Enterprise Java Developer's

SURVIVAL GUIDE

handbook

Petyo Dimitrov

AGENDA

Motivation

Steps for survival

Q&A

MOTIVATION

THE ENTERPRISE JAVA WILDERNESS

STEP 1: COME PREPARED

What do I need to know to be an Enterprise Java developer?

KNOWLEDGE (1)

Solid understanding of core Java & some specifics:

- garbage collection strategies
- class loading specifics
- debugging (thread & heap dumps)

Some experience with databases and middleware

KNOWLEDGE (2)

Knowledge in OOP concepts and design patterns

- Singleton, Dependency Injection, Factory, MVC …

Core Java EE specs like Servlets, JPA & Components

Basic Linux command line skills

STEP 2: BRING GEAR

What tools should I be experienced in?

IDES & TOOLS

VisualVM
Top Consumers
Biggest Objects (Overview)
(e) 67.4 KB
(f) 58 KB
(g) 50.2 KB
(h) 42 KB
(i) 38.6 KB
(j) 35.7 KB
(k) 34.3 KB
(l) 26.5 KB
(d) 123.6 KB
(c) 162.7 KB
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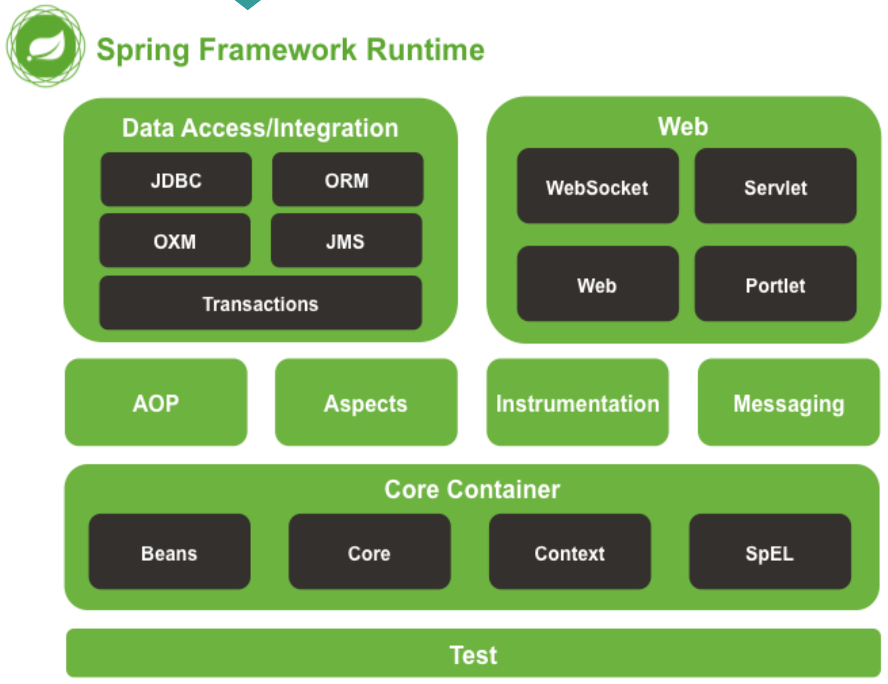
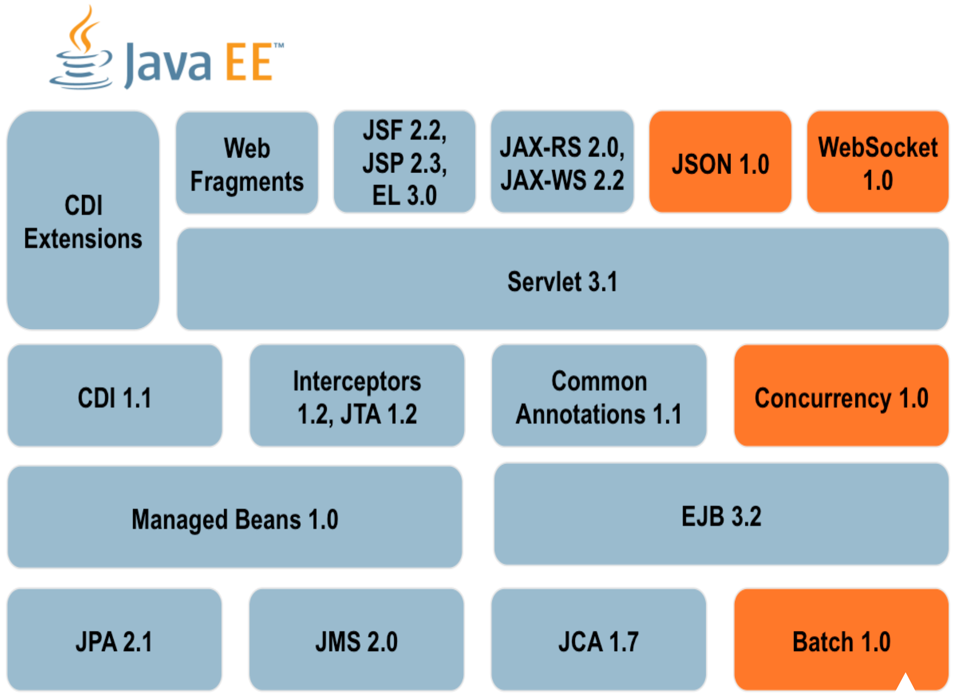
STEP 3: GET ORIENTED

