ba·bash·ka

Elegant and maintainable scripting with Clojure and Babashka

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((Hello World!))

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Disclaimer

ALL CONTENT IS FROM PERSONAL INTERESTS AND NOT THE OPINIONS OR ENDORSEMENTS OF OUR RESPECTIVE EMPLOYERS

Agenda (~2 hours)

- The Problem

- What are the options?

- What and Why of bb

- Editor and REPL setup

- Setting up the project

- Exploring the scripting issues

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- Let's code already!

- Ship it to AWS!

- [If time and/or interest permits] Hacking and contributing to bb

- Conclusion and References

The **Problem**

Desentitising Logs

- A service that **logs out the transactions** made by the various customers per account.

- The logs mostly are operational data but **may contain Personally Identifiable Information (PII)** like email ids, account numbers etc.

- These logs are **intended for long term storage**, primarily intended for retrospective debugging, analytics, replay etc.

- Regulations **require us to strip/redact these PII** and store longer term or adhere to GDPR and delete them after a period.

- We need to **do this live** as and when the logs arrive.

What needs to be done?

- A Function As A Service (FAAS) function with the logic **to find and redact the PII.**
- This needs to **react to every line of log** that's produced by the application.
- This needs to **have fast startup time** to process the logs as soon as possible to **improve log ingestion throughput**.
- Should be easy to **build and deploy** and adding and **modifying the PII patterns should be simple**.
- We know and **love the JVM**, can we still use it?

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What are the **options?**

SURELY THIS IS A SOLVED ISSUE

No silver bullet. Or is it?

- **This is a scripting issue**: a straightforward problem of finding patterns and replacing them ASAP.

- The classic JVM is ruled out due to **the slow stratup times**. Things like Lambda SnapStart help here.

- **Shell scripts** are out for obvious reasons.

- We could use **Python/Ruby/JS/other scripted langs** but we have issues like complex/no parallel processing, lesser performance and it's not the JVM!

- **GraalVM native compiled** java is fast but has significant building ceremony. Also, we need a scripted lang.

- **Can we use the JVM and still do all the above things?**

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What and Why of Clojure/bb

IT DOES HAVE A COOL NAME RIGHT?
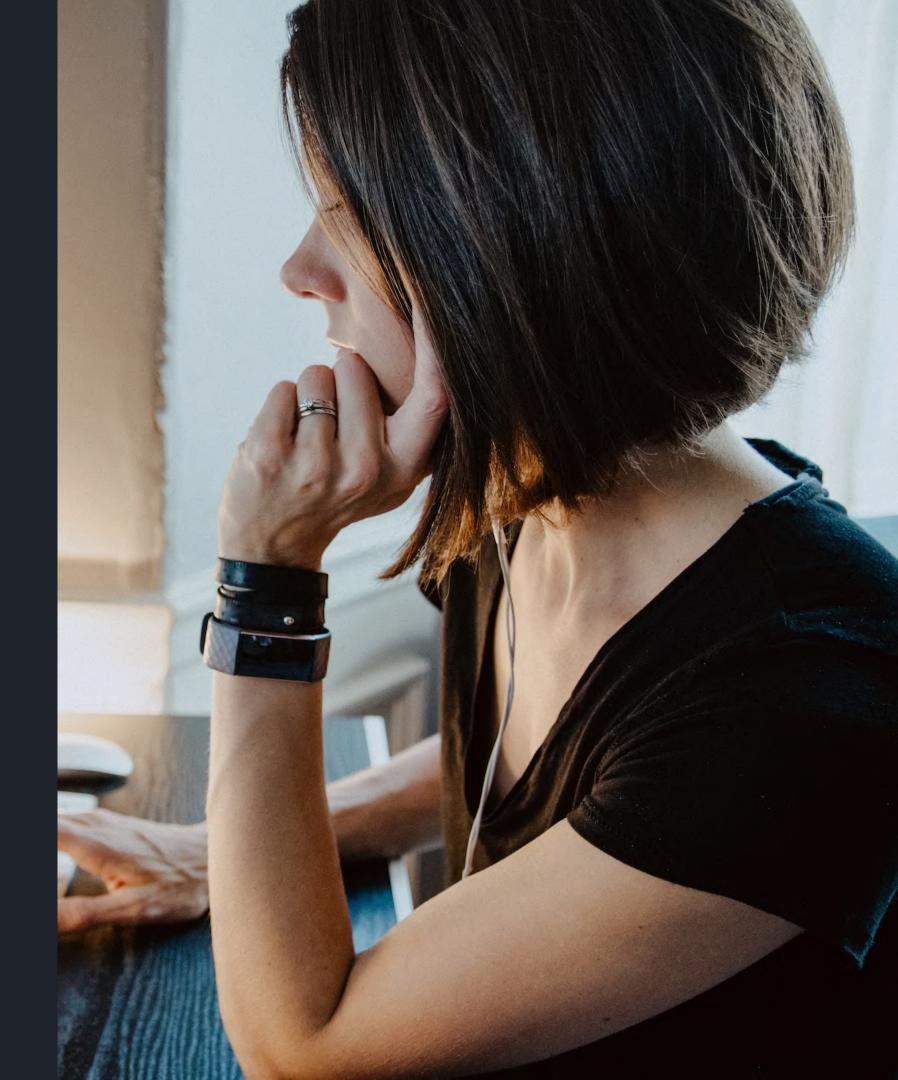
What's cool about Clojure?

