

# 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

AAPL Volume

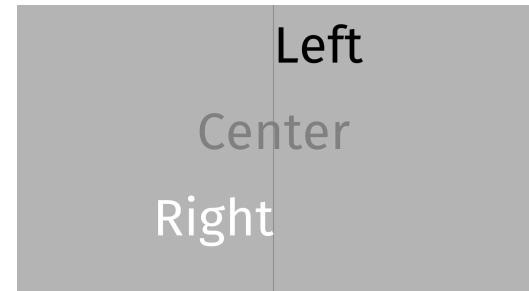
Date	Volume
2017-09-01	679.9
2017-09-02	504.3
2017-09-03	492.1
2017-09-04	504.3
2017-09-05	504.3
2017-09-06	504.3
2017-09-07	504.3
2017-09-08	504.3
2017-09-09	504.3
2017-09-10	504.3
2017-09-11	504.3
2017-09-12	504.3
2017-09-13	504.3
2017-09-14	504.3
2017-09-15	504.3
2017-09-16	504.3
2017-09-17	504.3
2017-09-18	504.3
2017-09-19	504.3
2017-09-20	504.3
2017-09-21	504.3
2017-09-22	504.3
2017-09-23	504.3
2017-09-24	504.3
2017-09-25	504.3
2017-09-26	504.3
2017-09-27	504.3
2017-09-28	504.3
2017-09-29	504.3
2017-09-30	504.3

```
// 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 environment with three windows:

- Code Editor:** A window titled "hw.dsh" showing the content of a DeckSh script. The code defines a slide with a black background, white text, and a blue circle. It includes sections for deck, slide, ctext, circle, eslide, and edeck.
- Terminal:** A window titled "code — bash — 72x5" showing the command \$ decksh hw.dsh|pdf followed by \$ open f.pdf and a blank line.
- PDF Viewer:** A window titled "f.pdf (1 page)" displaying a single slide with a black background. A large blue circle covers the bottom half of the slide, containing the text "hello, world" in white.

```
hw.dsh
Free Mode
~/gowork/src/github.com/ajstarks/deck/cmd/decksh/doc/code/hw.dsh · master

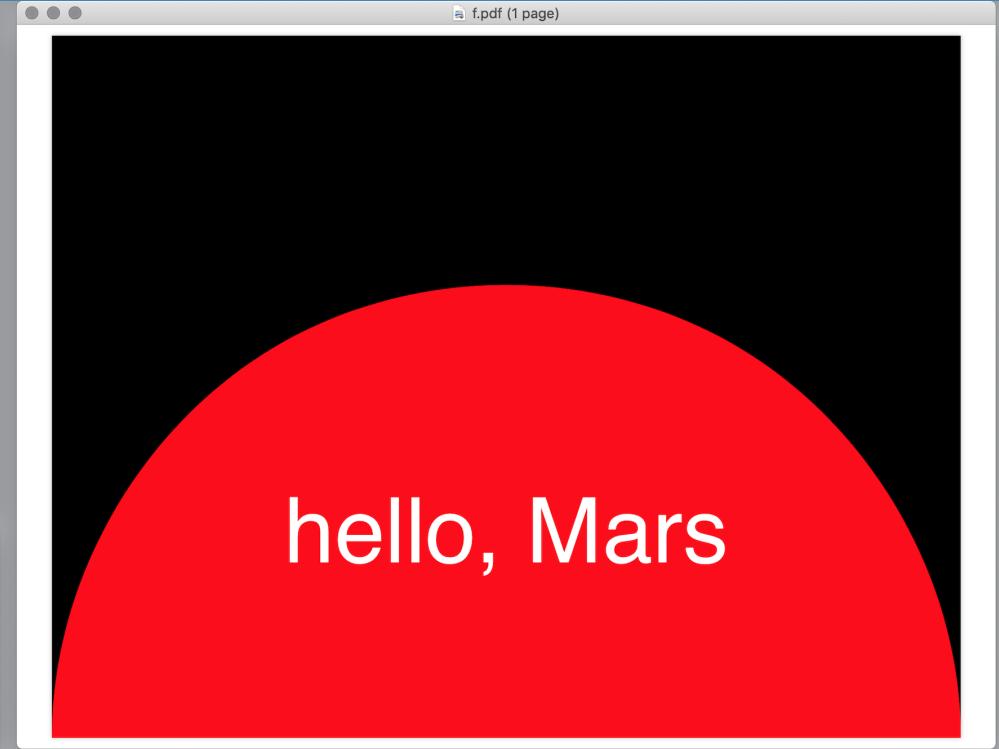
// hello world

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  
textfile  
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]`