Which technology stack should I choose?

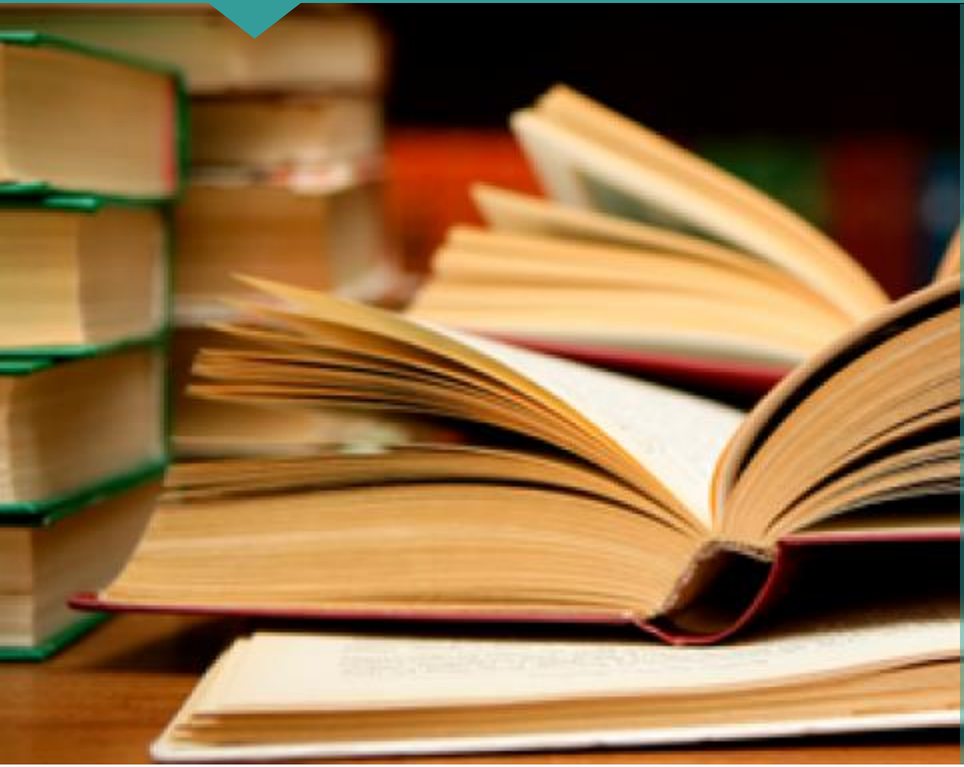
SPRING VS JAVA EE





CLIENT REQUIREMENTS

KNOWLEDGE REQUIREMENTS



