

# 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>
  <slide 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

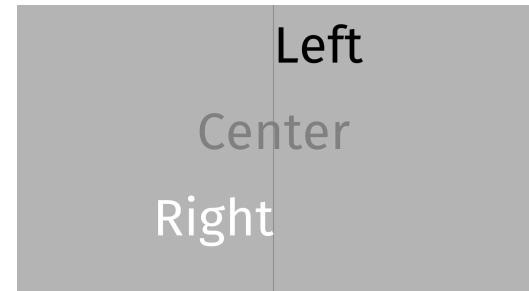
| Date       | Volume |
|------------|--------|
| 2017-09-01 | 679.9  |
| 2017-09-02 | 504.3  |
| 2017-09-03 | 492.1  |
| 2017-09-04 | 504.3  |
| 2017-09-05 | 504.3  |
| 2017-09-06 | 504.3  |
| 2017-09-07 | 504.3  |
| 2017-09-08 | 504.3  |
| 2017-09-09 | 504.3  |
| 2017-09-10 | 504.3  |
| 2017-09-11 | 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
```

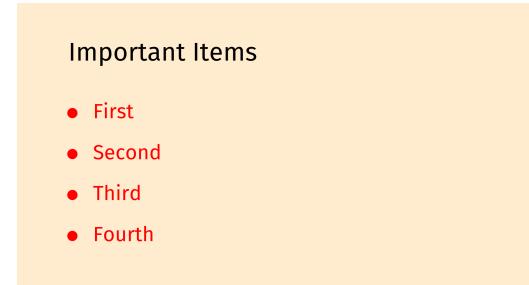
# hello, world

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*

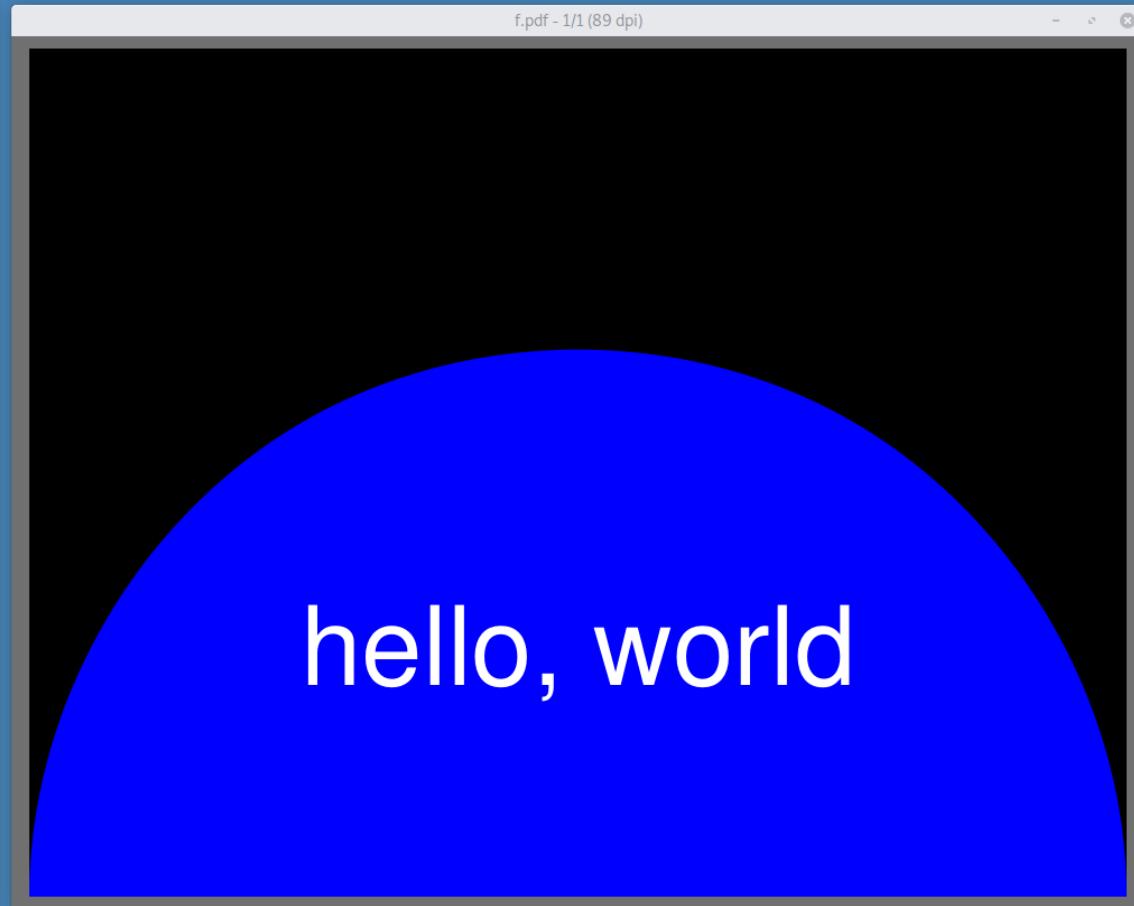
`decksh -o out.xml in.dsh`

*read from file, write to file*

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

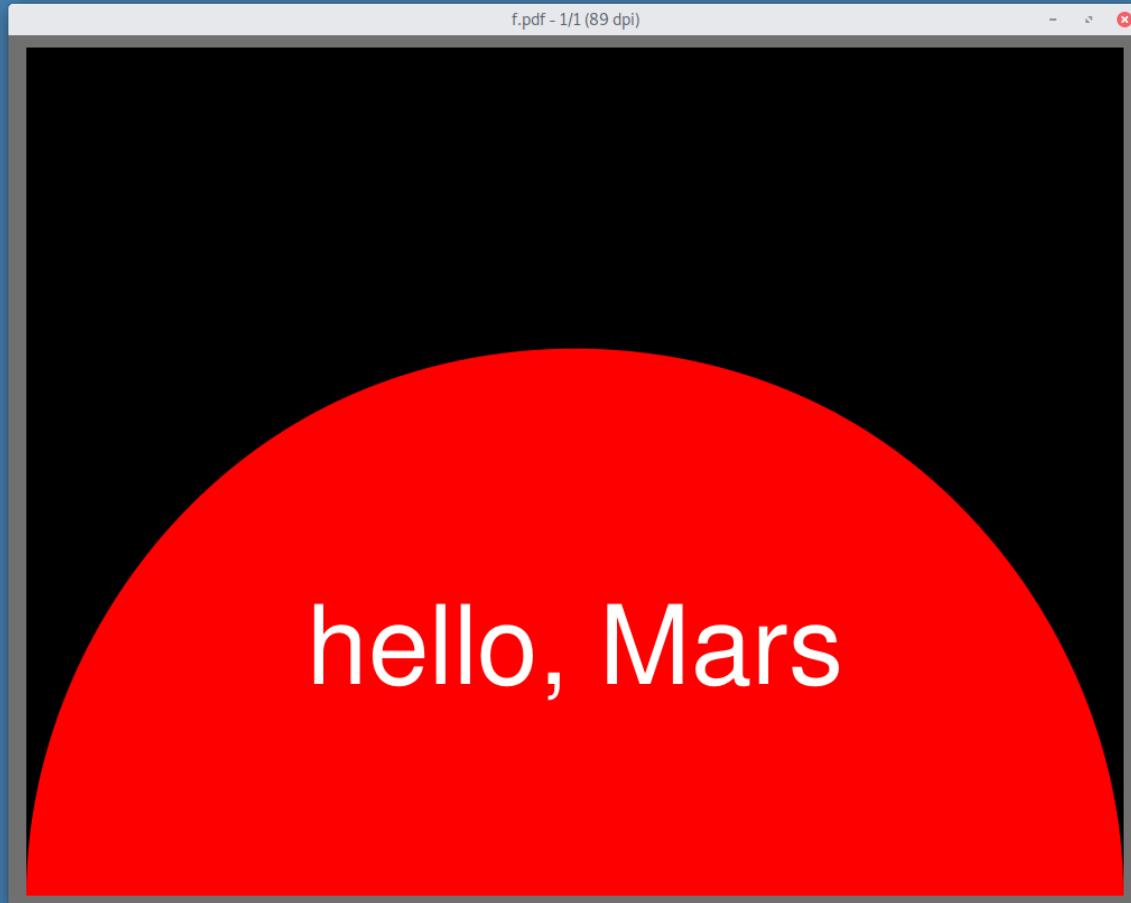
*executable deck with #!/path/to/decksh*

