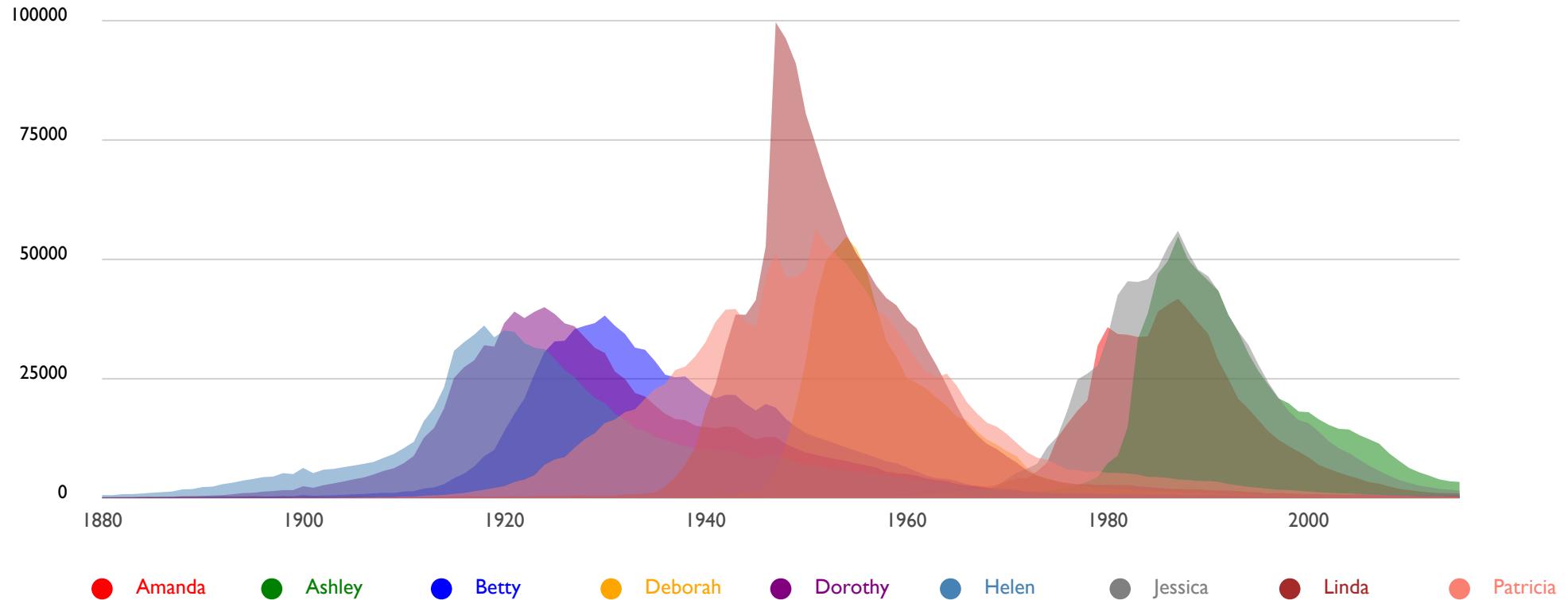


Akers was credited with simplifying the company's bureaucracy to focus more on profits. In a restructuring intended to reverse three years of disappointing performance, he created five new, autonomous organizations responsible for the company's innovation, design and manufacturing. Akers was forced to resign, after the company posted an unprecedented \$5 billion annual loss.

