Fundamentals of Data Engineering

Week 01 - sync session

datascience@berkeley

Week 1 - Overview

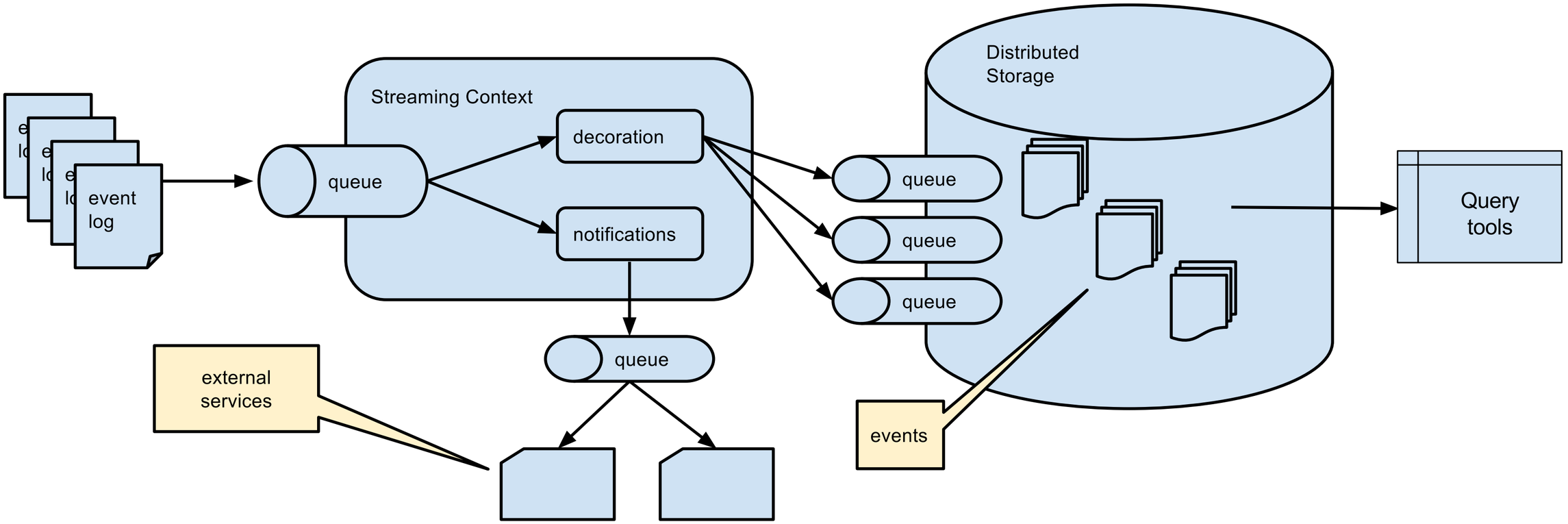
- Introductions
- Set up your working environment for this class
- Review syllabus, course goals, processes & tools ...

Introductions

In this class, you will

- Gain exposure to basic problems associated with data and data-driven decision-making
- Develop a working knowledge of some tools/techniques used to solve these problems
- Learn where to go for help and more info

Just enough


event log
queue
Streaming Context
decoration
notifications
queue
external services
queue
queue
queue
Distributed Storage
events
Query tools

Process/Procedures

- Good practices
- Appropriate tools
- Getting used to

How this class works

Syllabus

https://mids-w205-fund-of-data-eng.github.io/course-content/

Asyncronous Content

```
https://github.com/mids-w205-martin-mims/course-content/ \
blob/master/01-Introduction/async-videos.md
```

- Same as in ISVC, but you can access it all in one place here.

Readings

- No one textbook available for this course.
- Using subscription service to cover the range of topics.
- `https://www.safaribooksonline.com/pricing/`
- Individual option: $39/month (can stop whenever you want)
- Quick note: Get the mobile apps.

Prerequisites

- Resources listed under prereqs
- Safari has tons of other materials you can help yourself with.

