ECS 160

Software Engineering

Instructor: Tapti Palit

Teaching Assistant: Gabe Bai

Agenda

- Instructor and TA introductions
- Course information and policies
- Software engineering overview
- Course details

Instructor details

- Name: Tapti Palit
- Background: Software security, program analysis, systems
  - Ph.D. at SUNY Stony Brook, postdoc at Purdue University
- Contact details
  - Email: tpalit@ucdavis.edu
  - Email subject must contain "**W26 ECS 160**" followed by the actual subject
  - Office hours: Wednesday 2 PM – 4 PM (Zoom* / TBD)

TA details

- Name: Gabe Bai
- Background:
  - PhD student
- Email: gabbai@ucdavis.edu
- Office hours: TBD

Course information

- Class timings
  - Lectures - MWF 9 AM – 9:50 AM in Veihmeyer Hall 212
  - Discussion –
- Lectures and discussion will be recorded and uploaded on Canvas
- Course page:
  - Most slides already up
- Piazza link:
- Textbooks:
  - Required: None
  - Recommended: check the course website

Course components

- 1 midterm, 1 final
- 4 HWs – done solo
- 5-6 reading/video discussion on Perusall
- 5 **in-class** quiz

Component	Weightage
Midterm	30
Final	35
HW	20
In-class quiz	10
Reading/video reflections	5

Grade cutoffs

- Standard UC Davis grade cutoffs

Percentage	Grade
93%	A
90%	A-
87%	B+
83%	B
80%	B-
77%	C+
73%	C
70%	C-
67%	D+
63%	D
60%	D-

- Might be curved on top of these cutoffs *per instructor's discretion*
- No extra credit assignments

Academic integrity and AI policies

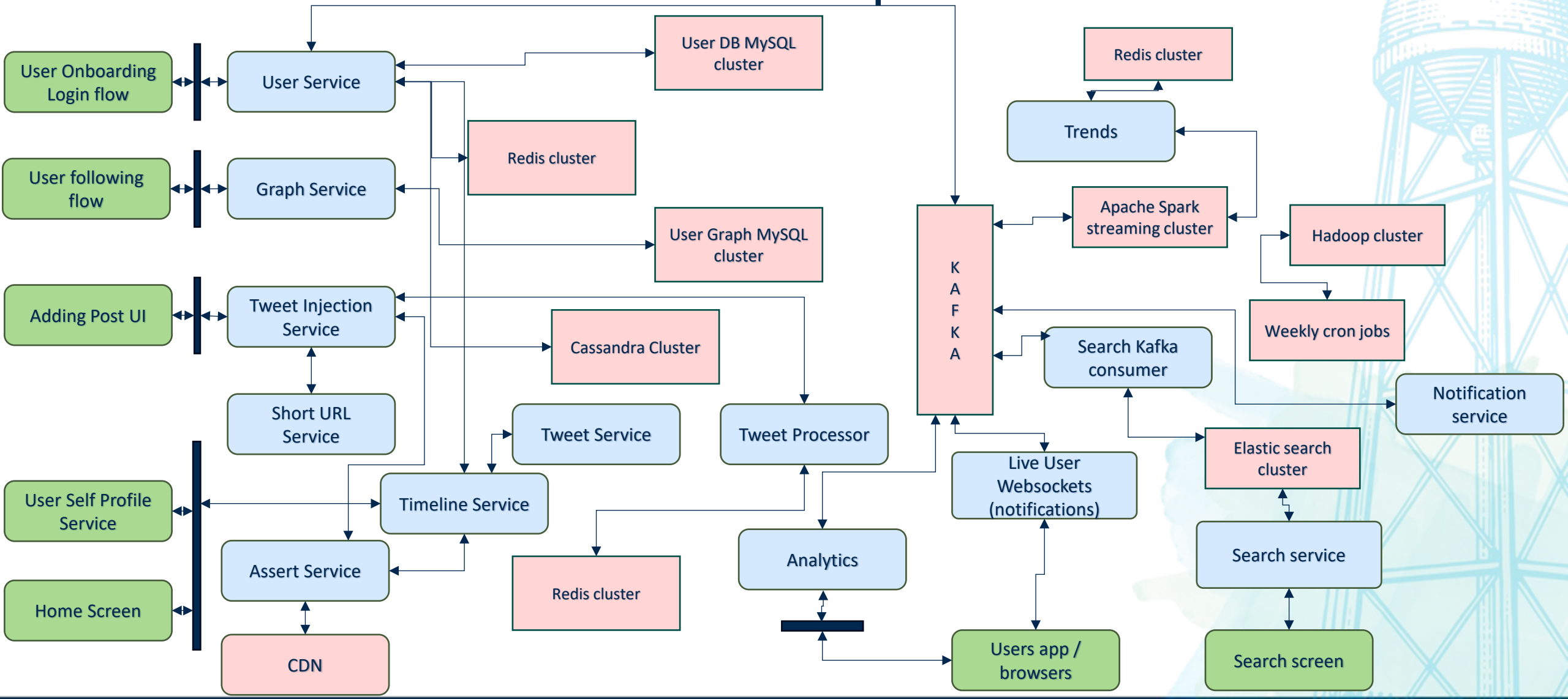
- Inter-group collaboration and discussion is permitted
  - Copying code is not permitted
- Using AI to understand concepts, exceptions, or compilation errors is permitted
- Using AI as a “search engine” is allowed
- Using any sort of AI-integration in IDEs is not permitted (Copilot, Cursor, etc)
- Turning in AI-generated code is not permitted

Modern software engineering

Modern software engineering

- Is distributed
- Is systems engineering
- Is rapidly evolving
- LLMs and automation raise the bar for humans
  - ***… ECS 160 takes these concerns into account***

Social media platform



ECS 160 modules

- Building components
- Composing systems
- Validating components

Syllabus overview

Module	Topic	Lectures	Weightage
Building components	- Design patterns - Metaprogramming using reflection and annotations	10	36%
Composing systems	- Microservices - Message queue, pub/sub - Event-driven design using Kafka - Orchestration using Kubernetes - Serverless and Function-as-a-Service	12	44%
Validating components	- Property testing - Fuzz testing and sanitizers - Symbolic execution - Abstract interpretation	6	18%
		28	

HW assignments

- ORM using Java annotation and reflection
- Social media data analysis using Spring Boot micro-services and Kafka
- [Tentative] Deployment of microservices on Google Cloud and Kubernetes
- Fuzz testing a provided library with custom mutators

Ideal background

- Experience with “app development”
- Knowledge of networking fundamentals
- Knowledge of OS fundamentals

Logistics

- Enrollment cap will likely not increase
- Limited by room size