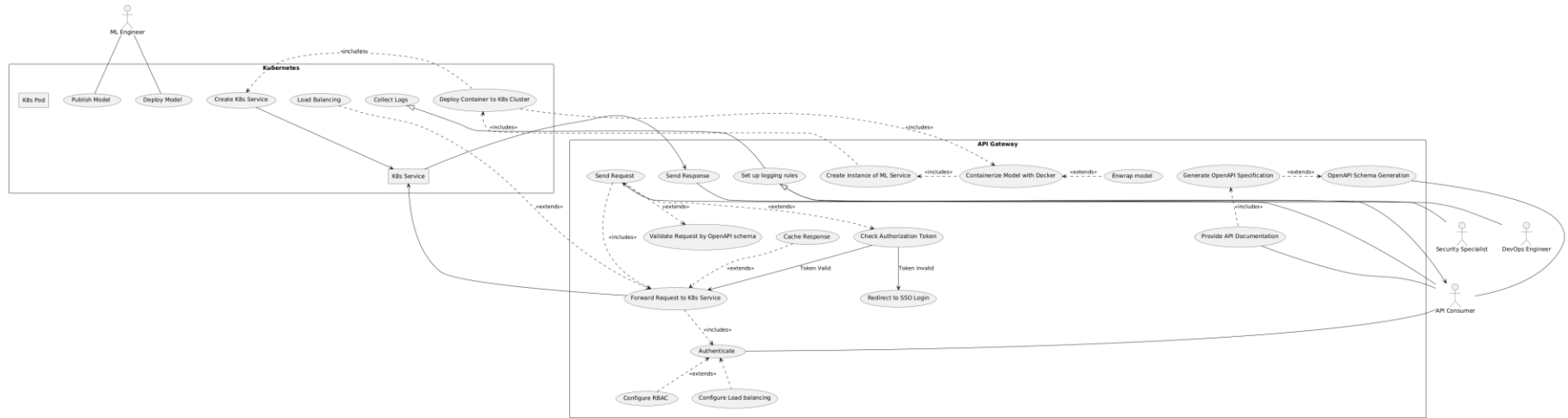# K8C

Resources and microservices

Product description

The product is a platform for deploying, managing, and scaling machine learning models in production. It offers a secure, flexible environment for automating ML tasks like model versioning, routing, and monitoring. With Kubernetes integration and containerization support, it's designed for developers, ML engineers, and enterprises needing scalable, reliable ML infrastructure.

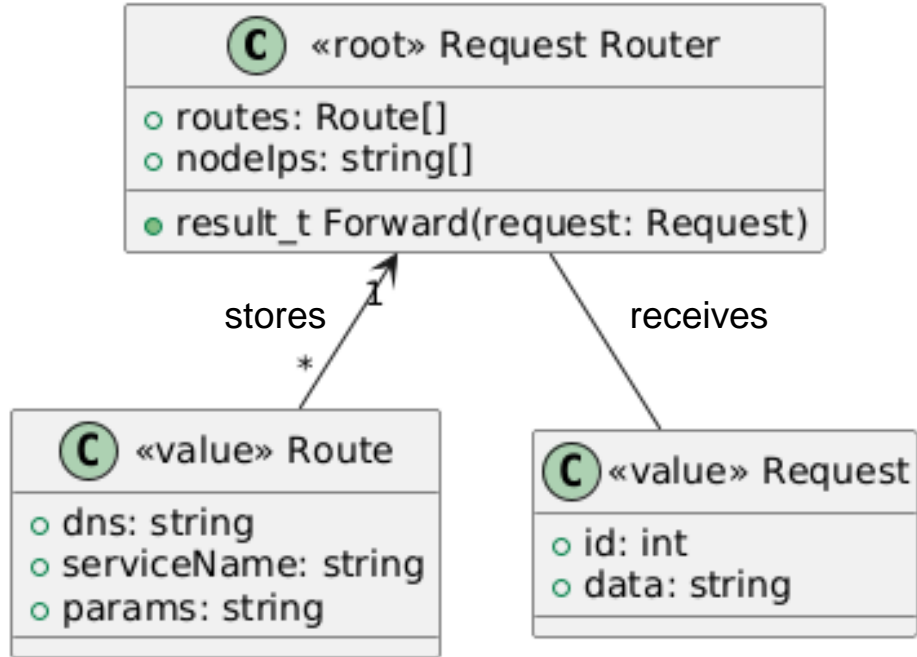**Team K8C**: Tsurkan Daniel; Dandamaev Gadji; Tsaturyan Konstantin; Smolkin Mikhail