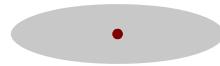
polygon

`"xc" "yc" [color] [op]`



hline

`x y len [lw] [color] [op]`



ellipse

`x y w h [color] [op]`



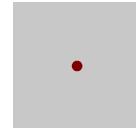
arc

`x y w h a1 a2 [lw] [color] [op]`



vline

`x y len [lw] [color] [op]`



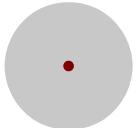
square

`x y w [color] [opacity]`



curve

`x1 y2 x2 y2 x3 y3 [color] [op]`



circle

`x y w [color] [op]`



line

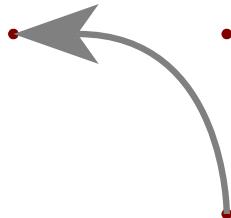
`x1 y2 x2 y2 [lw] [color] [op]`

# 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]

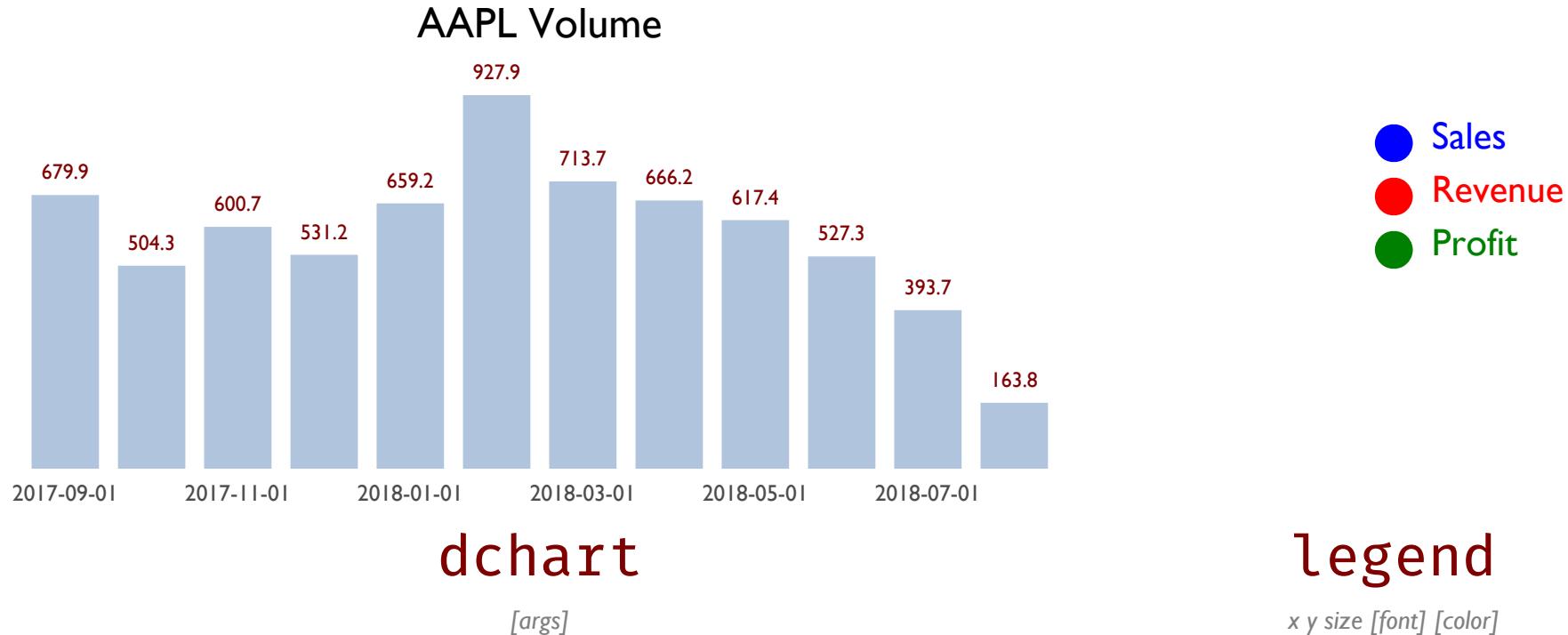


Up in the clouds

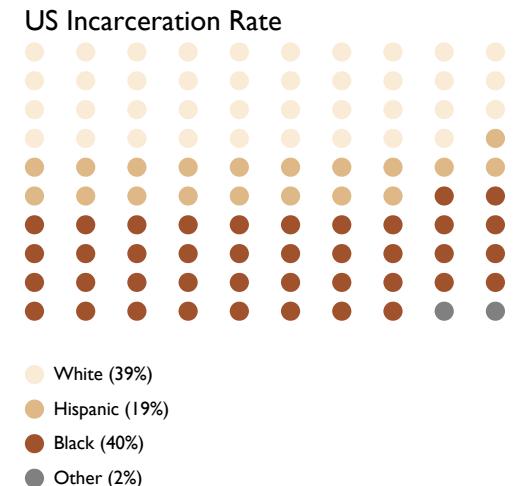
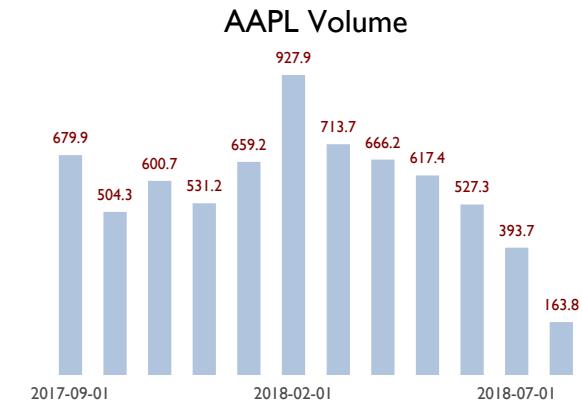
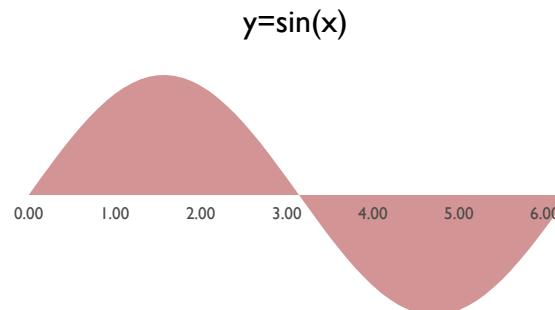
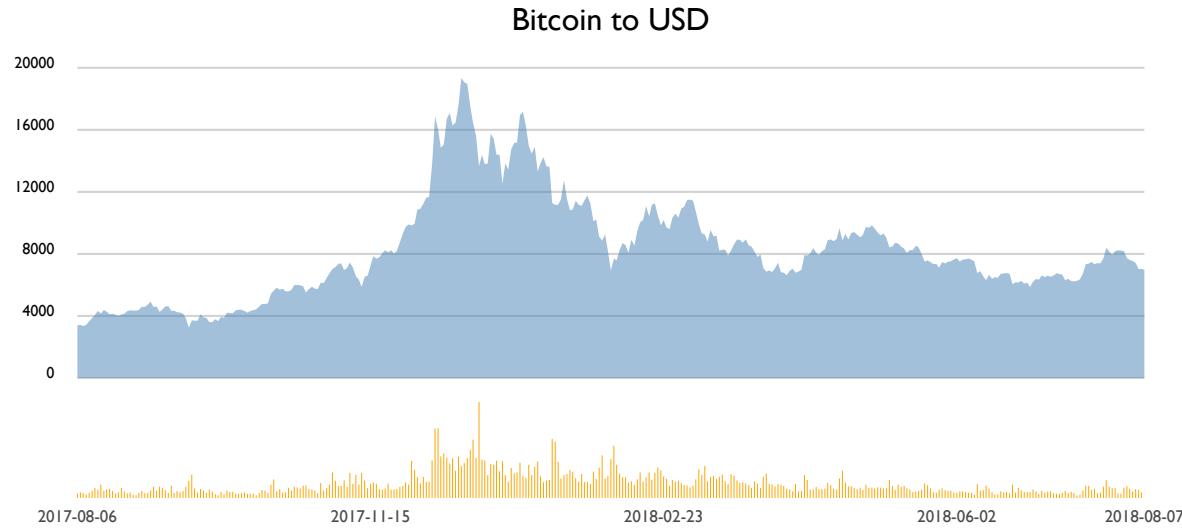
cimage