```
q ajstarks@slab:~/gowork/src/github.com/ajstarks/deck/cmd/decksh/doc/code
// hello world
deck
    slide "black" "white"
        ctext "hello, world" 50 25 10
        circle 50 0 100 "blue"
    eslide
edeck
~
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~
~
~
~
~
~
~
1,1 All
```



```
ajstarks@slab:~/gowork/src/github.com/ajstarks/deck/cmd/decksh/doc/code
$ decksh hw.dsh|pdf
$
```

```
q ajstarks@slab:~/gowork/src/github.com/ajstarks/deck/cmd/decksh/doc/code + - x
// hello world
deck
    slide "black" "white"
        ctext "hello, Mars" 50 25 10
        circle 50 0 100 "red"
    eslide
edeck
~
~
```



```
ajstarks@slab:~/gowork/src/github.com/ajstarks/deck/cmd/decksh/doc/code  
$ decksh hw.dsh|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 | Text      | Lists | Graphics and Arrows |
|-----------|-----------|-------|---------------------|
| deck      | text      | list  | rect                |
| edeck     | ctext     | blist | arc                 |
| slide     | etext     | nlist | arrow               |
| eslide    | textblock | li    | square              |
| canvas    | textfile  | elist | curve               |
| vmap      | textcode  |       | crarrow             |
|           |           |       | ellipse             |
|           |           |       | line                |
|           |           |       | clarrow             |
|           |           |       | circle              |
|           |           |       | hline               |
|           |           |       | cuarrow             |
|           |           |       | polygon             |
|           |           |       | vline               |
|           |           |       | cdarrow             |
| Images    | Charts    | Loop  | Data                |
| image     | dchart    | for   | data                |
| cimage    | legend    | efor  | 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

textfile

"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



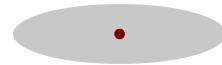
rect

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



polygon

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



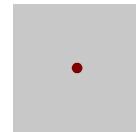
ellipse

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



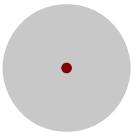
arc

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



square

`x y w [color] [opacity]`



circle

`x y w [color] [op]`



hline

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



vline

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



curve

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



line

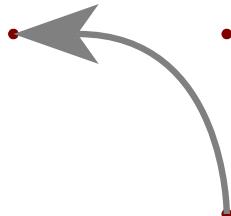
`x1 y2 x2 y2 [lw] [color] [op]`

# Arrows



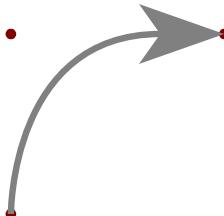
arrow

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



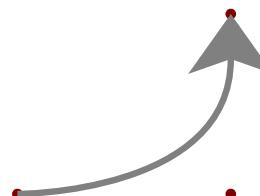
lcarrow

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



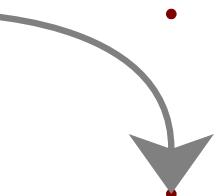
rarrow

...



ucarrow

...



darrow

...