- Runs on the **Java Virtual Machine, JavaScript runtimes and the Common Language Runtime (.NET)**.

- Has **many more non-official implementations (bb being one)**.

- **LISP**

- **Functional, Immutable**.

- **Dynamically Typed, Data Oriented**.

- **Hosted** with full **first class interop**.

- **Open Source** under **EPL 1.0**.

- **Brian Goetz's** favourite non-java JVM language!

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Who is bb for?

- The experienced Clojure dev **can keep writing their scripts in Clojure**.

- Folks needing more **scripting/glue code** to automate parts of their code and deployments.

- Folks working closer to the infra and **not on the JVM can still write Clojure**. Can this finally rid the world of YAML?

- Running Clojure on **resource constrained environments as cross-platform and self contained scripts**.

- **Need for (start-up) speed**: Write quick and lean Clojure scripts for functions as a service like AWS Lambda.

- **Sneak in Clojure as more maintainable scripts** in non Clojure/JVM codebases or teams.

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Differences from Clojure/JVM

- bb **is an Ahead Of Time compiled** binary which **interprets Clojure code** unlike the Clojure compiler.

- Only **a pre-selected set of Java classes are supported** as there is no bytecode compiler of the JVM.

- **Native code access from bb is not possible** for similar reasons as of now. (Might change, stay tuned!)

- More info and differences:

https://book.babashka.org/#differences-with-clojure

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Editor and REPL setup

BALANCE THE ((( )))

bb --version

clojure --version

Let the editor wars begin!

The indispensable Clojure LSP: https://clojure-lsp.io/installation/

Neovim, the best one!

https://github.com/Olical/conjure

Emacs

https://docs.cider.mx/cider/index.html

VSCode/Codium

https://calva.io/

Vim

https://liquidz.github.io/vim-iced/

Sublime Text 4

https://github.com/tonsky/Clojure-Sublimed

IntelliJ IDEA

https://cursive-ide.com/

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Running some code: script.clj

```clojure
(defn fact
  [n]
  (reduce * 1 (range 1 (inc n))))


(when (= *file* (System/getProperty "babashka.file"))
  (println (fact 5)))


(comment
  (fact 5))
```

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Setting up the project

LET'S GO!

The source code

git clone https://github.com/lispyclouds/javazone-bb-workshop

Trying it out

- Running tests: **bb test**

- Start nREPL: **bb nrepl**

- Try connecting your editor and try out eval-ing some forms.

- Build the lambda: **bb pack**

- [Optional] To deploy to AWS:

  - Make sure you have an account and the access keys are setup.

  - This uses the bb available on the system to make the layer and assumes x86_64 arch.

  - Run: **bb deploy**

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Exploring the scripting issues

HERE BE DRAGONS

Scripting is Easy

- FACT: **No one can write shell scripts** correctly.
- FACT: **No one can write Makefiles** correctly. Also, *WHAT* is up with the **.PHONY tabs**?
- The shell scripts are **not cross platform**. Windows shouldn't be ignored.
- **Complexity creeps up** in the automation code fast.
- **Big mental shift** when writing scripts.
- Pack everything in docker? **RIP hard disk space**.
- Would be nice to not only **keep writing Clojure** here but also **have the same reuse and maintainability** as the app code.