Project repo: https://github.com/fanglores/Advanced-Software-Design

This report: https://github.com/fanglores/Advanced-Software-Design
/blob/master/Practice%20Tasks/Module2/Task9/task9.1.pptx

Use case diagram

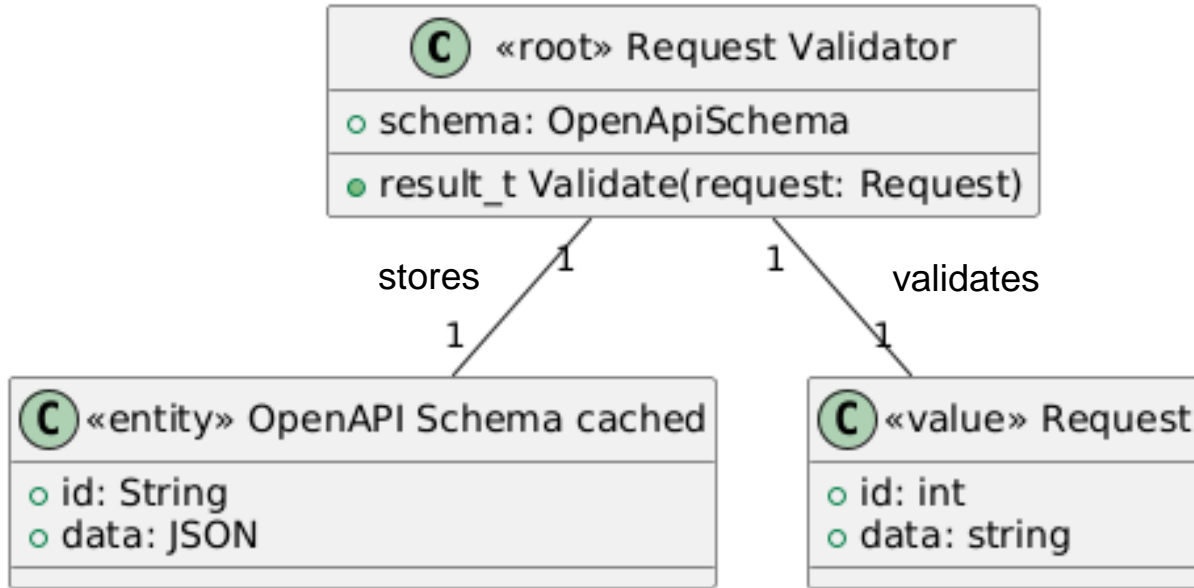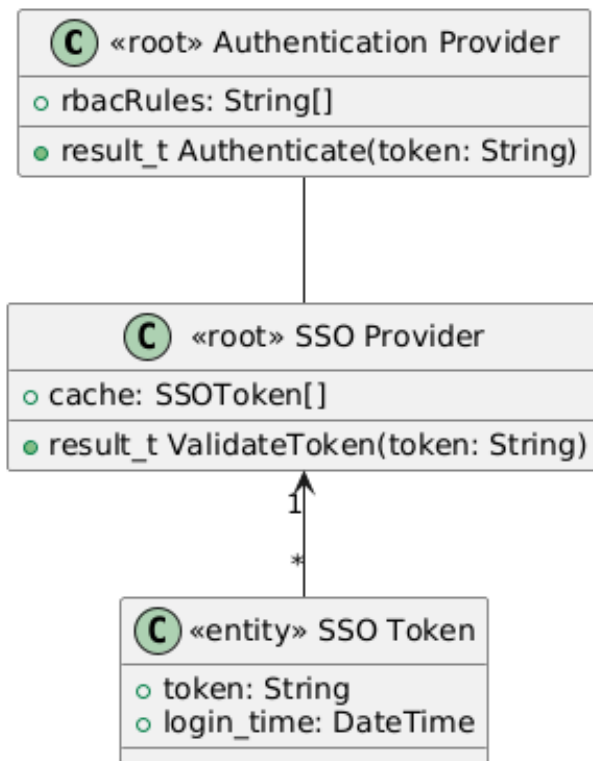https://github.com/fanglores/Advanced-Software-Design/tree/master/General/UseCases