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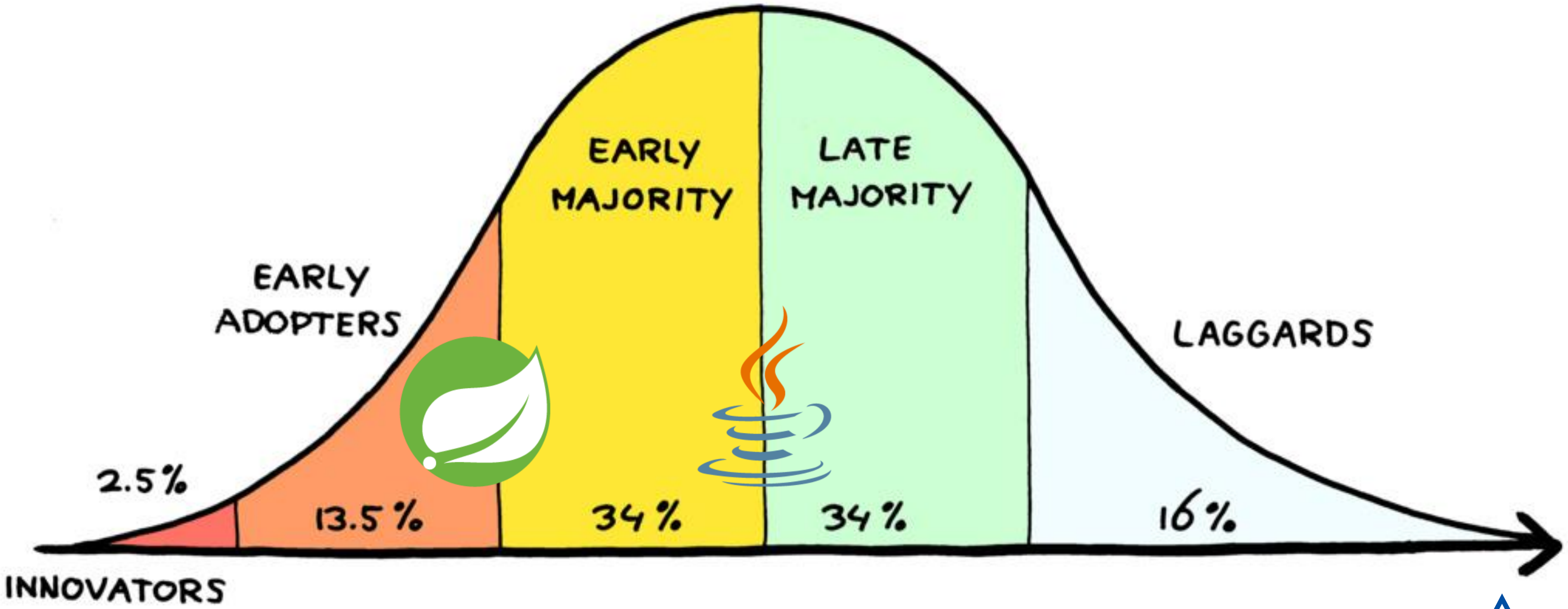
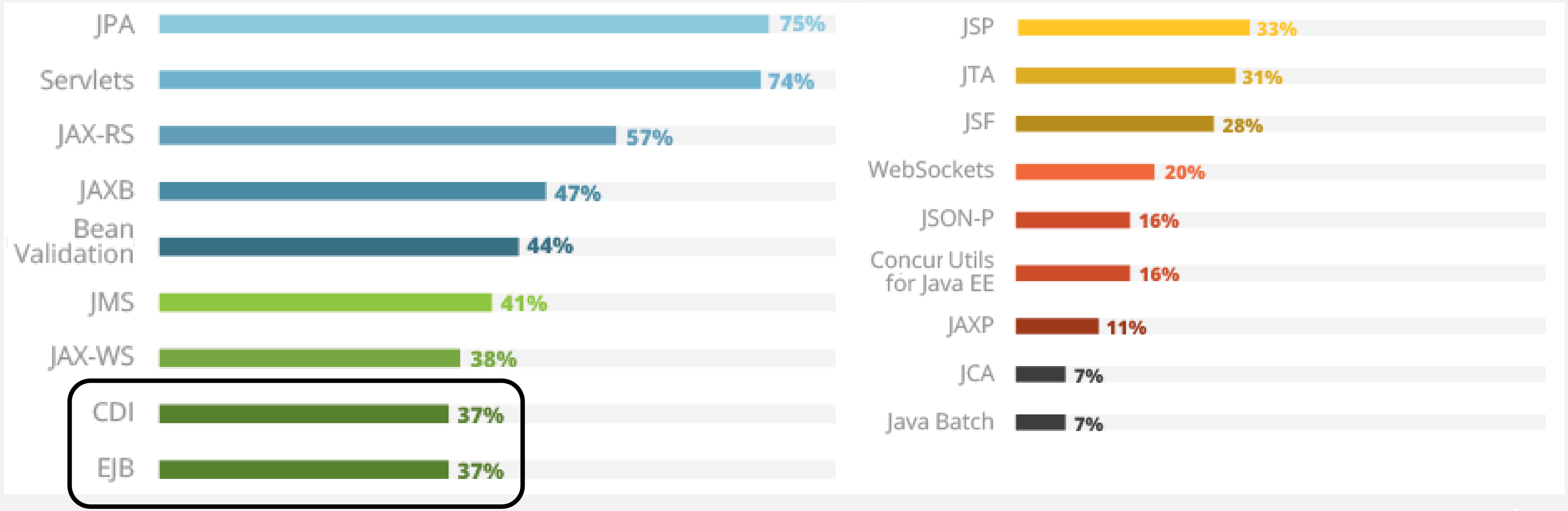
PROJECT REQUIREMENTS

