02 Backend

One by One

GO

Description

- Backed by Google
- 2009
- 40k commits
- System programming
- Compiled

What it is for ?

- Need performance
- Microservice
- Learn an easy compiled language

Pro

- Easy to learn (23 keywords)
- Efficient
- Compiled
- Fast
- Multithreaded (goroutines)
- Lot of packages

Cons

- Error catching
- Package management
- Garbage collector
- Not enough possible optimisation
- Not memory safe
- Code architecture
- Documentation

Who use it ?

- Uber
- Pinterest
- Sendgrid
- Groupon
- Heetch
- Google

Code example

Docker
Kubernetes
Graphana
Gogs
Hashicorp

NodeJS

Description

- Use javascript
- 2009
- 30k commits
- non-blocking event-driven I/O Runtime

What it is for ?

- Data intensive real time application
- Bots
- Cross-plateform application (electron/ionic)
- CLI

Pro

- Number of packages (think about an object suffix it with .js)
- One language for front and backend
- Asynchronous
- Performances
- npm / yarn

Cons

- No real normalization
- Monothread

Who use it ?

- Paypal
- Netflix
- Trello
- DuckDuckGo
- Reddit
- Ebay

Code example

Express
Ghost
API Boilerplate

Ruby (On Rails)

Description

- Created by DHH in 2004
- Extracted from the code of Basecamp
- Rails 6 is out !
- Backed mostly by Basecamp, GitHub and Shopify

What it is for ?

- Web application
- RESTful API
- Fast prototyping

Pro

- Developper productivity
- Mature ecosystem
- Best industry standards
- Stability
- Resources (howtos & gems)
- Active Record

Cons

- Ruby is slow (but Ruby 3 is coming)
  - boot time
  - runtime
- Documentation
- Lack of flexibility

Who use it ?

- Basecamp
- GitHub
- Airbnb
- Twitch
- Shopify
- SoundCloud

Code example

- Mastodon (Slack alternative)
- Rubygems (Ruyb package manager)
- Gitlab

Python

Description

- 1991
- 100k commits
- Interpreted language
- Made for non-developpers

What it is for ?

- Script
- Science
- ML

Pro

- Package - C Binding (Keras/Jupyter Notebook)
- Beautiful code
- Rapid development
- Large community

Cons

- Slow
- Not good on Multi-processor task
- OOP bad design

Who use it ?

- Uber
- Spotify
- Instagram
- Netflix
- Dropbox
- Google

Rust

Description

- 90k commits
- System programming language
- Strong compile-time correctness guarantees
- Fast performance
- Memory safe (no crashes, no data races)

What it is for ?

- System
- Fast binaries
- Safe progam
- WASM

Pro

- Guaranteed memory safety
- Fast
- Open source community
- Concurrent
- Efficient C bindings
- Cargo
- Documentation

Cons

- Learning curve
- Packages maturity
- Compile time

Who use it ?

- Mozilla
- Dropbox / Cloudflare / Amazon
- NPM
- Chucklefish (Stardew Valley)
- Deliveroo
- Meili

Code example

MeiliDB
Amazon Firecracker
Wasmer
Servo