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bb.edn and tasks

RIP MAKE

- https://book.babashka.org/#project-setup
- https://book.babashka.org/#tasks

Lets code already!

- Sample log input:

```
{

  "event": {

    "log": "{\"timestamp\":\"2019-09-07T-15:50+00\",\"level\":\"WARN\",\"message\":\"This email:

foo@bar.com totally needs to be removed.\"}"

  }

}
```

- Output:

```
{

  "event": {

    "log": "{\"timestamp\":\"2019-09-07T-15:50+00\",\"level\":\"WARN\",\"message\":\"This email:

<REDACTED> totally needs to be removed.\"}"

  }

}
```
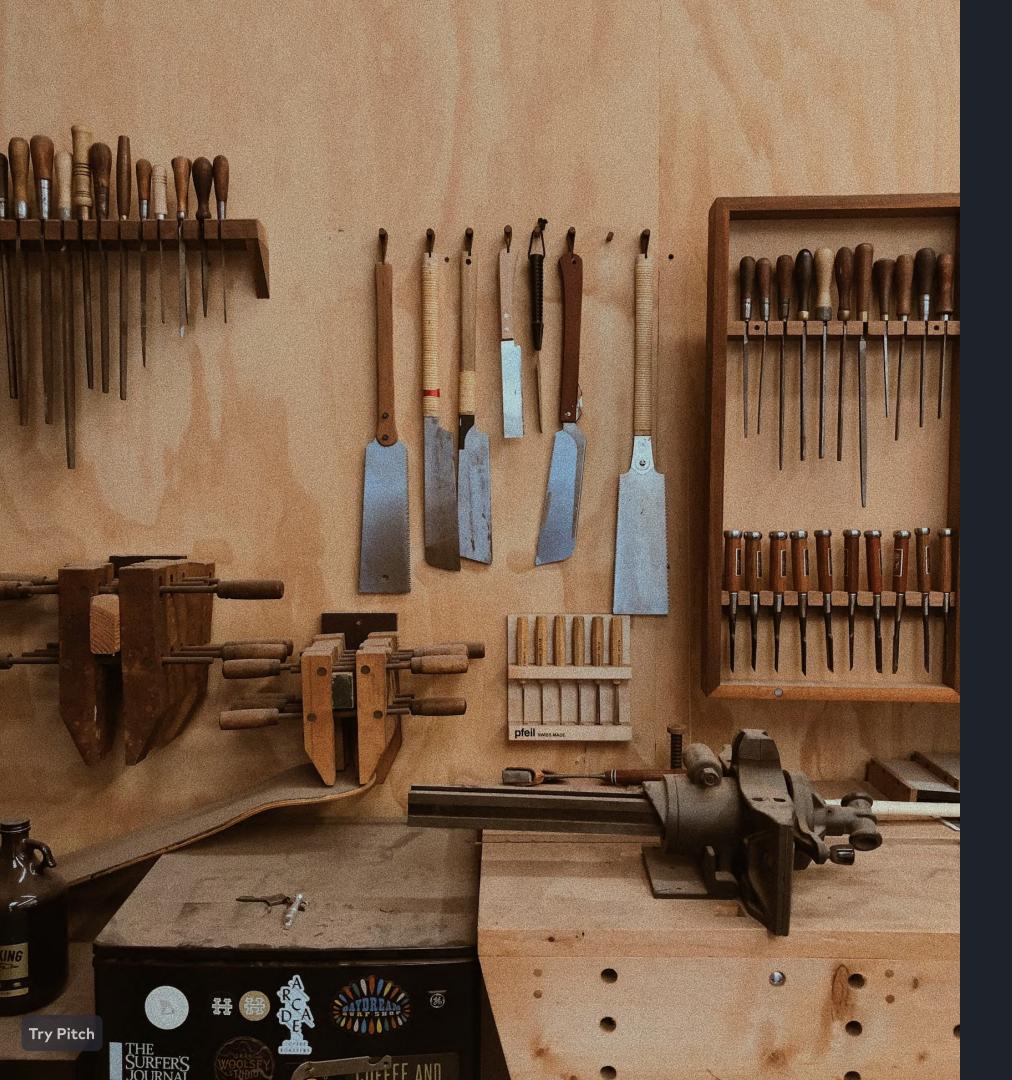
Ship it to AWS!