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

# Charts



# *dchart: 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

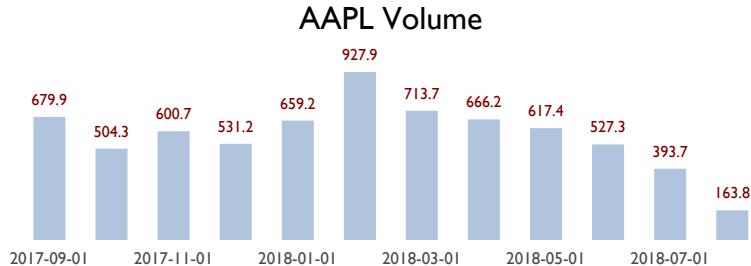
AAPL Volume

Date	Volume
2017-09-01	479.9
2017-11-01	504.3
2018-01-01	600.7
2018-01-01	521.2
2018-01-01	659.2
2018-03-01	927.9
2018-03-01	713.7
2018-05-01	688.2
2018-05-01	617.0
2018-07-01	527.3
2018-07-01	393.7
2018-07-01	163.8

decksh example.dsh | pdf

# Deck elements

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

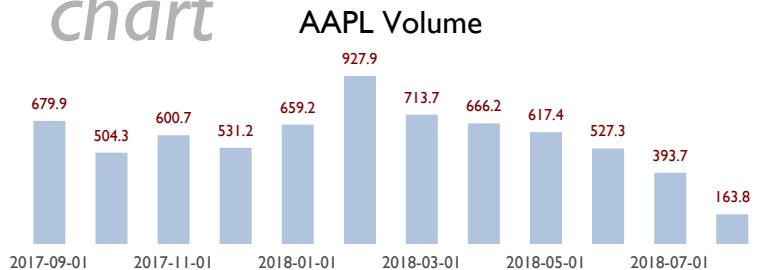


# *text* Deck elements

*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

```



# 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

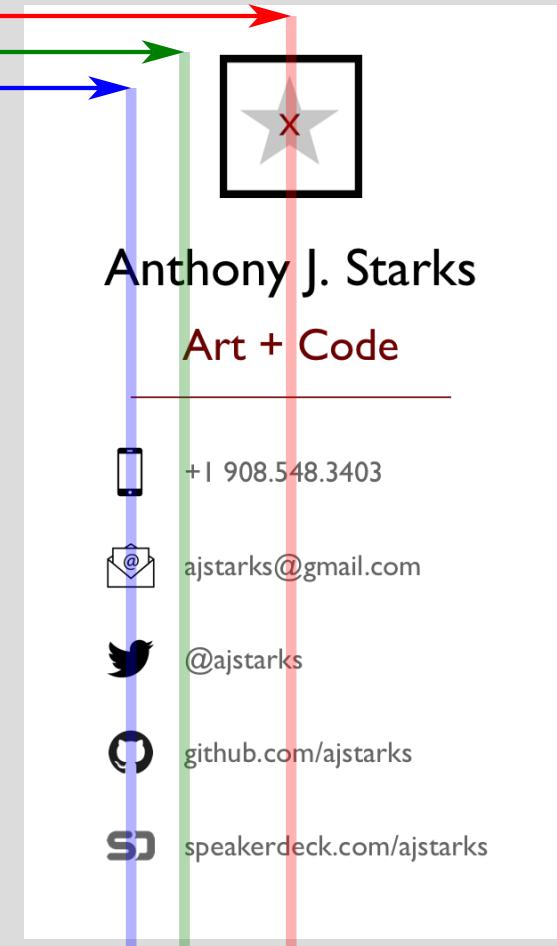
  slide "white" "rgb(100,100,100)"
    image "starx.png"           mx 87 512 512 7.5
    ctext "Anthony J. Starks"   mx 70 ts "sans" "black"
    ctext "Art + Code"          mx 62 ss "sans" "maroon"
    line ix ly 80 ly 0.3 "maroon"

    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