# Images



image

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

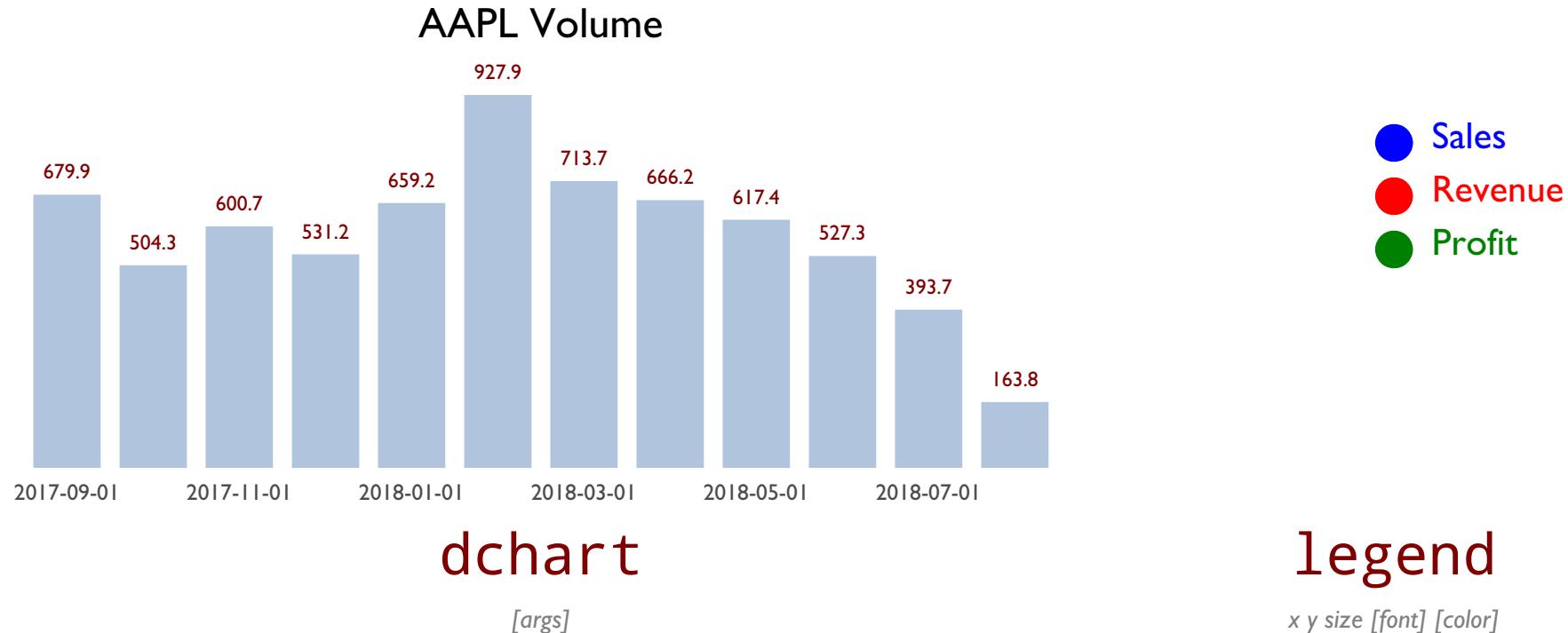


Up in the clouds

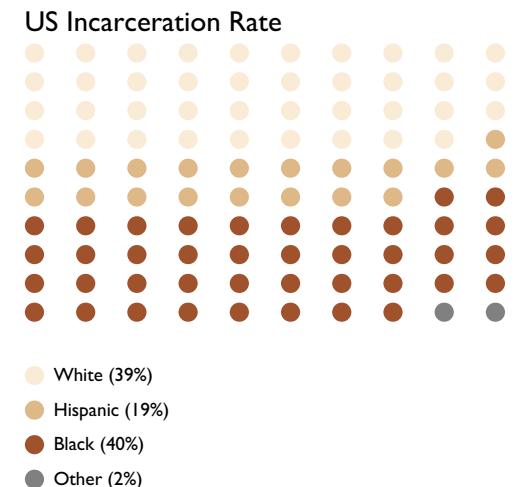
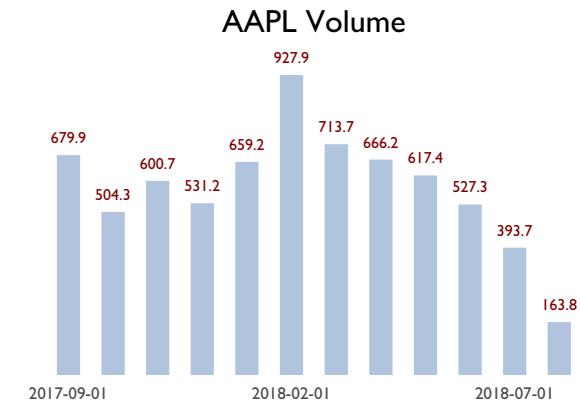
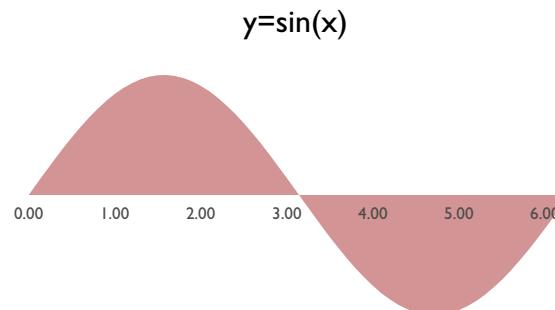
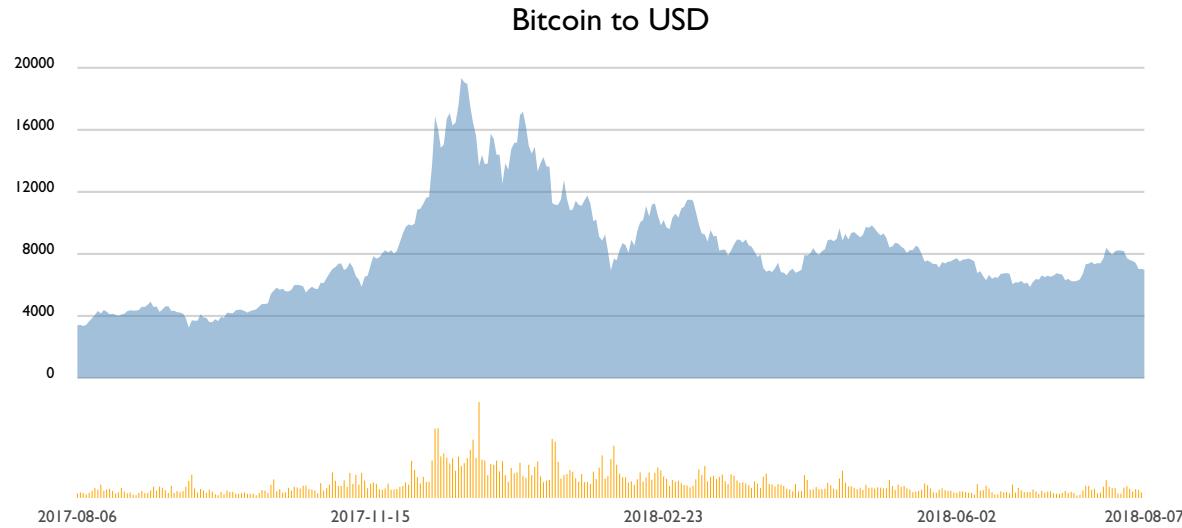
cimage

