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### Q3. Design an HLD for an Online Examination System applying SRP and OCP

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The **High-Level Design (HLD)** of an Online Examination System focuses on defining the **major components, their responsibilities, and interactions** while ensuring scalability, maintainability, extensibility using **Single Responsibility Principle (SRP)** and **Open/Closed Principle (OCP)**

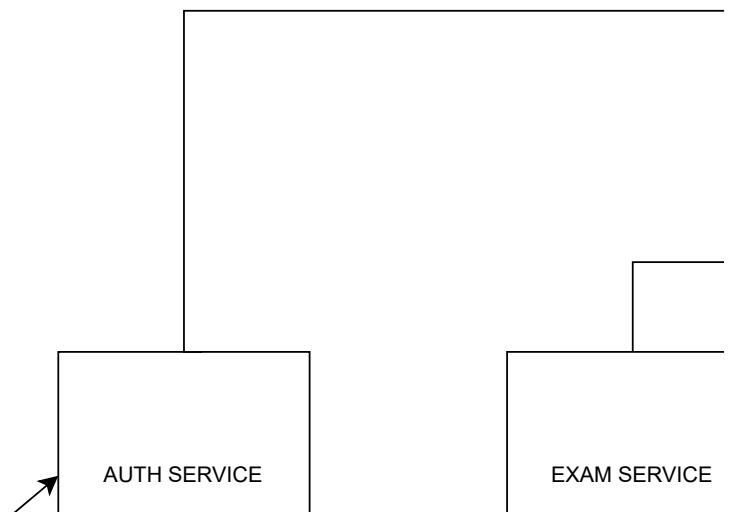
#### Functional Requirements

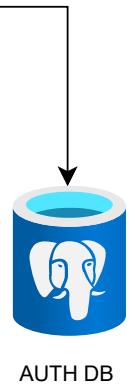
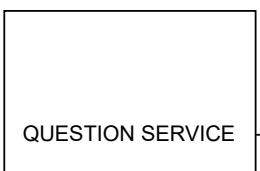
Student	Admin	System
Register/Login		
Available exams	• Create Exams	• Auto-evaluate answers
Attempt exam	• Add Questions	• Store results
Submit answers	• Set time limits	• Send notifications
View results	• Publish Results	

or  
, and  
).

## Non Functional Requirements

- **Scalability** – support many users
- **Security** – authentication & data protection
- **Performance** – low response time
- **Availability** – 24/7 access
- **Reliability** – no data loss
- **Usability** – easy UI