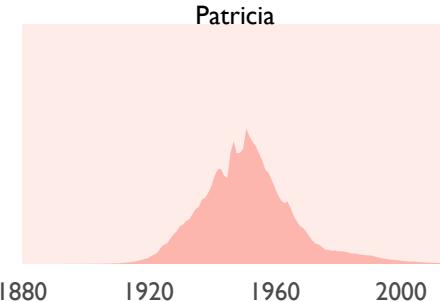
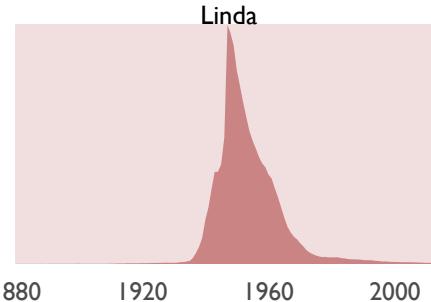
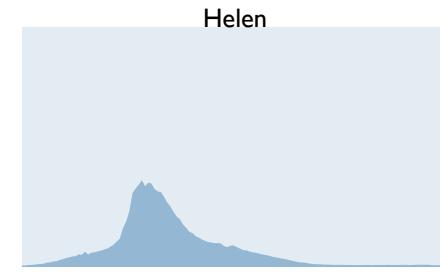
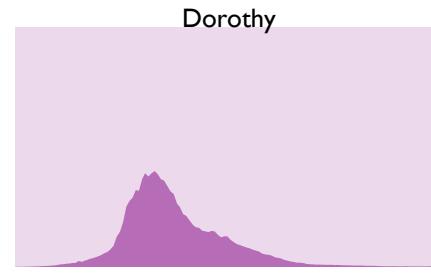
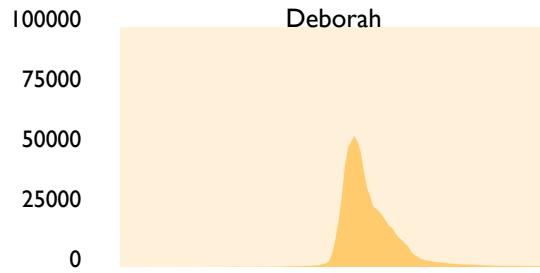
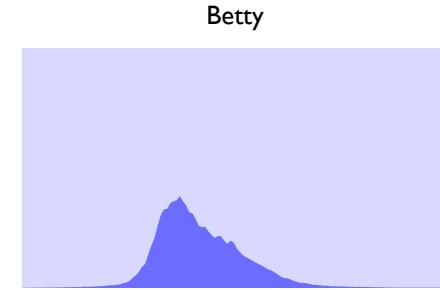
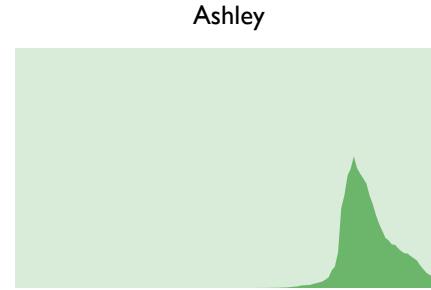
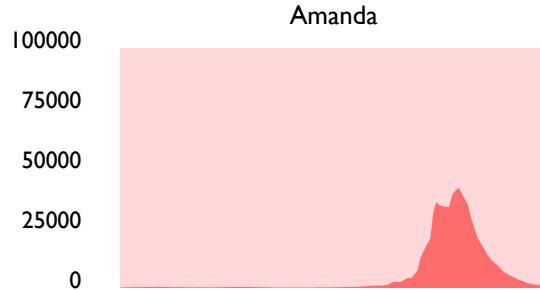
Sales over time



Evolution of Baby Names in the US: 1880-2015

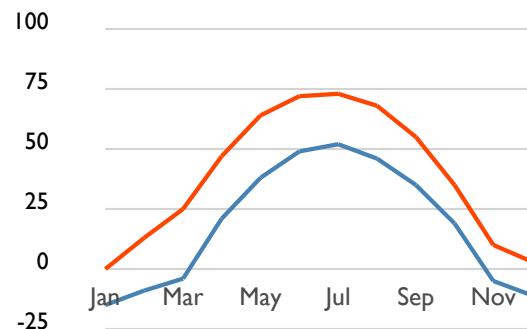


Evolution of Baby Names in the US: 1880-2015

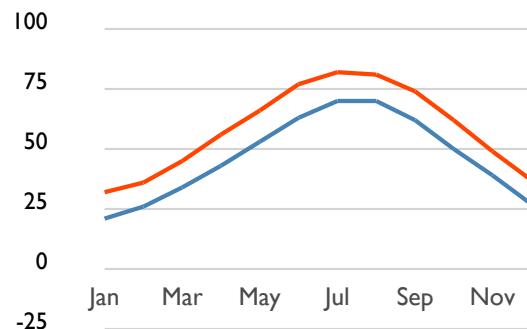


Average High/Low Temperatures (°F)