Request Router Aggregation

«root» Request Router

- routes: Route[]
- nodeIps: string[]
- result_t Forward(request: Request)

stores   1   receives

*

«value» Route
- dns: string
- serviceName: string
- params: string

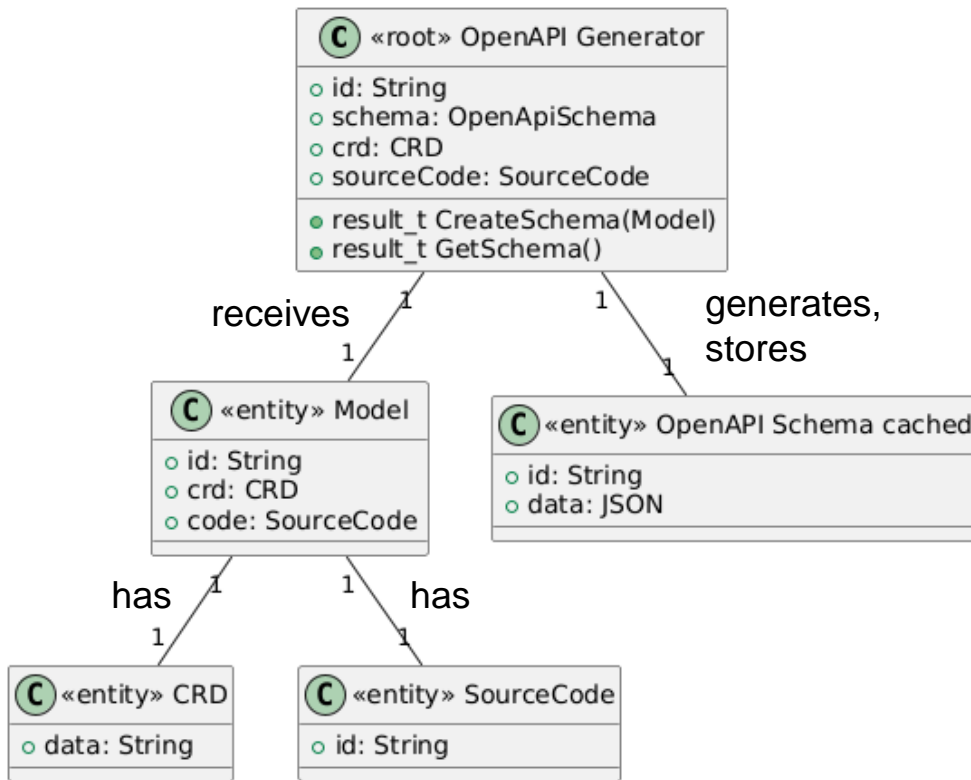«value» Request
- id: int
- data: string

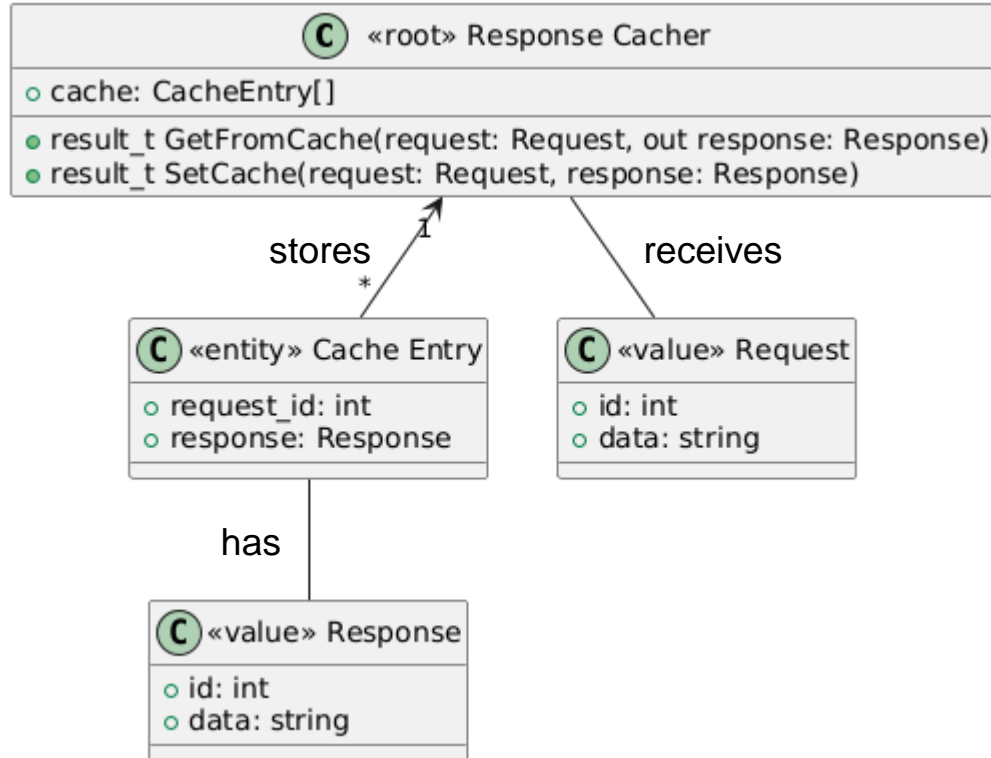# Request Validator Aggregation