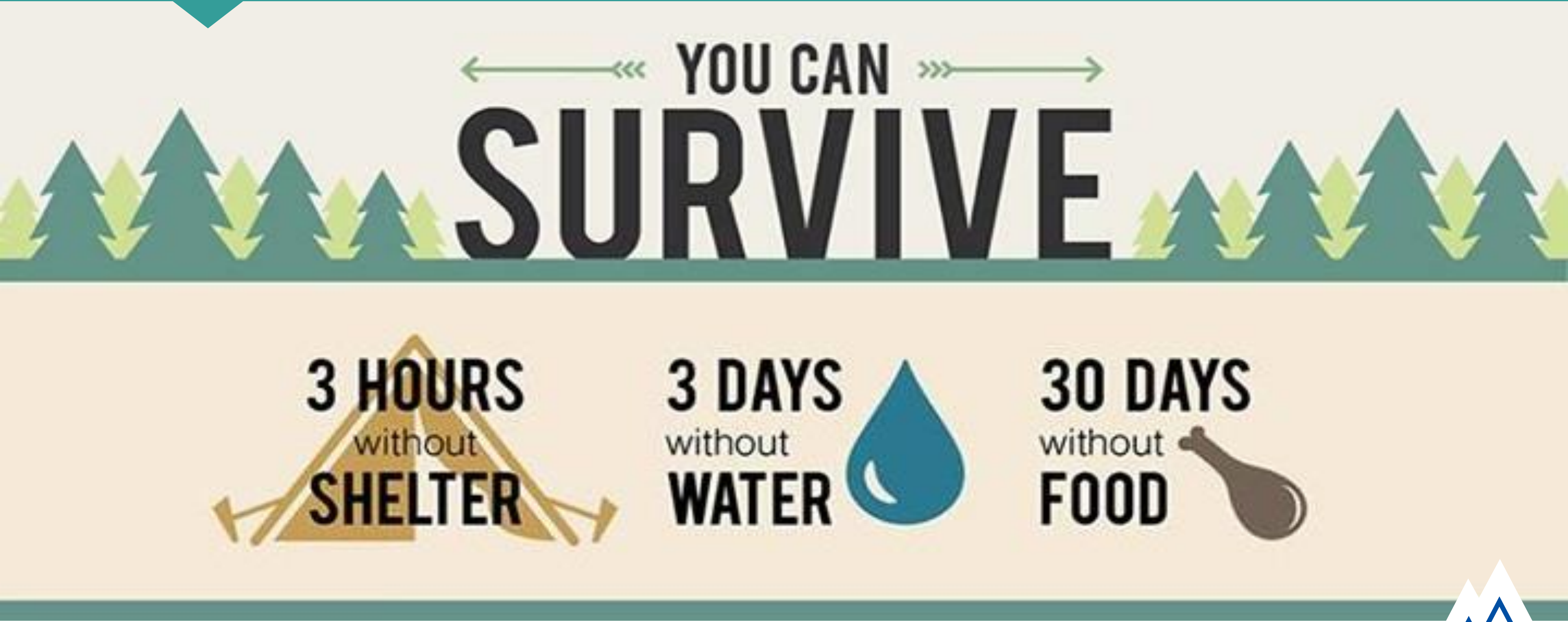


POPULAR JAVA EE SPECIFICATIONS



ZeroTurnaround's survey of ~1700 developers

AND NOW WHAT?



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STEP 4: BUILD SHELTER

How do I setup the project?

