

BSc Computer Engineering  
Software Engineering Assignment  
Scalable School Management System Architecture  
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A Microservice architecture is used to scale resources as a collection of services. Microservice architecture ensures continuous delivery and or deployment of large complex applications. It also ensures scalability and fault isolation and tolerance however, minimizing the risk of affecting the entire application during a micro service issue.

### **Breaking School Management System Structure**

The system consist of services that are grouped under micro services.

1. School Enroll Management: Consist of Enrollment service and the Profile information service of a student.
2. School Management: Consist of the Account management system and the Student Fees Management system.
3. Course info Management: Consist of Courses as a group and Library Management system.
4. Examination info Management: Consist of Exams Marks Management and Chart and Graph analysis of examination results of students
5. Class info Management: Consist of the Class Routine Schedule and Daily attendance system.
6. Internal Messaging system stands alone.

Each Service works independently. However, they collaborate via API using commands and queries in order to ensure loosely coupled services. Thus, micro services communicate through their APIs and not their database tables.

### **Scaling the Database**

- The Replica Database consist read/write databases with each serving as a duplicate for two services.
- Each Service has its own database and thus works independently.
- In other to make the system faster, caching is introduced in the system. Any data that is worthy of storing can be stored in the Redis.

Microservice architecture are flexible as users can access other services while a service is being worked on or updated. So say the Examination info Management is being upgraded, users can access the Course info Management service.

This flexible helps in fault isolation and minimizing the risk of affecting the entire application during a micro service issue.

### Client

For client request, load balancer distributes the requests and it is connected to the service available on the application.

Scalable School Management Architecture.

