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Microservices

vs

Monoliths

Architectural Differences

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Microservices

Microservices is a software architecture style in which a large application is built as a suite of small, independent and deployable services.

Each service is designed to perform a specific task and communicates with other services through well-defined protocols such as HTTP, gRPC, AMQP (Advanced Message Queuing Protocol) and Pub/sub.

With Microservices, each service can be deployed independently and scaled up or down as needed, which can reduce costs.

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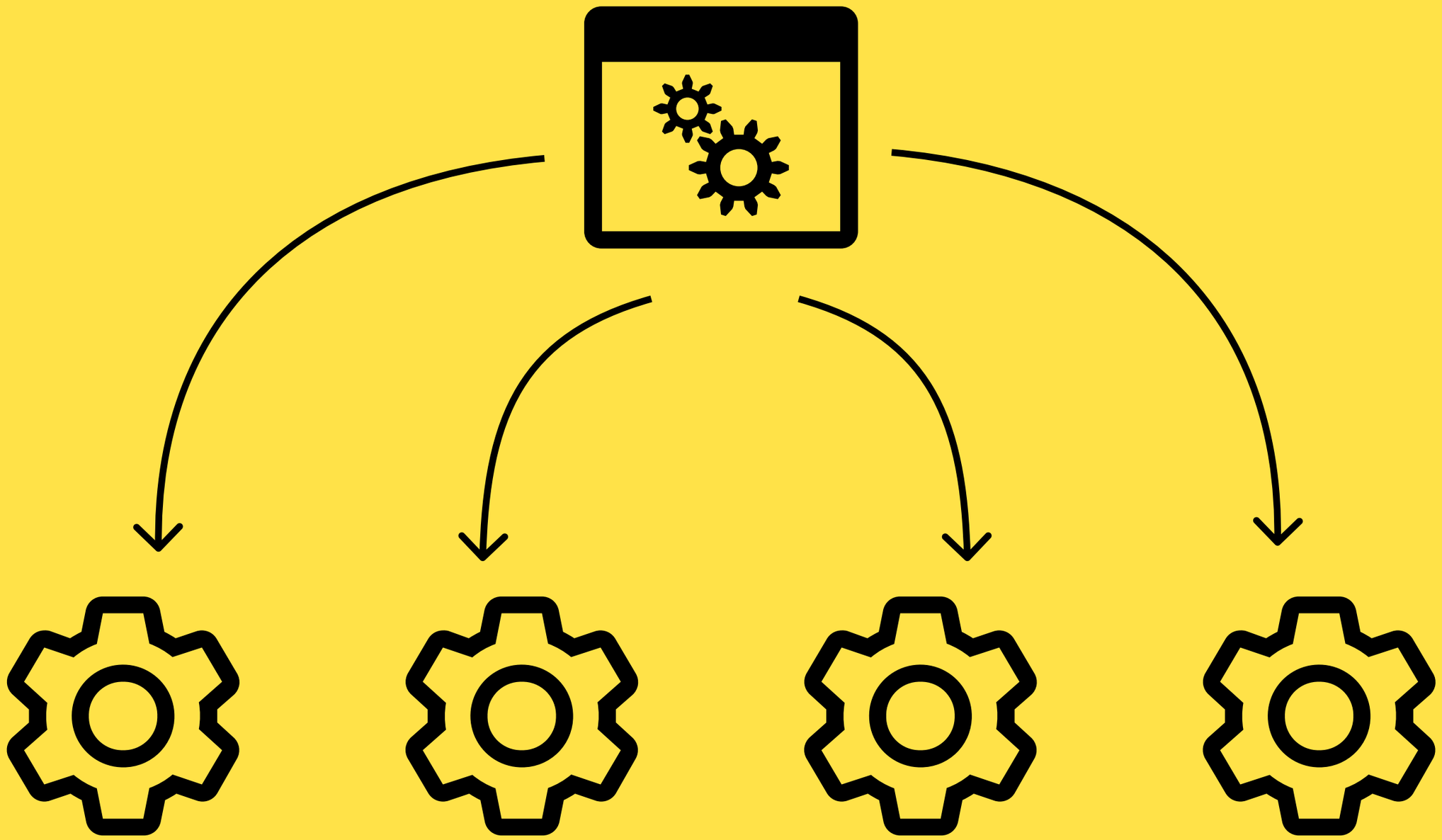
Microservices

Diagram

Application



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Microservices

Pros

Better Organization

Broken down into smaller services and is relatively better organized.

Increased Agility

Individuals of a team can build and deploy modules independently.

Cons

Debugging and Testing Challenges

Microservices can be challenging to debug and test because they have more components and interactions.

Complexity

The increased number of moving parts and components that need to be maintained and managed makes microservices more complex.

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Monolithic

Conventional method of application development which is developed as a single package.

A monolith consists of a three-tier architecture, namely, a database, a user interface, and a server-side application.

Modules are tightly coupled with each other. The application and the business logic is encapsulated in a single deployable binary called a monolith.