"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

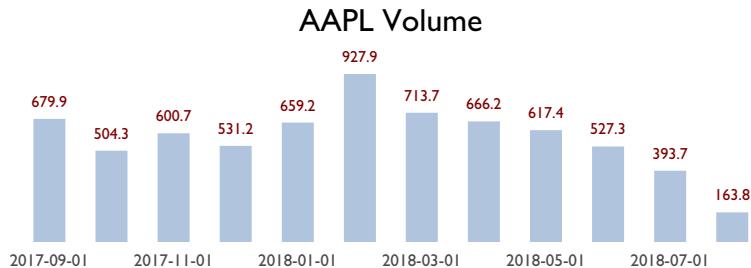
- text, image, list
- rect, ellipse, polygon
- line, arc, curve



decksh example.dsh | pdf

# Deck elements

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

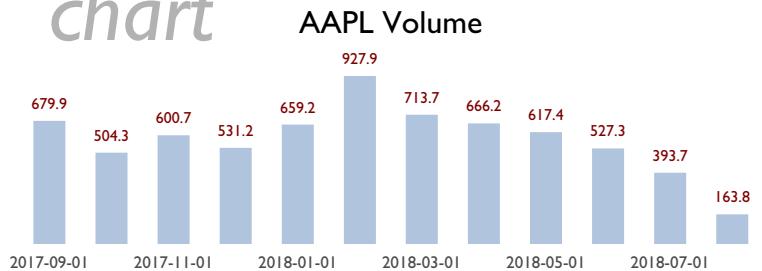


# *text* Deck elements

*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
```

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=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



ajstarks@gmail.com



@ajstarks

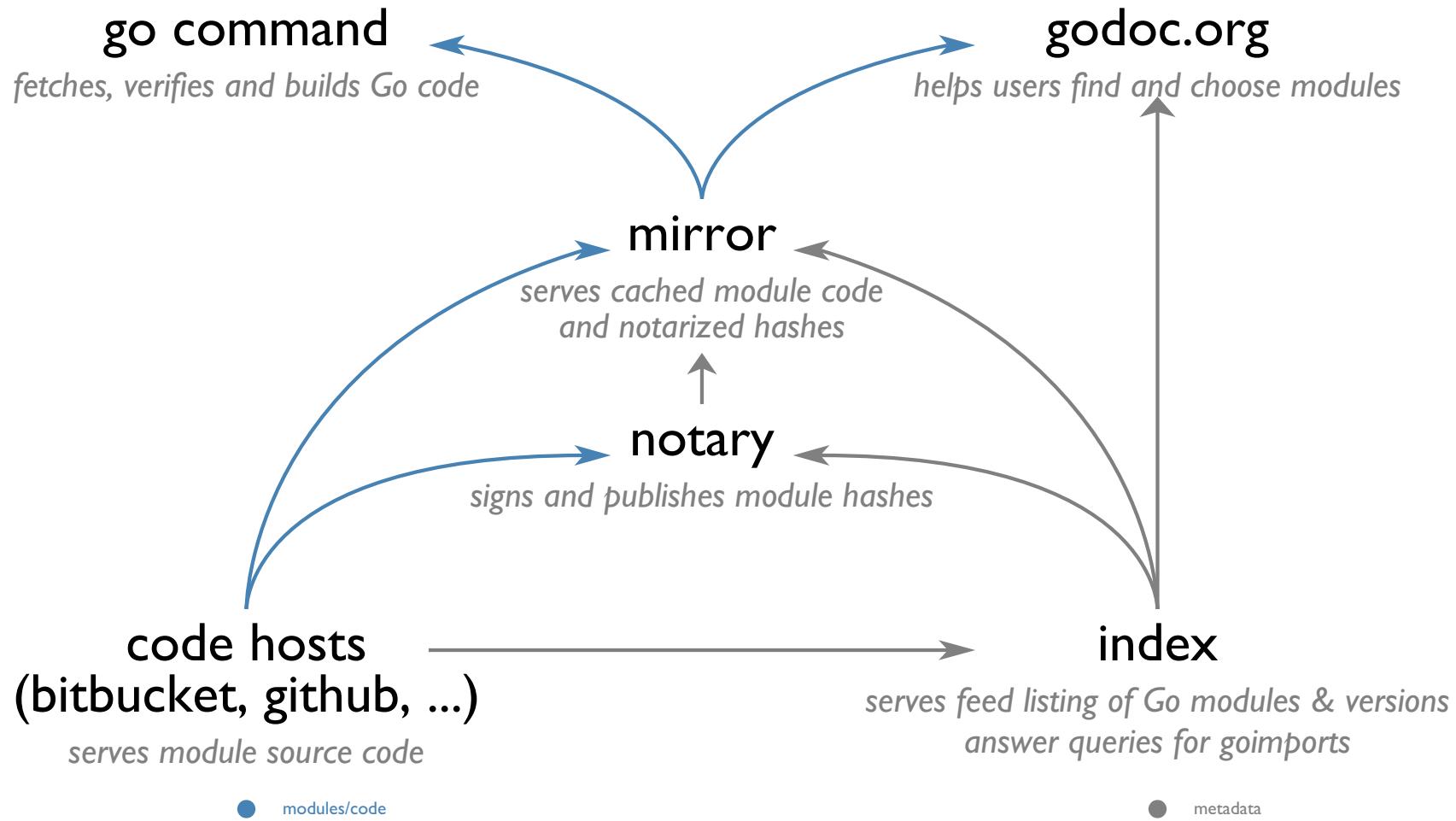


[github.com/ajstarks](https://github.com/ajstarks)



[speakerdeck.com/ajstarks](https://speakerdeck.com/ajstarks)

# Go Module Information Flows





Pulp Fiction (1993)



The Matrix (1999)



Roma (2018)

pulp04.png,1920,1080,Pulp Fiction (1993)  
matrix12.png,1920,1080,The Matrix (1999)  
roma04.png,1920,1080,Roma (2018)

caption movies.csv | decksh | pdf ...

BOS



SFO