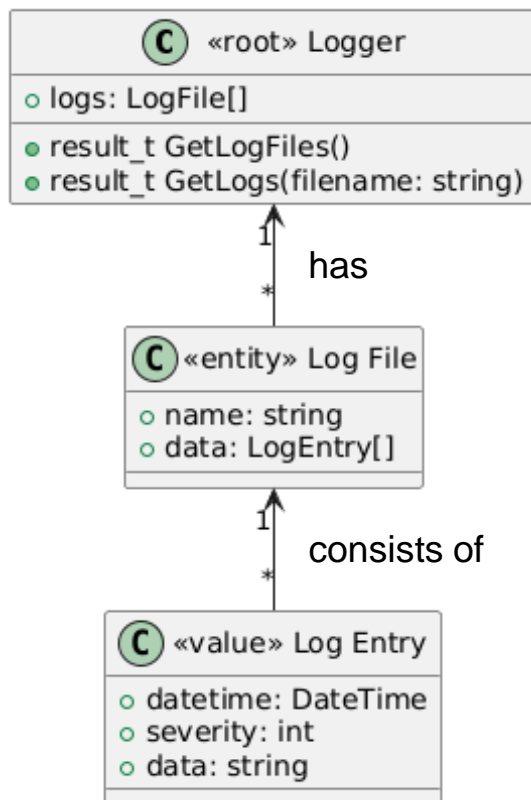# Authentication Provider Aggregation

OpenAPI Generator Aggregation

Response Cacher Aggregation

Logger Aggregation

«root» Logger

o logs: LogFile[]

● result_t GetLogFiles()
● result_t GetLogs(filename: string)

1

* has

«entity» Log File

o name: string
o data: LogEntry[]

1

* consists of

«value» Log Entry

o datetime: DateTime
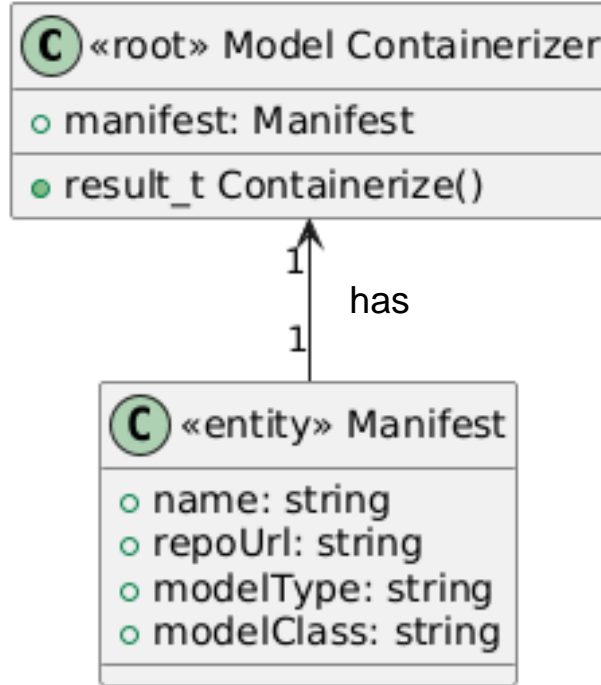o severity: int
o data: string