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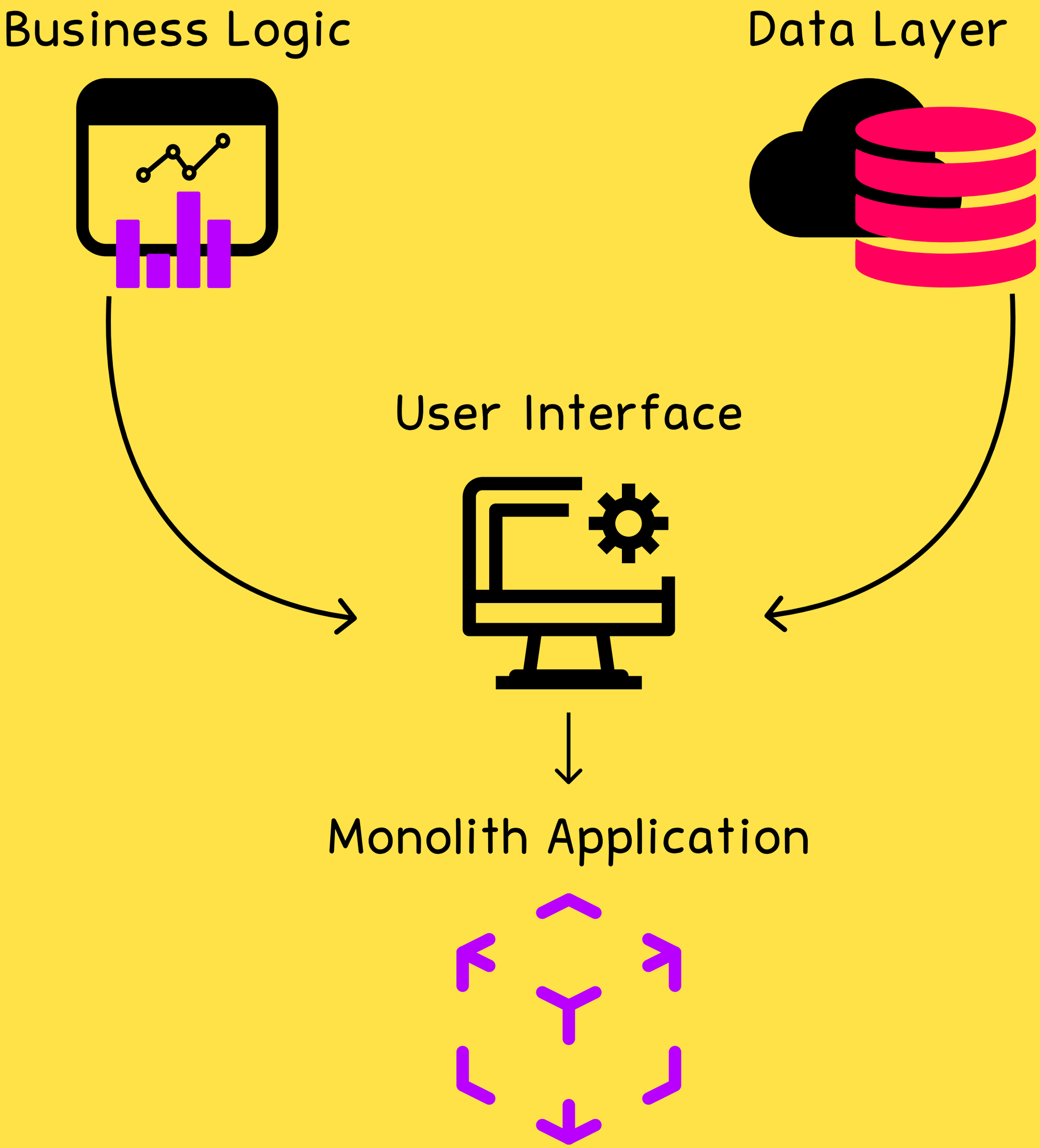
Monolithic

Diagram



Monolithic

Pros

Easy Development

Developers just perform single chunk of deployable code.

Simplicity of Debugging and Testing

The debugging and testing process is simple because all code is located in one place.

Cons

Slow Build and Release

Code base is enormous. This retards the velocity of the development cycle.

Tight Coupling

Business logic is tightly entangled. Makes it difficult to isolate the application.

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Differences

These are the key differences between Microservice Architecture and Monolithic Architecture.

- Language
- Codebase
- Understandability
- Application Scaling
- Development and Deployment
- Service Startup
- Data Model
- Consistency and Availability

Let us now look these differences in detail

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Language

Microservice

Every service can be developed separately in a different programming language.

Monolithic

Completely developed using a single programming language.

Codebase

Monolithic

It has only a single codebase. Components are interdependent.

Microservice

Every service has a separate codebase for them.

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Understandability

Monolithic

It is very difficult to understand, and it is confusing.

Microservice

Has high understandability and is very easy to maintain.

Application Scaling

Monolithic

Application scaling is very difficult as the entire application should be scaled.

Microservice

Very easy as each service can be scaled separately without scaling of the entire application.

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Development and Deployment

Monolithic

Continuous development and deployment are very complicated.

Microservice

Continuous development and deployment are possible.

Service Startup

Monolithic

Time-taking service startup.

Microservice

Quick service startup.

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Data Model

Microservice

It has a federated data model, allowing each service to adopt its own data model.

Monolithic

It has a centralized data model.

Consistency and Availability

Monolithic

Comparatively less consistent and available

Microservice

Highly consistent and readily available.

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Conclusion

Monolithic

Monolithic architecture is preferred for small teams, simple applications, and shorter deadlines.

Microservice

Microservice architecture is good for the development of complex applications. It is known for its change adaptability and scalability.