Virgin America 351

Gate B38

8:35am

On Time

JFK



IND

US Airways 1207

Gate C31C

5:35pm

**Delayed**

# Flight Information

Los Angeles (LAX)



New York/Newark (EWR)



Time to Destination

Estimated time of arrival

Local time of arrival



1:20

12:14 am

12:14 am

Ground speed



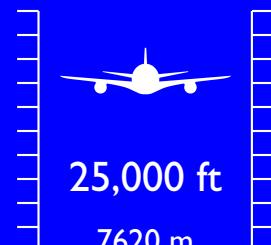
Headwind



Outside Temperature



Current Altitude

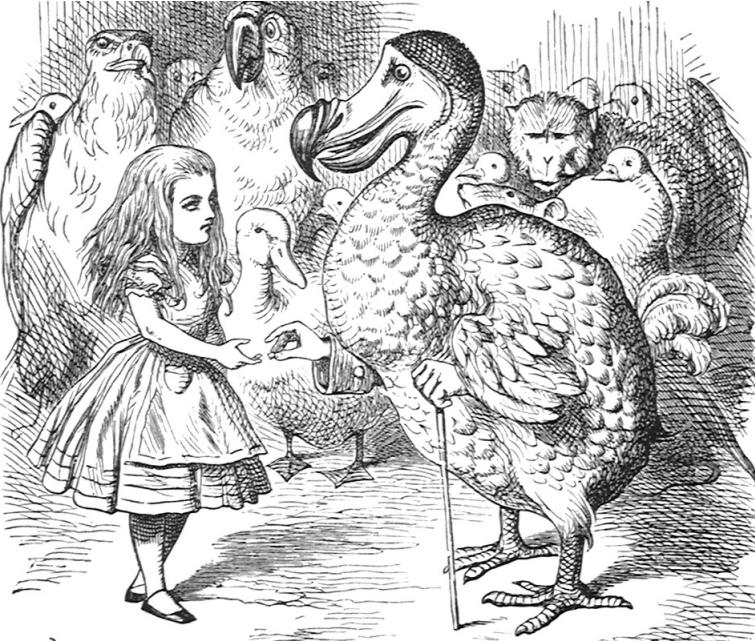


## *Chapter V*

## *Advice from a Caterpillar*



THE Caterpillar and Alice looked at each other for some time in silence: at last the Caterpillar took the hookah out of its mouth, and addressed her in a languid, sleepy voice. "Who are you?" said the Caterpillar. This was not an encouraging opening for a conversation. Alice replied, rather shyly, "I—I hardly know, sir, just at present—at least I know who I was when I got up this morning, but I think I must have been changed several times since then."