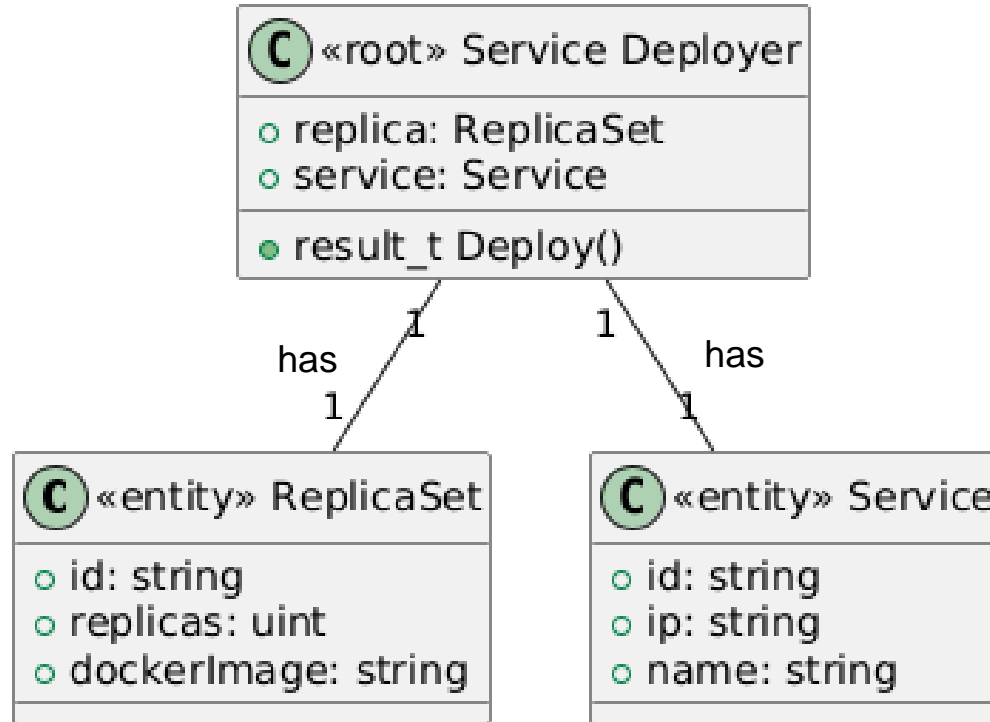# Load Balancer Aggregation

«root» Load Balancer

weights: map<id: int, weight: int>

result_t Get(id: int, out value: int)
result_t Set(id: int, value: int)

Model Containerizer Aggregation

Service Deployer Aggregation

C «root» Service Deployer

o replica: ReplicaSet
o service: Service

● result_t Deploy()

1   1
has   has
1   1

C «entity» ReplicaSet

o id: string
o replicas: uint
o dockerImage: string

C «entity» Service

o id: string
o ip: string
o name: string

Service diagram
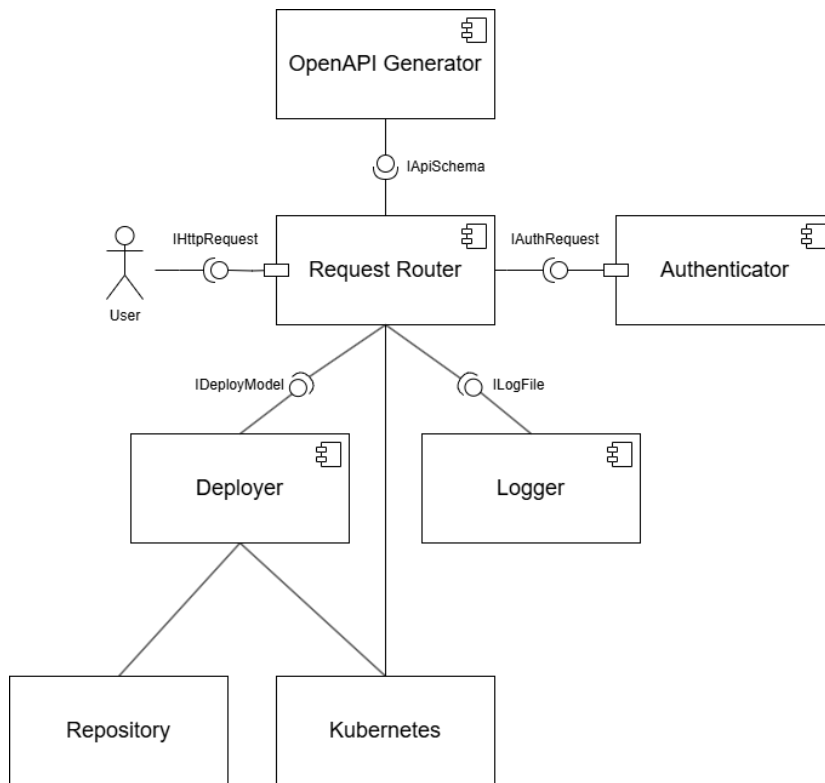
Traceability

Microservice (component)	Resources (provided interfaces)	Domain classes in the microservice	Use case that use the microservice
Request Router	IHttpRequest	Request Router, Request Validator, Load Balancer, Response Cacher	Request Routing, Request Validation, Load balancing
Authenticator	IAuthRequest	Authentication Provider	Authentication
Deployer	IDeployModel	Model Containerizer, Service Deployer	Model containerization, Service deployment
OpenAPI Generator	IApiSchema	OpenAPI Schema Generator	OpenAPI schema generation
Logger	ILogFile	Logger	Logging Rules