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BASIC SETUP (1)

CI: Jenkins Travis CI

Build: maven gradle

VCS: git

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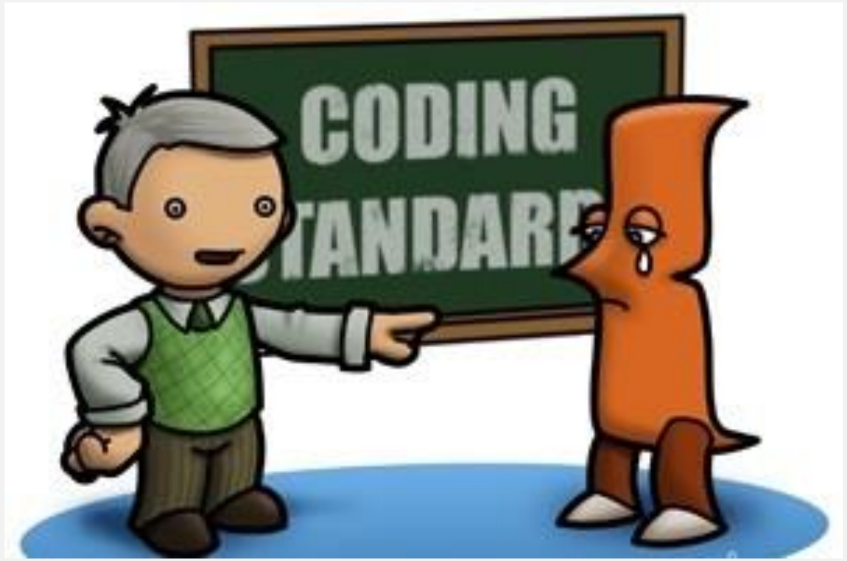
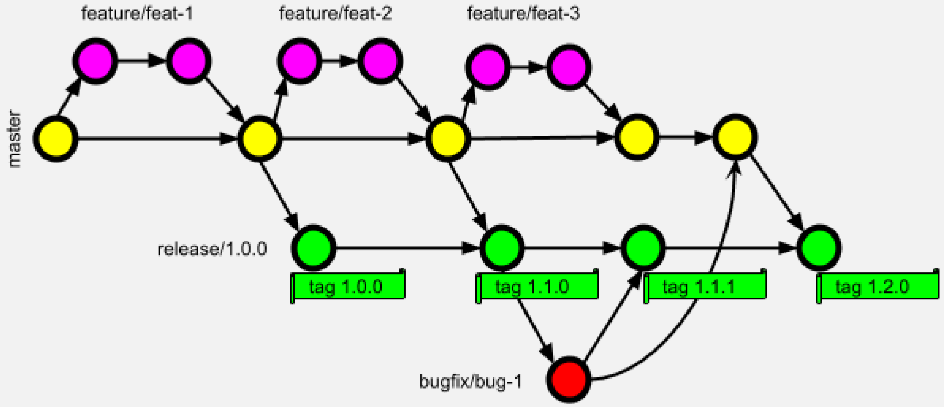
BASIC SETUP (2)