```



```

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

```



# Anthony J. Starks

## Art + Code

---

+1 908.548.3403

ajstarks@gmail.com

@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

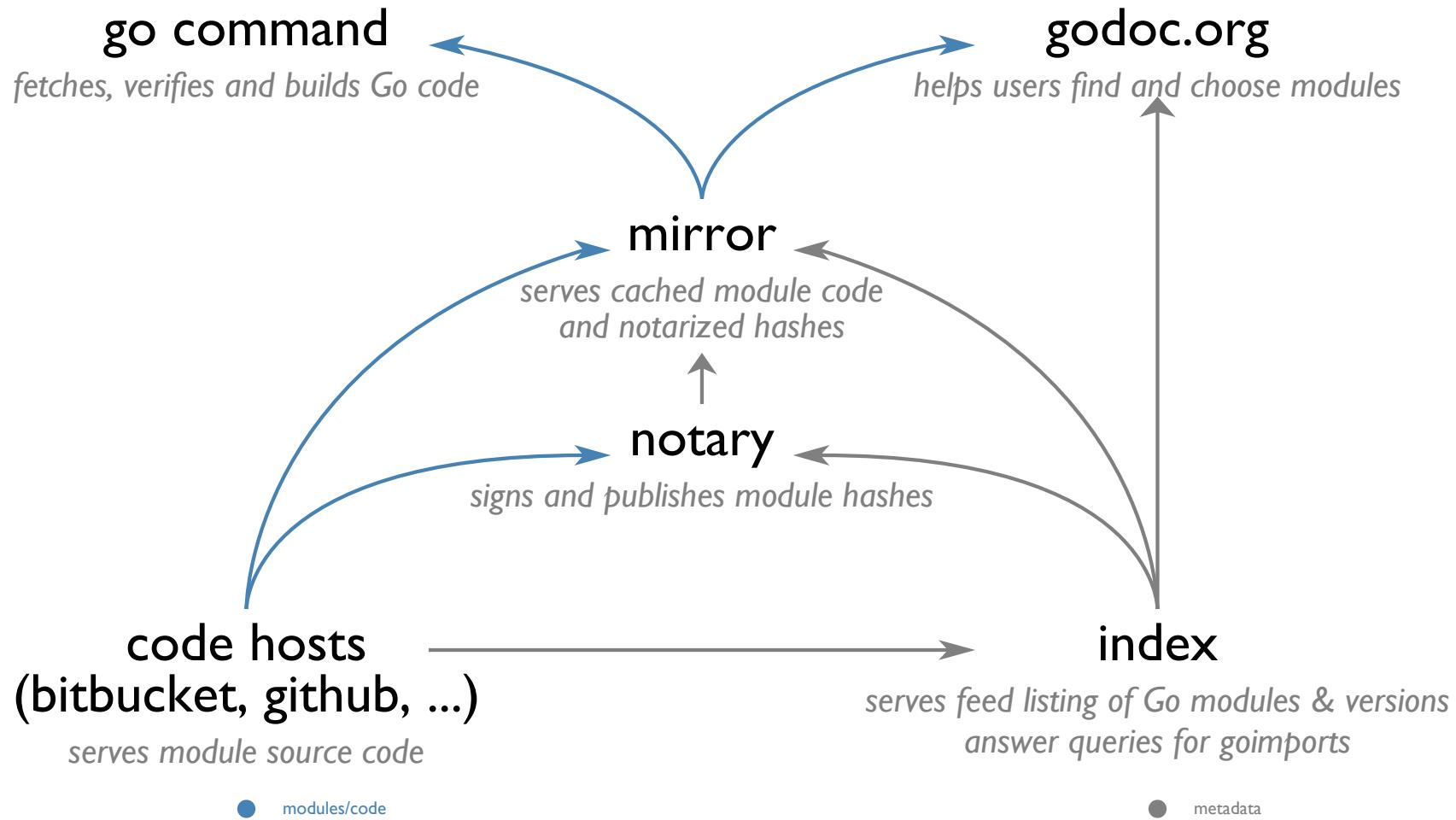
    text "+1 908.548.3403"     tx 79 cs
    text "ajstarks@gmail.com"   tx 64 cs
    text "@ajstarks"            tx 49 cs
    text "github.com/ajstarks"  tx 34 cs
    text "speakerdeck.com/ajstarks" tx 19 cs
  eslide
edeck
```



A Speaker Deck slide featuring a white background. In the top right corner, there is a logo consisting of a gray star with a red 'X' inside it, set against a black square background. Below the logo, the name "Anthony J. Starks" is