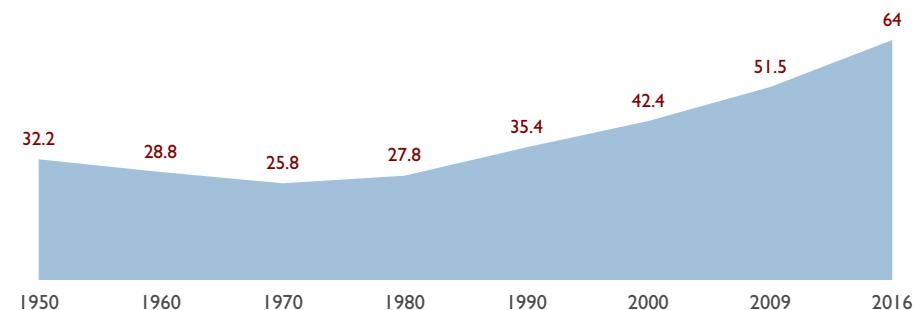
You promised to tell me our history, you know," said Alice, "and why it is you hate—C and D, she added in a whisper, half afraid that it would be offended again. Mine is a long and a sad tale!" said the Mouse, turning to Alice, and sighing. "It is a long tail, certainly," said Alice, looking down with wonder at the Mouse's tail; "but why do you call it sad?" And she kept on puzzling about it while the Mouse was speaking, so that her idea of the tale was something like this:—

Fury said to a mouse, That he met in the house,  
"Let us both go to law: I will prosecute  
YOU—Come, I'll take no denial; We must have a trial: For really this morning I've nothing to do."  
Said the mouse to the cur, "Such a trial, dear Sir, With no jury or judge, would be wasting our breath." "I'll be judge, I'll be jury, Said cunning old Fury: "I'll try the whole cause, and condemn you to death.'

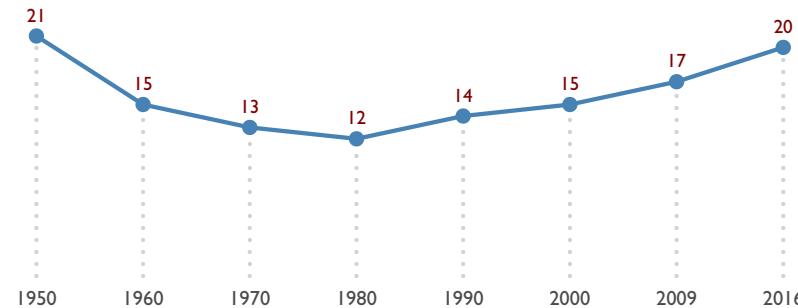
