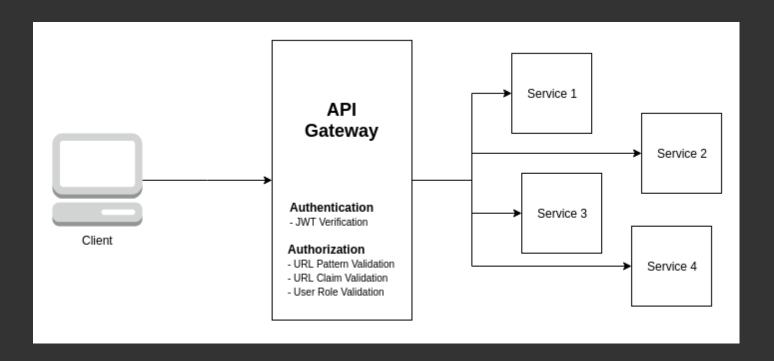# API Gateway Authentication

The API Gateway acts as a central authentication point for all incoming requests. Clients authenticate once with the API Gateway, which validates the credentials (could be a JWT, OAuth2, or any other method).
The API Gateway forwards the request to the respective microservice with the user's credentials or token.

Mutating the Requests

You can mutate the request (e.g., add headers, modify path, or change query parameters) before it is sent to the downstream service. This is typically done in pre-filters.

```java
@Override
public Mono<Void> filter(ServerWebExchange exchange, GatewayFilterChain chain) {
    // Mutate the request by adding a custom header
    exchange.getRequest()
            .mutate()
            .header("X-Request-Source", "Gateway")
            .build();

    // Proceed with the mutated request
    return chain.filter(exchange);
}
```

Mutating the Response

You can modify the response (e.g., add headers, modify the body) before it is sent to the client. This is typically done in post-filters.

```java
@Override
public Mono<Void> filter(ServerWebExchange exchange, GatewayFilterChain chain) {
    return chain.filter(exchange).then(Mono.fromRunnable(() -> {
        // Mutate the response by adding a custom header
        exchange.getResponse().getHeaders().add("X-Response-Time", "100ms");
    }));
}
```