displayed in a large, bold, black sans-serif font. Underneath the name, the text "Art + Code" is written in a smaller, bold, dark red sans-serif font. To the right of the slide content, there is a vertical red line. To the right of this line, five contact details are listed, each preceded by a small icon: a phone for the phone number, an envelope for email, a Twitter bird for the Twitter handle, a GitHub octocat for the GitHub URL, and a Speaker Deck logo for the Speaker Deck URL.

+1 908.548.3403  
ajstarks@gmail.com  
@ajstarks  
github.com/ajstarks  
speakerdeck.com/ajstarks

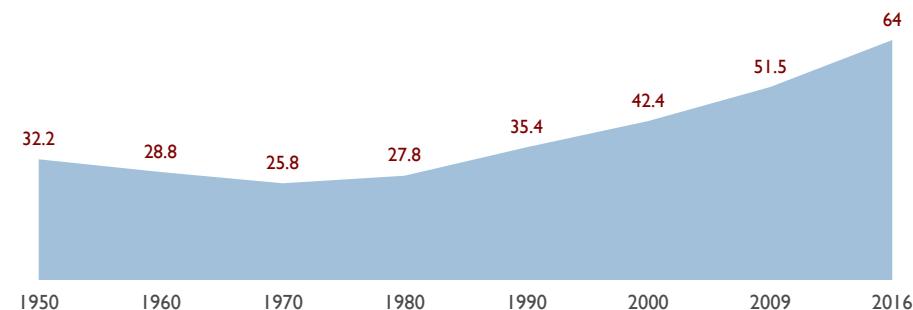
# Go Module Information Flows



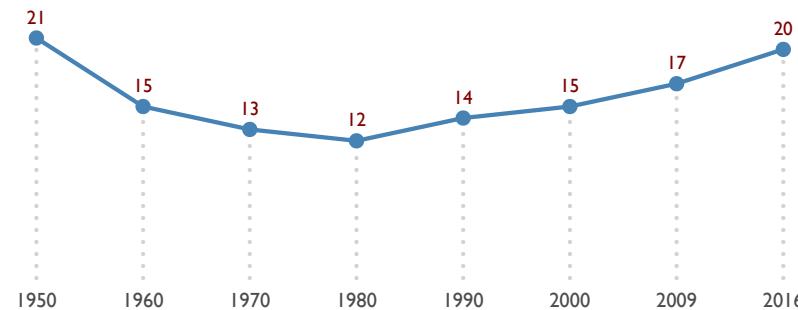