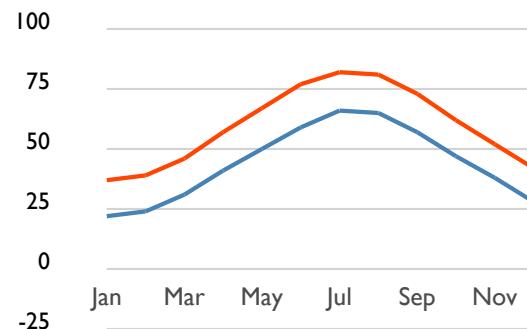
Fairbanks



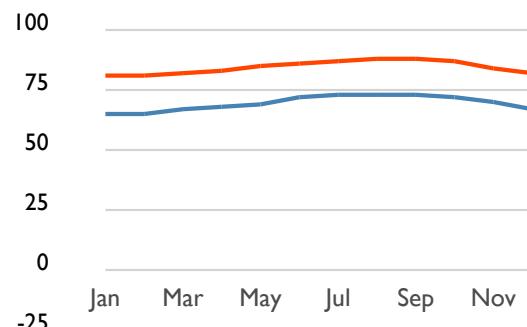
Chicago



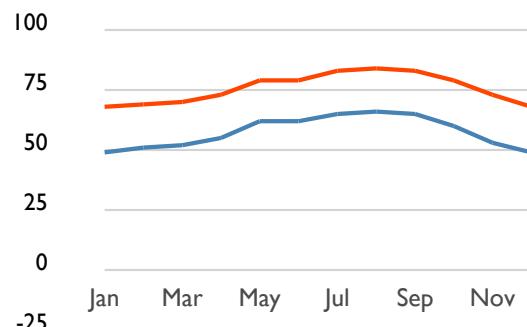
Boston



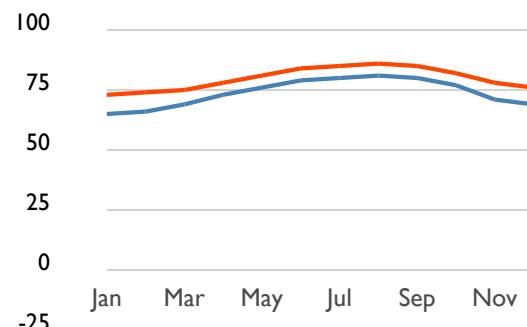
Honolulu



Los Angeles

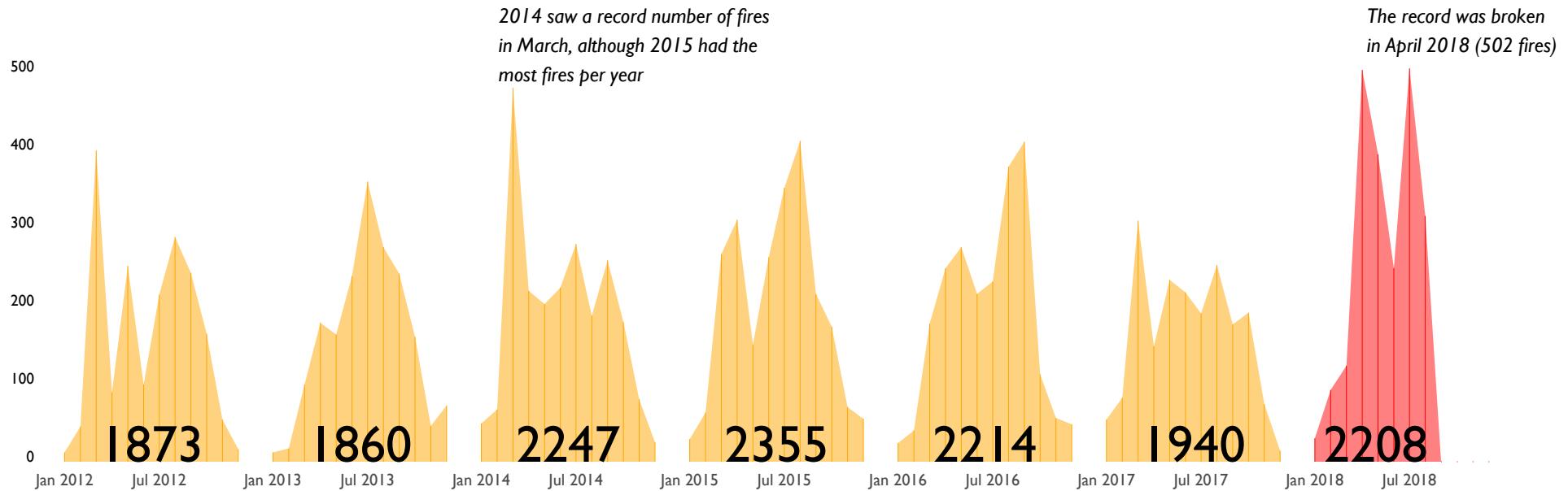


Miami



● Avg. High ● Avg. Low

German Wildfires 2012-2018



How does Go help?

fmt

text/scanner

errors

go get it

deck

github.com/ajstarks/deck

decksh

github.com/ajstarks/deck/cmd/decksh

pdfdeck

github.com/ajstarks/deck/cmd/pdfdeck

dchart

github.com/ajstarks/deck/cmd/dchart

deck fonts

github.com/ajstarks/deckfonts