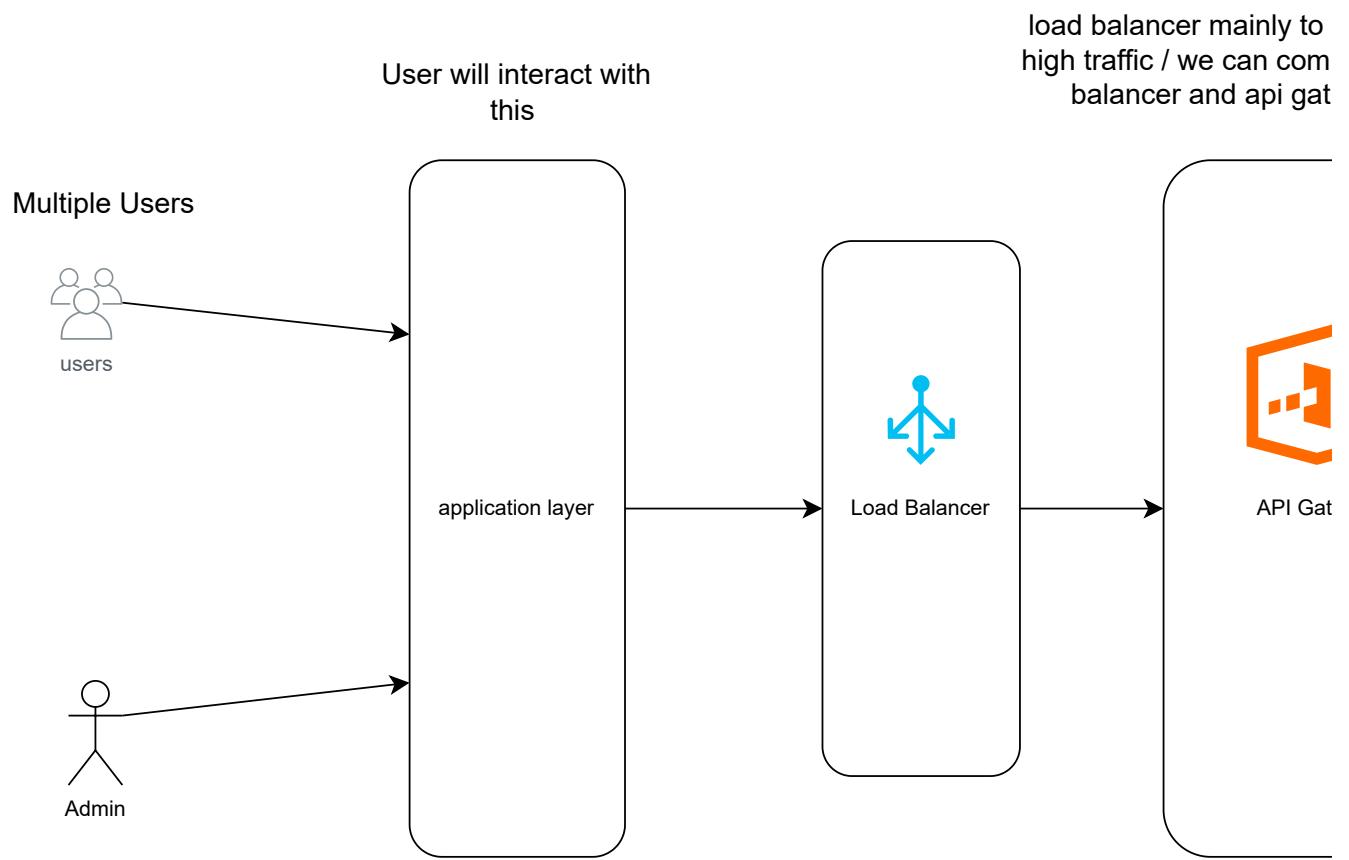
## **KEY POINTS:**

**SRP: Each service handles one responsibility**

**OCP: Evaluation service uses polymorphism**

**LB: Load Balancer for high traffic**

**API Gateway: Single entry point**



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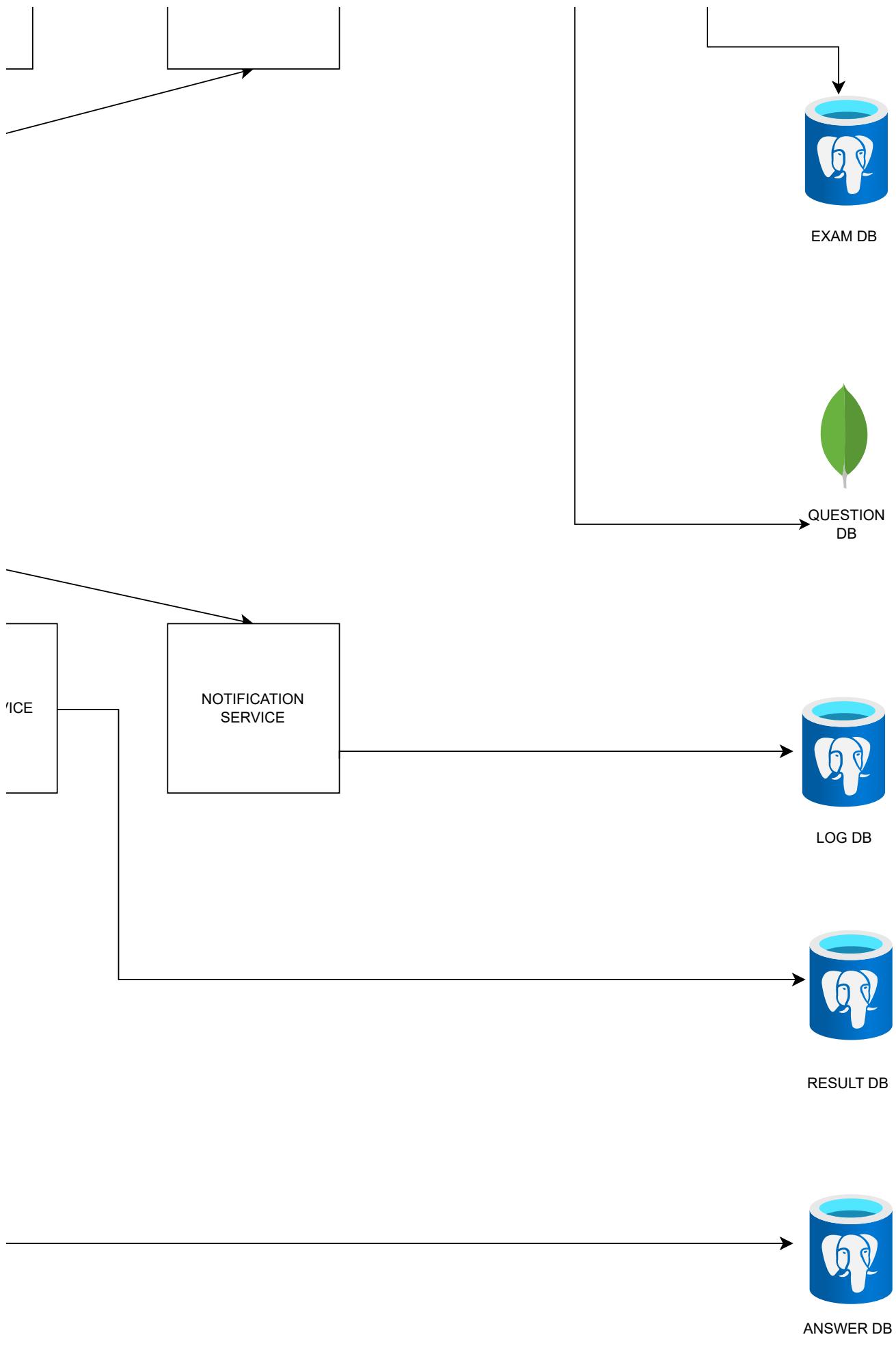
### OCP EXAMPLE

EVALUATION SERVICE  
EVALUATOR (INTERFACE)  
-MCQ EVALUATION  
-CODING EVALUATION  
-DESCRIPTIVE EVALUATION

RESULT SERV

EXAM PROCTOR  
SERVICE

ADDITIONAL  
FEATURE WE CAN  
WORK ON







# CLOUD INFRASTRUCTURE

- Kubernetes Cluster



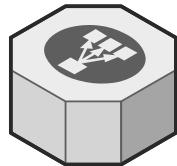
- Auto Scaling Groups



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Groups

- Load Balancer (ELB / Nginx)
- Monitoring (Pron



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neheus / Grafana)

• Logging (ELK Stack)

• Backu



Cloud  
Logging

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## **IP & Disaster Recovery**