# A record 64 million Americans live in multigenerational households

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.

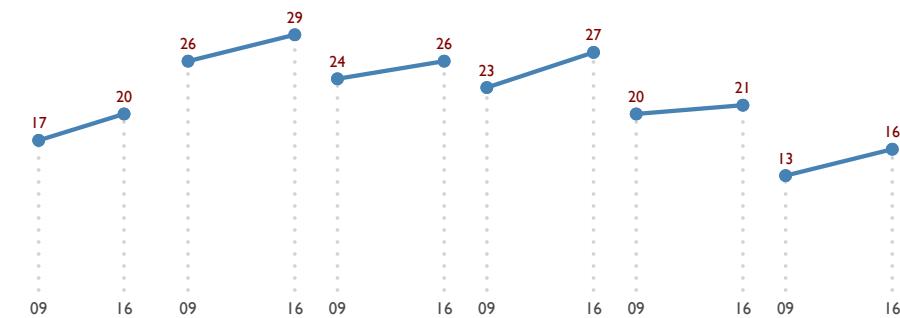
Multigenerational households (millions)

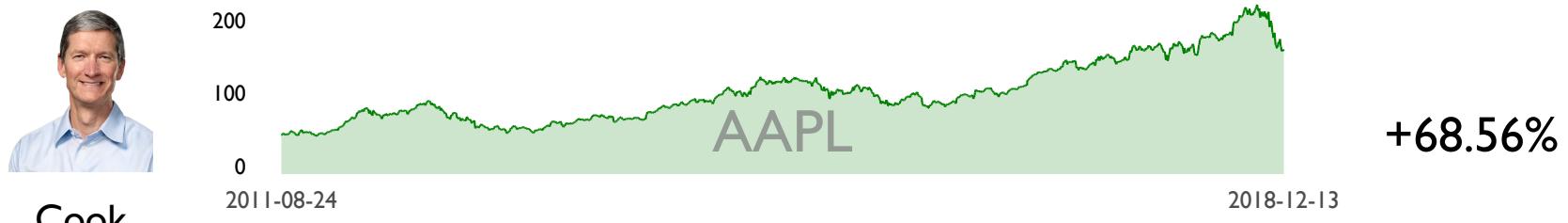


% of Americans in multigenerational households



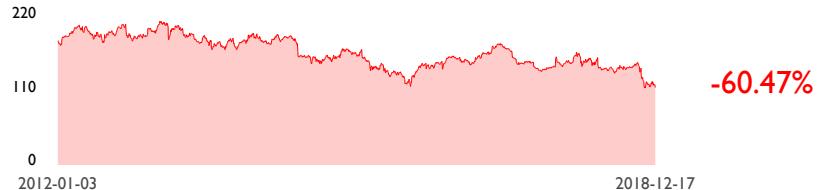
Total      Asian      Black      Hispanic      Other      White







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.



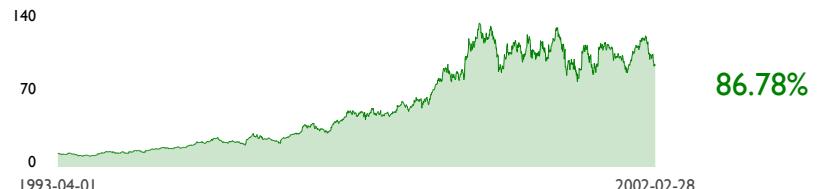
Palmisano



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.



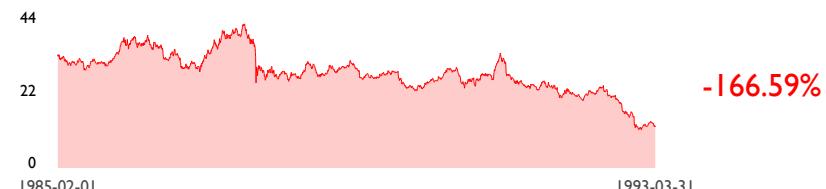
Gerstner



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.

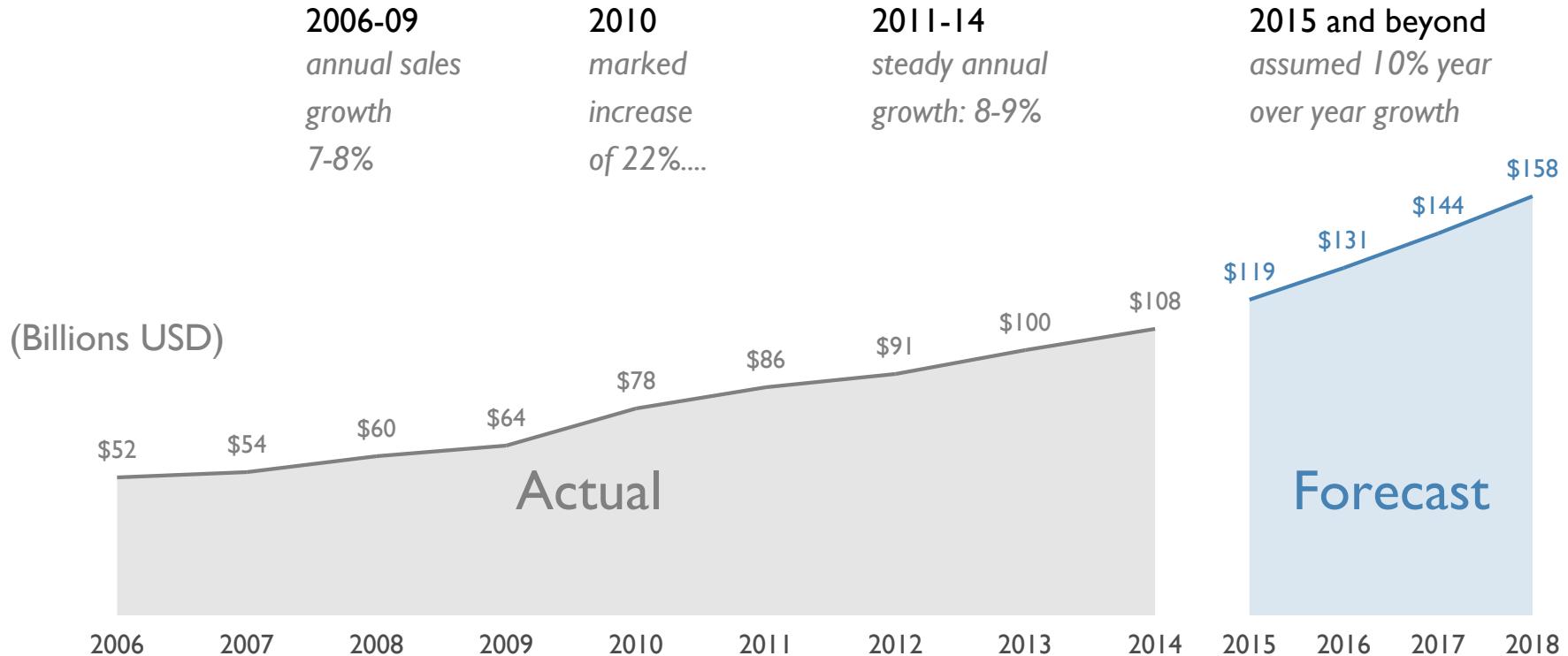