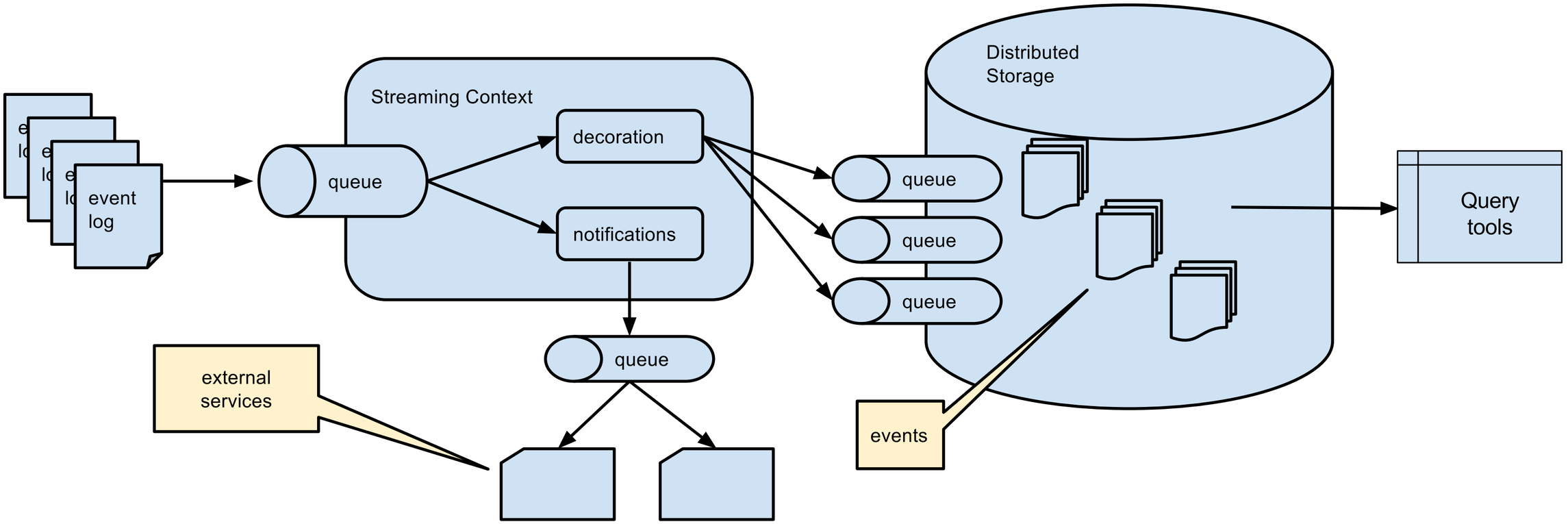
Course Outline

- 4 sections:
- 3-week Introduction
- 5-week Basics section
- 4-week Streaming Data section
- Putting it All Together

Student Projects

Student Projects

1. Querying Data
2. Tracking User Activity
3. Understanding User Behavior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Querying Data

- Use existing tools/pipeline/dataset
- Answer basic business questions

Tracking User Activity

- Use provided pipeline components
- Transform/store data
- Answer business questions
- Bonus:
  - Trigger notifications

Understanding User Behavior

- Assemble an end-to-end pipeline
- Ingest/transform/store data
- Answer comprehensive business questions
- Bonus:
  - Manage sessionization / state

Levels of Expertise

Async

- To get ready for project 1, videos - how events are generated

Activities

- Let’s get going!

Slack

Cloud Instances

1. Sign up for GCP account
2. Create a w205 image in your account
3. Create your instance
4. Access your instance

Create a w205 image in your account

Create your instance

Access your instance

SSH in and set a password

```
sudo passwd <username>
```

Access JupyterHub

- JupyterHub:

```
http://<ip_address>/
```

- Login: (created by google cloud)
- Password: (created by you)

Docker


DON'T PANIC

- pull the image:

```
docker pull midsw205/base
```

- create your mids-w205 workspace:

```
mkdir w205
```

- run (set *your* home directory for "`-v`")

```
docker run \
  -it \
  --rm \
  -v ~/w205:/w205 \
  midsw205/base:latest \
  bash
```

- `exit` (or `ctrl-d`)

Git

Git set up

Clone the `course-content` repo

- `cd w205`
- Clone the `course-content` repo into your mids-w205 workspace:

```
git clone https://github.com/mids-w205- \
  <instructor-last-name>/course-content
```

Signup Assignment

Clone the repo

- `cd w205`
- Clone the repo into your mids-w205 workspace:

```
git clone https://github.com/mids-w205- \
  <instructor-last-name>/ \
  signup-<git-user-name>
```

Open, Change, Close `README.md`

- `nano README.md`
- change line
- `ctrl-o`
- return
- `ctrl-x`
- Now you're out of nano.

Git: commit changes

- `git status`
- `git add README.md`
- `git commit -m 'my new readme'`
- The first time you commit, it doesn't know who you are.

```
git config --global user.email "you@example.com"
```

```
git config --global user.name "Your Name"
```

- `git commit -m 'my new readme'`
- `git push`

Git: submit a PR

- All assignments submitted as PRs

```
https://github.com/mids-w205-martin-mims/signup-<user-name>
```

- Click on `README.md`
- Click on edit button (pencil icon)
- Make a change
- “Commit changes” section, select “Create a new branch for this commit…”
- Enter PR name & description
- Click “Propose file change” button
- Assign instructors as reviewers
- Click “Create pull request” button

Berkeley SCHOOL OF INFORMATION