# A record 64 million Americans live in multigenerational households

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.

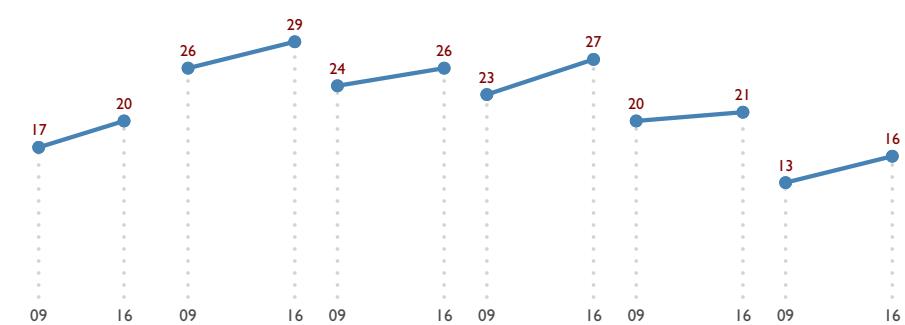
Multigenerational households (millions)

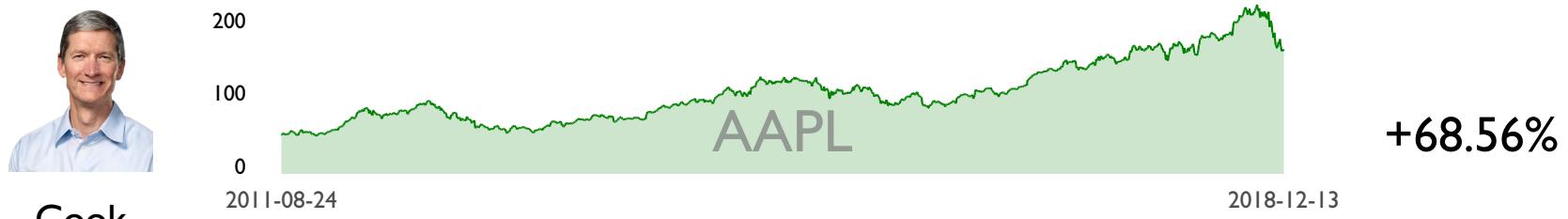


% of Americans in multigenerational households



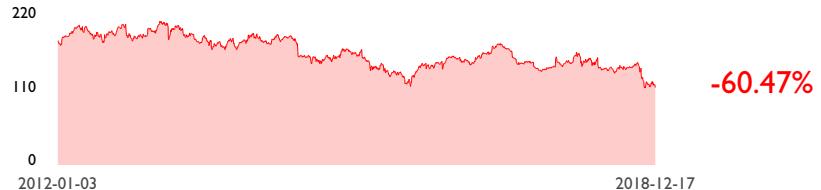
Total      Asian      Black      Hispanic      Other      White







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.



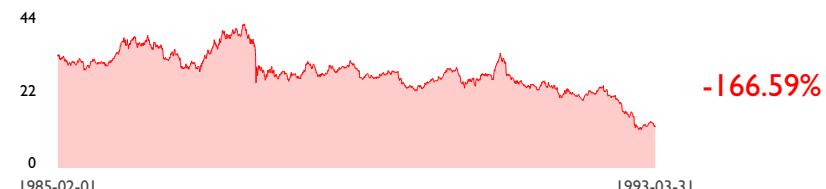
Gerstner



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.

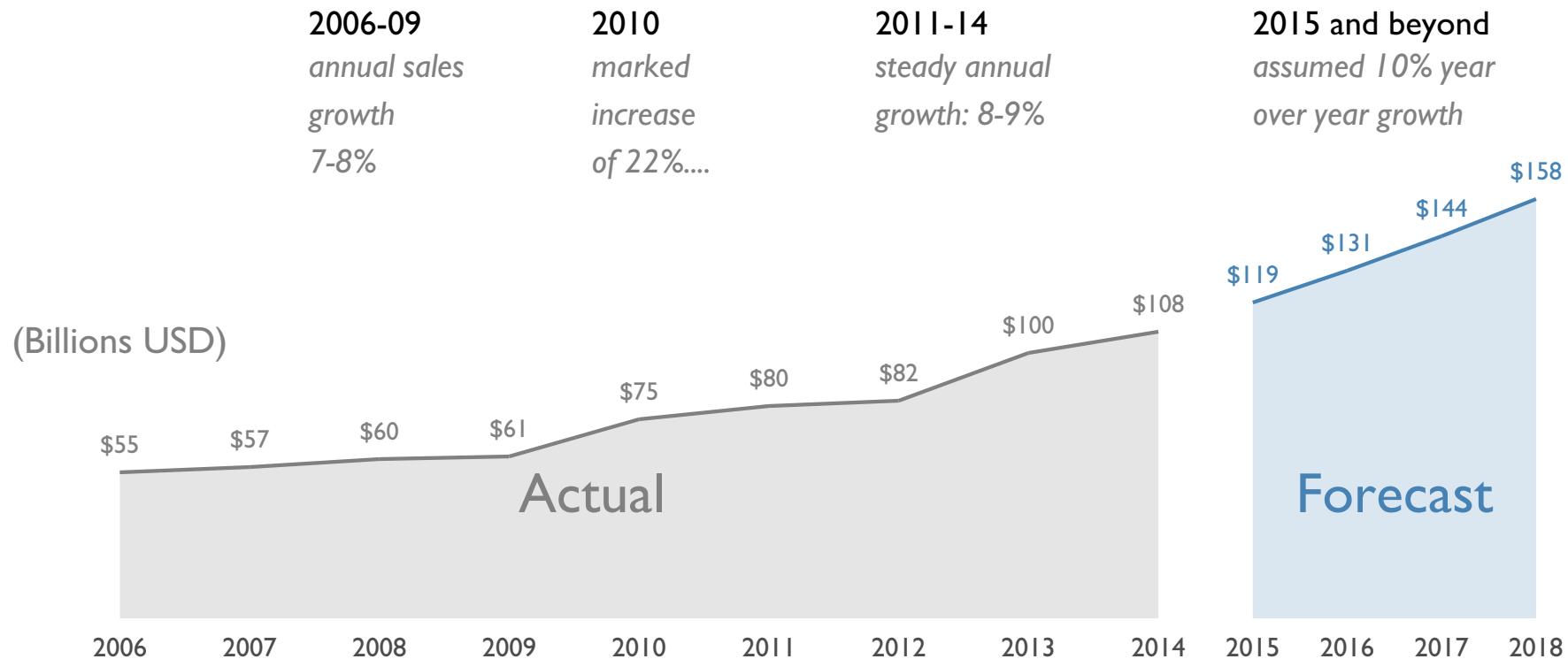


Akers

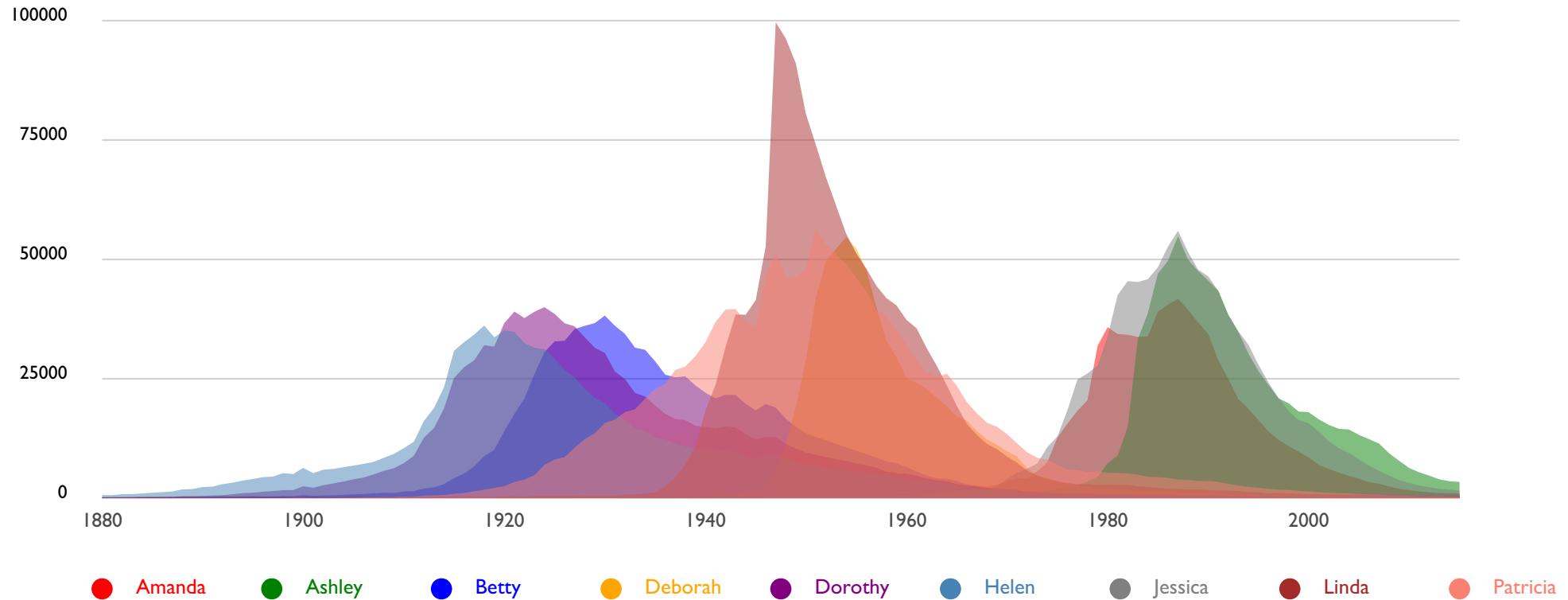


Akers was credited with simplifying the company's bureaucracy to focus more on profits. In a restructuring intended to reverse three years of disappointing performance, he created five new, autonomous organizations responsible for the company's innovation, design and manufacturing. Akers was forced to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