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ADVANCED SETUP

1. Static code analysis → Sonar / IDE-based
2. DB schema management → Flyway / Liquibase
3. In-memory DB for development
4. Easy to setup local environment
5. Stable staging environment
6. Continuous Delivery

UNIT TESTING!

Via JUnit & Mockito / Groovy & Spock

Caveats:

- one-off short-term projects
- tests treated as second class code
- meaningless tests
- brittle tests (white box, extensive mocking)
- lack of strategy for test data

STEP 5: FIND WATER

How do I implement the project?

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SHOULD I USE AN ORM?

relational	nosql
new	legacy
object centric	data centric
CRUD queries	reporting queries

WHAT PROBLEMS CAN I EXPECT?

"Magic" powers i.e. hidden learning curve

Reduced control over DB

Loss of DB specific capabilities

Difficulty fetching necessary data

Performance issues and locks

HOW TO DESIGN REST API-S?

- Follow the REST principles
  & look at the APIs of large companies
- Use proper HTTP verbs (GET, PUT, POST, …)
  - `GET /movie/1/booking`
- Use proper HTTP status codes
  - `418 I‘m a teapot`

HOW TO DESIGN REST API-S? (2)

- Medium grained resources
  - up to two levels of nesting

- Security:
  - HTTPS
  - OAuth2
  - BasicAuth

HOW TO DESIGN REST API-S? (3)

- Proper URLs using plural nouns
  - `GET /movies vs GET /getAllMovies`
- Spinal-case in URLs and camelCase / snake_case for parameters
  - http://www.penisland.net/
  - `GET /order-item/1?orderNumber=2`

HOW TO DESIGN REST API-S? (4)

- Consider versioning early on:
  - only major version
  - aim to have up to 2 versions in parallel
  - `/v1/movies, /v2/movies`
- Filters & sorting via URL parameters
  - `?sort=rating,budget&director=nolan`

HOW TO DESIGN REST API-S? (5)

- I18n of data:
    - via `Accept-Language: bg_BG`

- Handling of operations (i.e. non-resources)
    - `POST /email/12/send`
    - consider JSON-RPC

STEP 6: FIND FOOD

What about performance?

WHAT PROBLEMS SHOULD I EXPECT?

- Infrastructure issues (available resources, unreliability, latency)
- External system communication (synchronous calls, no timeouts, faulty integrations)
- Lack of middleware tuning (thread & connection pools, clusters)
- Garbage collection (limits, strategies)
- Bugs (synchronization issues, memory leaks)

HOW TO IMPROVE PERSISTENCE?

1. Monitor query performance
2. Review native SQL of sensitive queries
   - mark/optimize slow queries
3. Use caching offered by ORM
4. Beware of many-to-many relations & fetch types
5. Run updates/deletes in bulk (beware of cascading)
6. Paging & query projection
7. Move logic to DB

HOW TO IMPROVE FRONT END?

1. Track time for processing each REST request
2. Use gzip
3. Partial request & responses (?fields + HTTP PATCH)
4. Cache friendly results (etag, last-modified)
5. Paging

STEP 7: STAY IN ONE PLACE VS SCOUT THE AREA

QUESTIONS?

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THANK YOU

petyo.dimitrov@musala.com