DOES IT ACKSHUALLY RUN?

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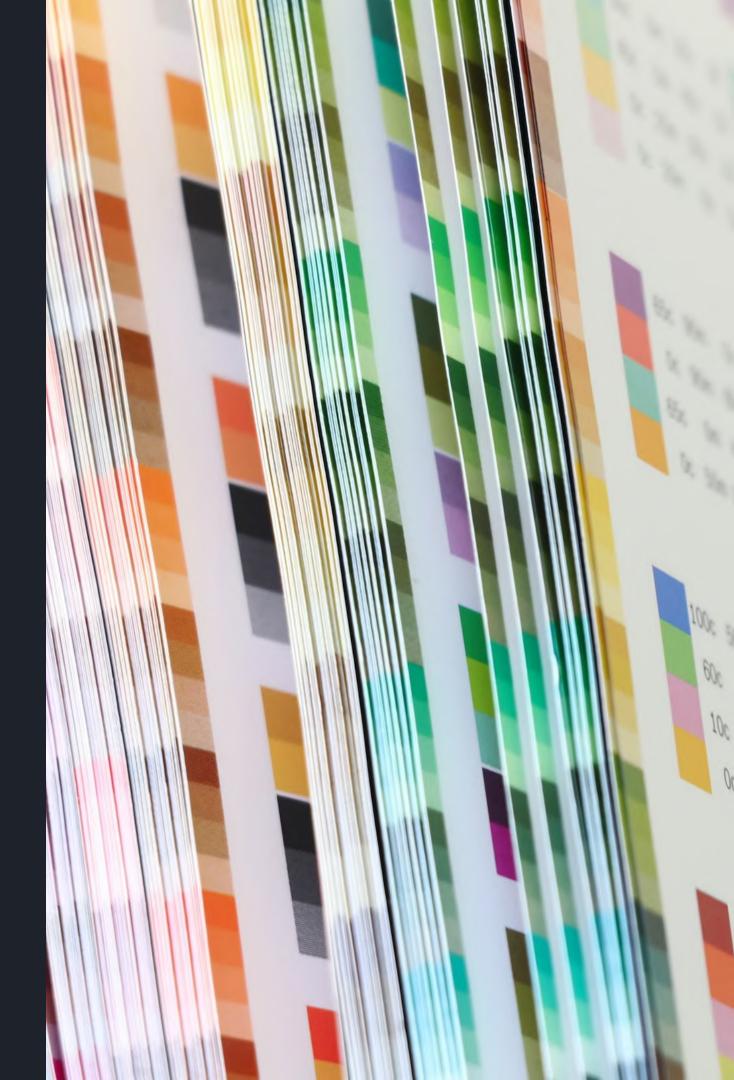# Hacking and contributing to bb

BIG WARM COMMUNITY!

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Contributing

- We are **always on the lookout for more folks** to get their hands dirty with the source! There's **a whole universe of things to contribute** to around bb as well!
- Code lives on: https://github.com/babashka/babashka
- Come **chat with us** on the #babashka channel on the Clojurians Slack.
- Checkout the developer doc.
- Recommended steps:
  - **Look for an issue** that may already address your needs **or make one** before contibuting. A conversation can also be started on the slack channel.
  - **Raise a Pull Request(PR)** from a fork containing:
    - The code **changes**
    - **Tests** for the changes
    - **Changelog**
    - **Docs** if needed
- **PRs are given high priority** and would be addressed ASAP!

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References

- Site: https://babashka.org

- The Book: https://book.babashka.org

- The Babooka: https://www.braveclojure.com/quests/babooka

- The wiki: https://github.com/babashka/babashka/wiki

- GitHub: https://github.com/babashka/babashka

- The first talk: https://www.youtube.com/watch?v=Nw8aN-nrdEk

- Clojurians Slack: #babashka

- The bb ecosystem: https://github.com/babashka

- Collection of more external resources:
  https://github.com/babashka/babashka#articles-podcasts-and-videos

- Follow the **#babashka** hashtag on twitter and mastodon and the Babashka News.

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The ~~bork~~superdude

Consider sponsoring **borkdude** on:

- https://github.com/sponsors/borkdude
- https://opencollective.com/babashka
- https://ko-fi.com/borkdude

Thank You!

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