

Objectives

- Backend: Data stores
 - PostgreSQL in practice
- Final Project

Mar 18, 2022

Sprenkle - CSCI397

1

1

Next Friday: Patrick Reynolds

- GitHub Actions
- AMA (Ask Me Anything)
 - 2:30-3:30 p.m.
 - What form would this take?

Mar 18, 2022

Sprenkle - CSCI397

2

2

Programmatic API Example: JDBC

```

public User getUser(int user_id) {
    Connection con = getConnection();
    PreparedStatement pstmt;
    ResultSet rs;
    User u = new User();
    try {
        pstmt = con.prepareStatement("SELECT username FROM users WHERE id=?");
        pstmt.setInt(1, user_id);
        rs = pstmt.executeQuery();
        while (rs.next()) {
            String username = rs.getString(1);
            u = getUser(username);
        }
        pstmt.close(); rs.close(); con.close();
    } catch (SQLException e) {
        ...
    }
    return u;
}

```

Mar 18, 2022

Sprenkle - CSCI397

3

3

Programmatic API Example: Elasticsearch

```

response = client.prepareSearch(ES_INDEX_NAME)
    .setTypes(ES_TYPE_NAME)
    .setQuery(query)
    .addField("id", CITY_FIELD_NAME, INSULA_ID_FIELD_NAME,
INSULA_NAME_FIELD_NAME, PROPERTY_ID_FIELD_NAME,
"property.property_number", "property.property_name",
PROPERTY_TYPES_FIELD_NAME, "edr_id", "bibliography",
WRITING_STYLE_IN_ENGLISH_FIELD_NAME,
LANGUAGE_IN_ENGLISH_FIELD_NAME, "cil", "description",
"comment", "content_translation", "measurements")
    .setSize(NUM_RESULTS_TO_RETURN)
    .addSort("edr_id", SortOrder.ASC)
    .execute().actionGet();

for (SearchHit hit : response.getHits()) {
    inscriptions.add(hitToInscription(hit));
}

```

(truncated)

What design pattern is this using?

Mar 18, 2022

Sprenkle - CSCI397

4

4

Practice PostgreSQL

- ~10 minutes

Mar 18, 2022

Sprenkle - CSCI397

5

5

What You Should Know Before You Graduate

- No matter what you do after graduation, I know you will need to do a few things:
 - Learn something new on your own
 - Present something you learned to someone else
 - Have to make a decision based on tradeoffs and justify the decision
 - Work with others

Mar 18, 2022

Sprenkle - CSCI397

6

6

Final Project: Tool Exploration and Presentation

- Logistics: teams of three (and one of four)
- Explore a ('hefty') tool
 - Why the tool?
 - Features
 - Complementary tools
 - Alternative tools
- 25-minute presentation of the tool
 - Includes a demo

Mar 18, 2022

<http://www.cs.wlu.edu/~sprenkle/cs397/project.php>

7

Tool Options

- Cloud databases (not taking CS326)
 - AWS Dynamo, Google Cloud SQL, AzureSQL
- Debugger: GDB
- Deployment: Octopus Deploy
- Development/Workflow: Crucible, Jenkins
- DevOps: GitLab, Ansible, Puppet
- Kubernetes
- Message queuing tools: RabbitMQ or Apache Kafka (needs more)
- Monitoring Tools
 - Elastic Stack (ELK)
- Postman (needs more with it)
- Software Frameworks
 - React
 - Flask/Django
 - Spring
- Testing and Coverage
 - Cucumber, GoogleMock, Mockito
- WebHooks (needs more)

Should be new to you

Open to others but need to be software-related

Mar 18, 2022

8

Deliverable: Preliminary Tool Exploration

- Explore tool
 - Find relevant documentation, tutorials, blog posts, etc.
- Organize team
 - Division of labor
 - A lot of overlap in tasks
 - How collaborate?
 - Team deadlines
- Let me know if anything needs to be installed

Mar 18, 2022

Sprenkle - CSCI397

Deadline: Tues, March 29

9

9

Deliverable: Presentation

- Move past the buzzwords: what is it really?
- Motivation, Problem tool solves
- How does it work?
- What you need to do to get started?
 - Dependencies
- Demo
- What are the opportunities?
 - What does the tool work with?
 - (some of the tools can work together)
 - How can you extend it?
- What are the competitors/alternatives?
 - How do they compare?
- Strengths and limitations of tool

Mar 18, 2022

Sprenkle - CSCI397

10

10

Deliverable: Web Pages

- Web page about the tool for other students
 - Summary of the presentation topics
 - Best tutorials, sites about tool
- This can take different forms, e.g.,
 - A Markdown file in a public GitHub repository
 - GitHub pages
 - A Google site

Mar 18, 2022

Sprenkle - CSCI397

11

11

Deliverable: Analyses

- Evaluation of Tool
 - Summary of tool
 - Quantitative analysis
 - Qualitative analysis
 - Tradeoffs in adopting the tool
- Team assessment
 - Organization, Collaboration
- Individual reflection

Mar 18, 2022

Sprenkle - CSCI397

12

12

Project Timeline

Objective	Deadline	% of Final Project
Tool preferences (individual)	March 21, 11:59 p.m.	1%
Preliminary Exploration	March 29, 11:59 p.m.	5%
Presentation	Last week of classes	49%
Web page(s)	Tues of finals week	16%
Analyses (individual) <ul style="list-style-type: none"> • Tool • Team • Individual reflection 	End of Finals Period	29%

Mar 18, 2022

Sprenkle - CSCI397

13