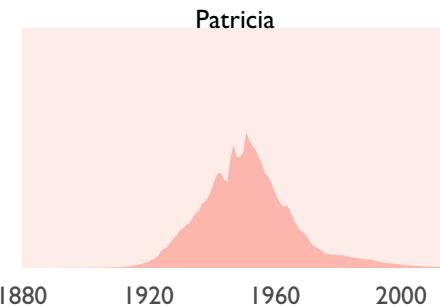
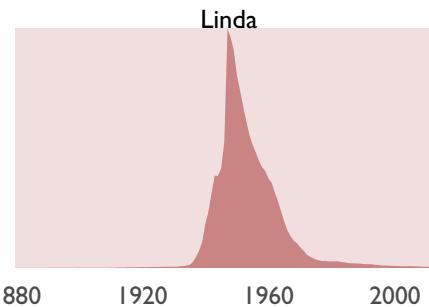
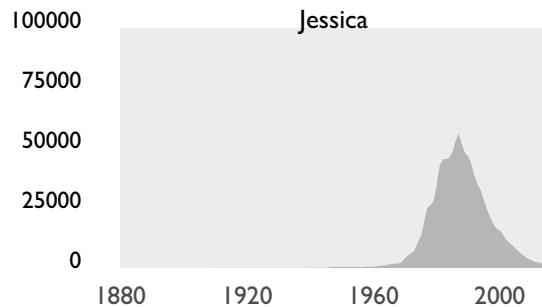
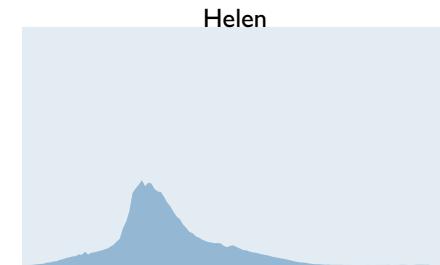
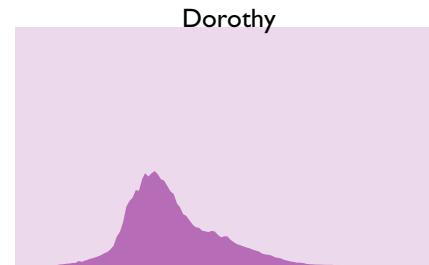
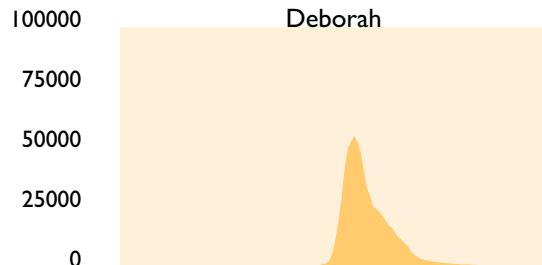
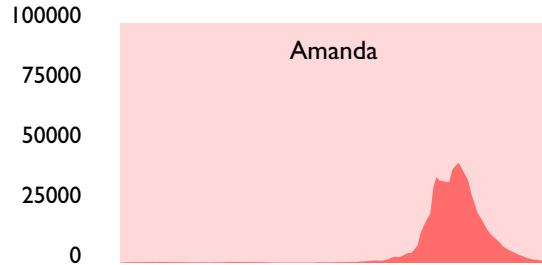
# Sales over time



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

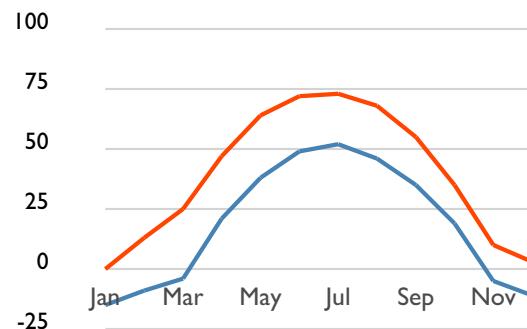


# Evolution of Baby Names in the US: 1880-2015

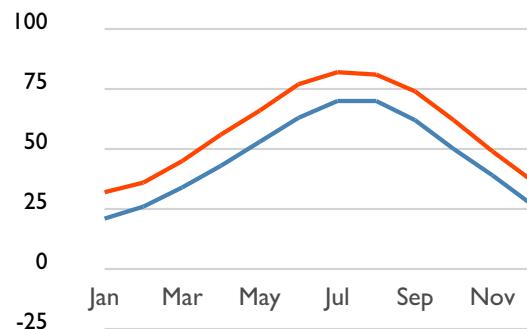


# Average High/Low Temperatures (°F)

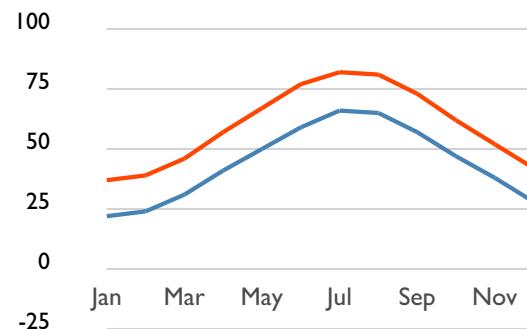
## Fairbanks



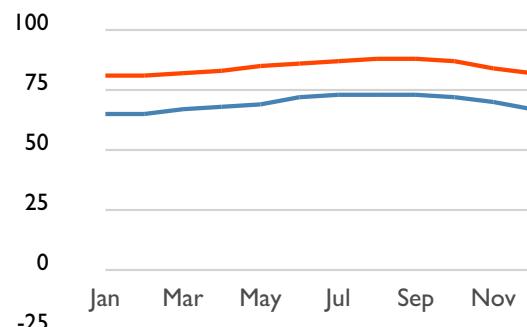
## Chicago



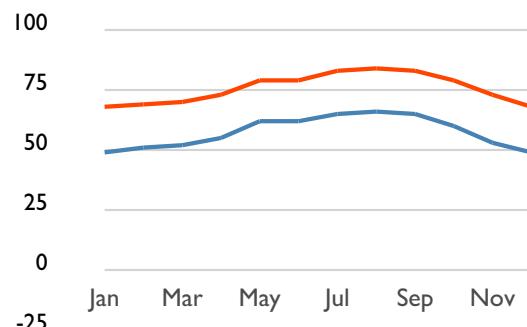
## Boston



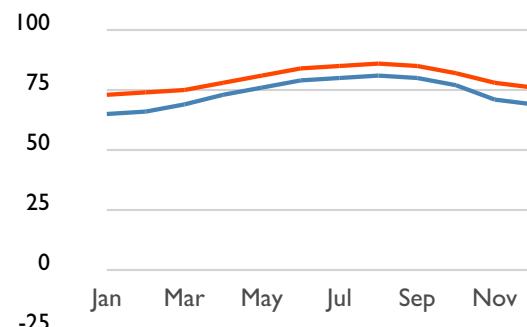
## Honolulu



## Los Angeles

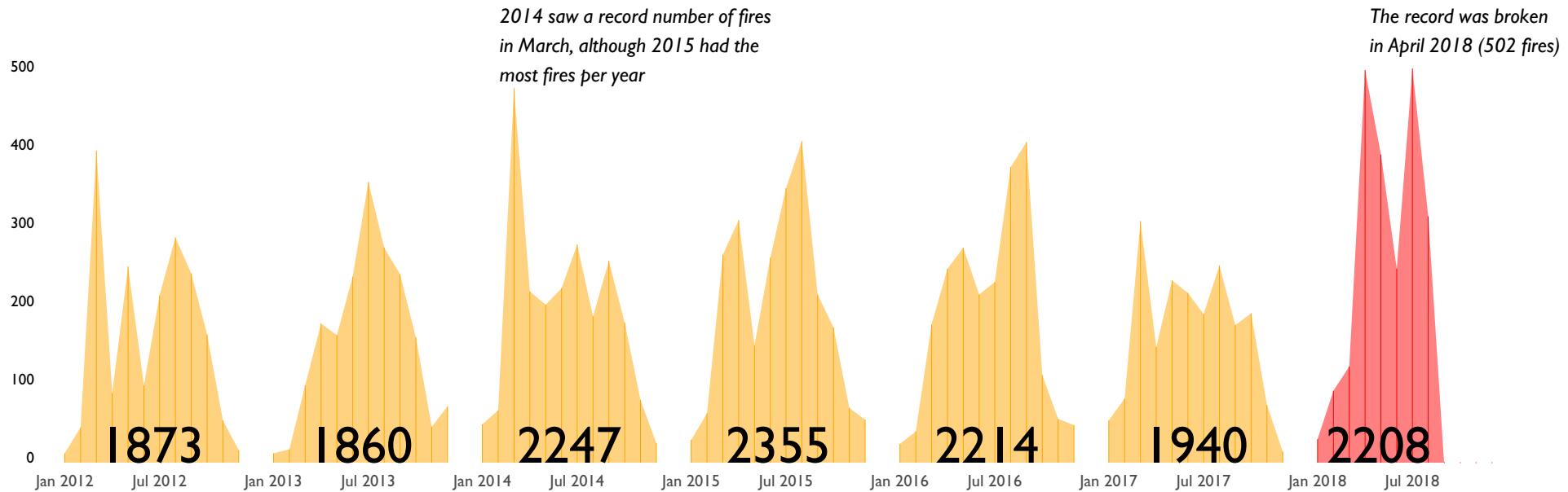


## Miami



● 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`