Akers

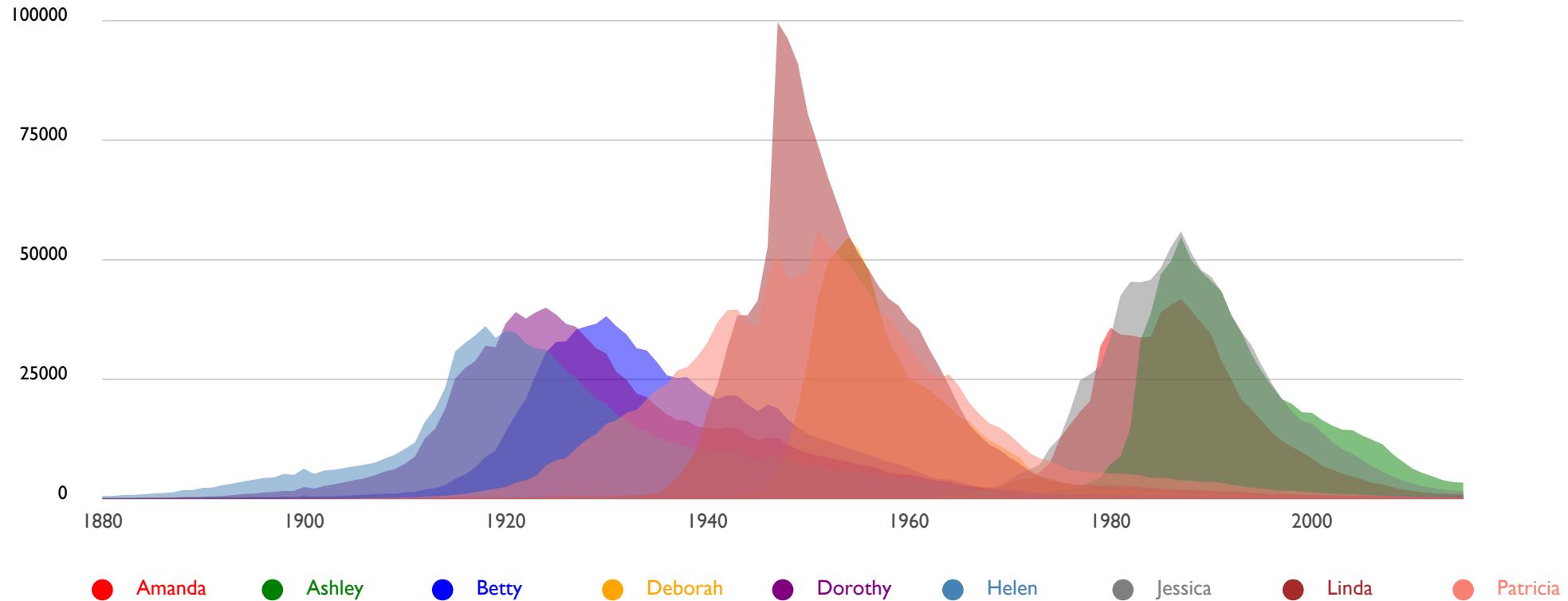


Akers was credited with simplifying the company's bureaucracy to focus more on profits. In a restructuring intended to reverse three years of disappointing performance, he created five new, autonomous organizations responsible for the company's innovation, design and manufacturing. Akers was forced to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

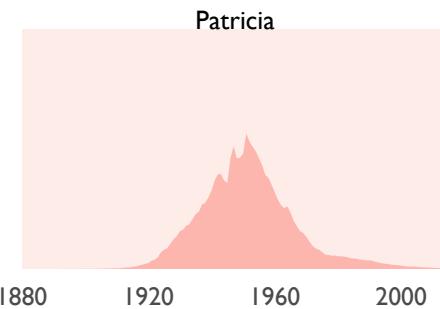
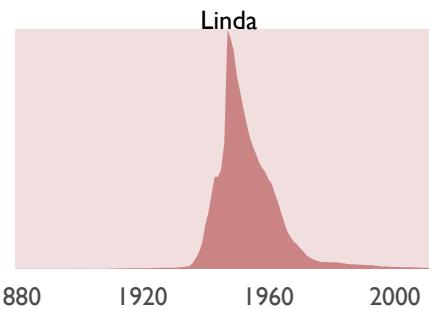
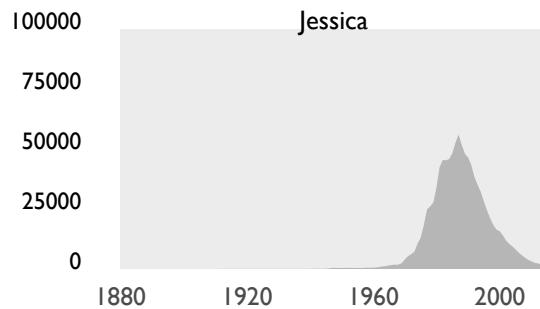
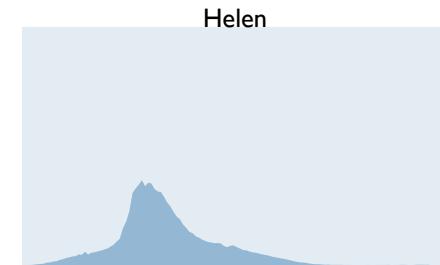
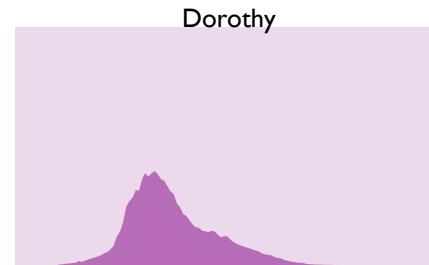
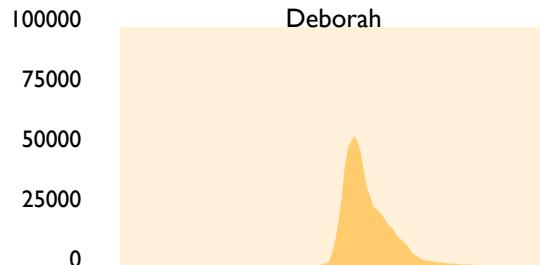
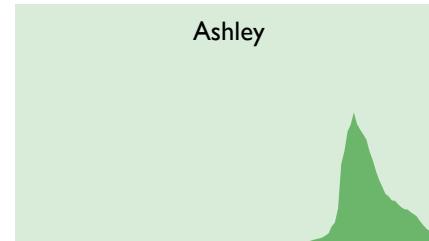
