

Week 5 - Microservices

Activity 1: Airtel Products and Services

Go to <https://www.airtel.in/> and find out all products and services that are offered.

Sample Services Offered:

- Mobile Services: Prepaid, Postpaid
- DTH Services: Airtel Digital TV
- Broadband: Xstream Fiber, Wi-Fi
- OTT / Entertainment: Airtel Xstream Play
- Financial Services: Airtel Payments Bank, FASTag, Insurance
- IoT & Cloud: Airtel IoT, NaaS, Cloud Services
- Business Solutions: MPLS, VPN, SD-WAN
- International Roaming
- Recharge & Bill Payment Services

Activity 2: Discuss Monolithic App Failure Scenario

Scenario: Due to memory leak in "Get Account Balance" RESTful API, the entire monolithic application becomes unresponsive during peak load.

Solutions:

- Use microservices to isolate services
- Implement circuit breakers (Resilience4j/Hystrix)
- Apply rate limiting to APIs
- Use load balancing
- Introduce caching (e.g., Redis)
- Implement centralized logging and monitoring

- Use profiling tools to detect memory leaks

Activity 3: Create Microservices (Account & Loan)

Created 2 Spring Boot microservices:

1. account-service (port: 8080)

Endpoint: GET /accounts/{number}

Sample Output:

```
{  
  "number": "00987987973432",  
  "type": "savings",  
  "balance": 234343  
}
```

2. loan-service (port: 8081)

Endpoint: GET /loans/{number}

Sample Output:

```
{  
  "number": "H00987987972342",  
  "type": "car",  
  "loan": 400000,  
  "emi": 3258,  
  "tenure": 18  
}
```

Activity 4: Create Eureka Discovery Server

Created Eureka server (port 8761) and registered:

- account-service
- loan-service

Verified registration on: <http://localhost:8761> under "Instances currently registered with Eureka"

Activity 5: Spring Cloud API Gateway with Global Filter

Steps:

- Created greet-service: /greet -> "Hello World"
- Registered greet-service with Eureka
- Created api-gateway microservice
- Configured route: /greet-service/** to greet-service
- Accessed: <http://localhost:9090/greet-service/greet>
- Implemented global filter (LogFilter) to log all incoming requests

Sample Log Output:

Logging request path: /greet-service/greet