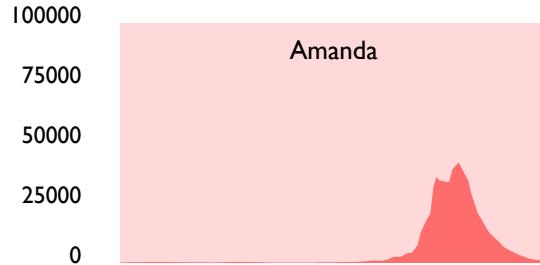
# Sales over time



# Evolution of Baby Names in the US: 1880-2015

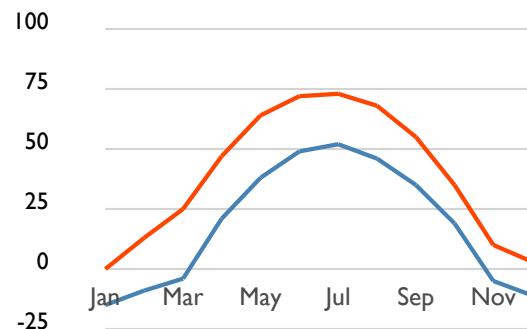


# Evolution of Baby Names in the US: 1880-2015

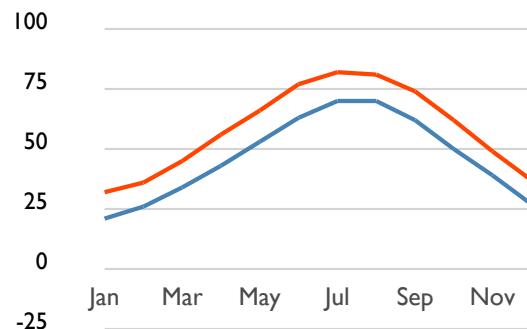


# Average High/Low Temperatures (°F)

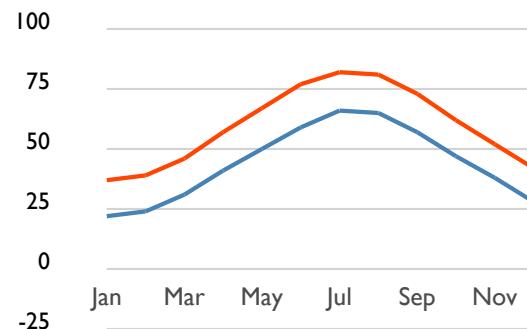
## Fairbanks



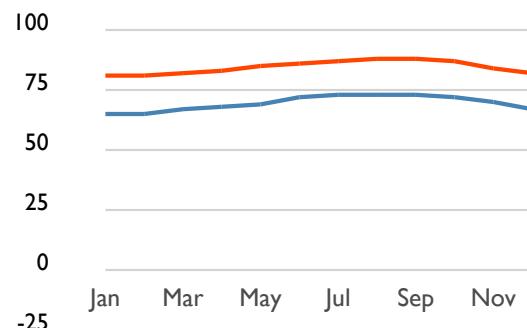
## Chicago



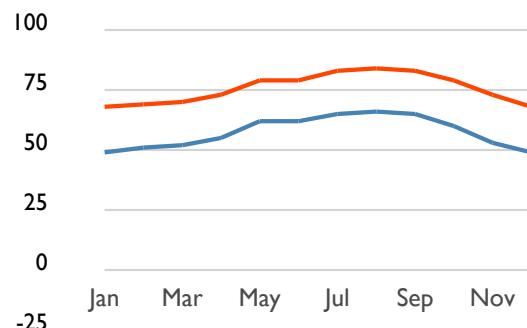
## Boston



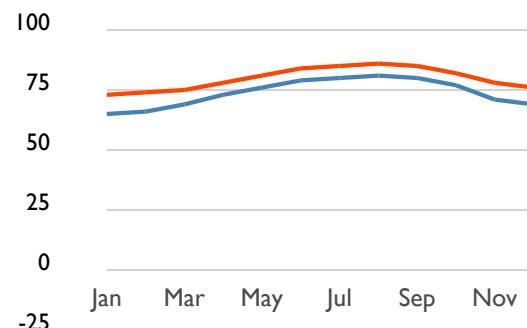
## Honolulu



## Los Angeles

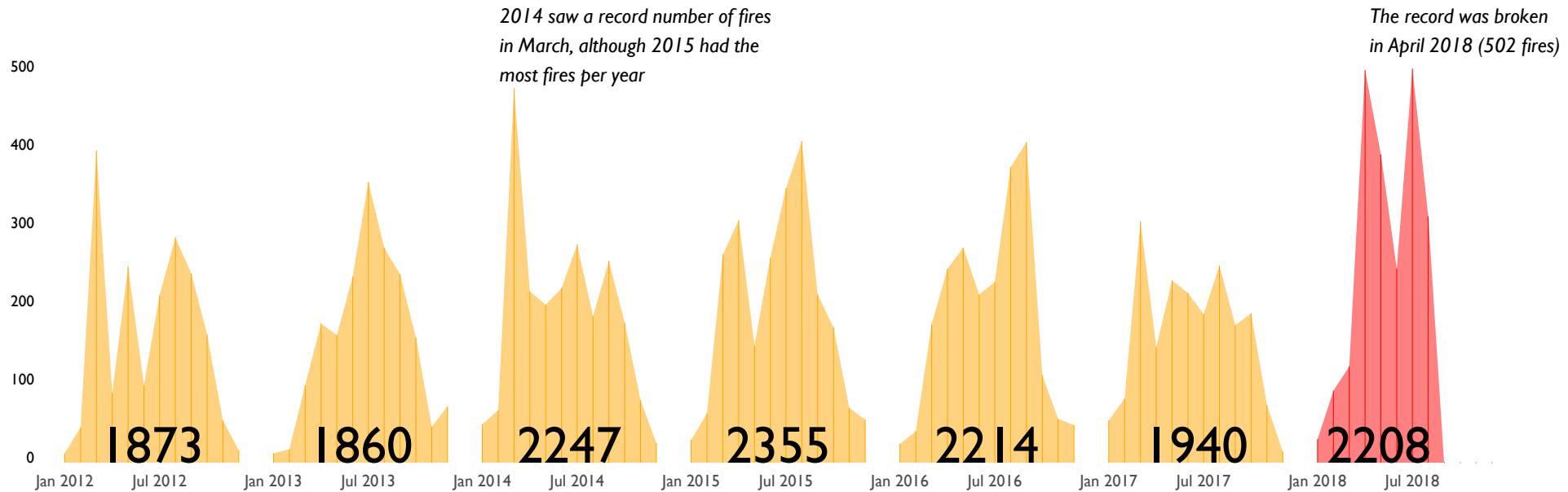


## Miami



● 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`

**examples**

`github.com/ajstarks/deckviz`

**fonts**

`github.com/ajstarks/deckfonts`