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**Group:** 5A ISW BIS

**Topic:** Comparison between frameworks

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**What is Express.js Framework?**

Express js is an open source Node.js' framework. It is used to build web applications easily and quickly, only using javascript for the creation of these apps.

This framework can be used with multi, single or hybrid-web-pages, also helps programmers with the code, generating the bases of the application. Express.js is lightweight and helps to organize web applications on the server-side into a more organized MVC(Model View Controller) architecture.

**Features of Express.js:**

1.Faster Server side development:

Express.js provides many commonly used features of Node.js as functions that can be used wherever in the application. This saves hours of programming code.

2.Middleware:

Middleware is a part of the program that has access to the database, client request, and the other middlewares.

3.Routing:

Express.js provides a highly advanced routing mechanism which helps to preserve the state of the webpage with the help of their URLs.

4.Templating:

Express.js provides templating engines that allow the developers to build dynamic content on the web pages by building HTML templates on the server-side.

5.Debugging:

Express.js makes debugging easier by providing a debugging mechanism that has the ability to pinpoint the exact part of the web application which has bugs.

**Why should you use Express.js?**

It is because you just need to learn javascript to use it, also because of the wide use of this programming language and it is supported from

everywhere. Express.js offers simplicity, flexibility, efficiency, minimalism, and scalability to the programmers.

**Advantages of using Express.js:**

- Express is Unopinionated, and we can customize it.
- For request handling, we can use Middleware.
- A single language is used for front and backend development
- Express is fast to link it with databases like MySQL, MongoDB, etc.
- Express allows dynamic rendering of HTML Pages based on passing arguments to templates.

**Limitations of Express.js:**

- Sometimes, there is no structural way to organize thinking, and the code becomes non-understandable.
- There are so many issues with callbacks.
- The error messages that will come are challenging to understand.

**What is Ruby on Rails (RoR)?**

Ruby on rails is open-source software that is used to build web applications. Ruby on rails is a framework used to manipulate the server side from the application. This framework is written in the programming language Ruby and its alternative name is RubyGem.

Rails is a framework that helps the programmer to execute tasks that can be repeated many times in the program. In this framework we can combine different programming languages like javascript, html or css. So, this framework is used in agile development environments.

**Features of Ruby on Rails:**

1.MVC Architecture:

Ruby on Rails is based on the Model View Controller pattern, so the users who are already familiar with the pattern will feel comfortable using this framework.

2.Active record:

This makes it easier for the programmer to develop with databases because of the use of a library called active record. This library makes it possible for the programmer to write the queries in the Ruby language and in the running stage they are converted into SQL queries.

3.Convention over configuration:

Ruby on rails avoids configuration files to spare conventions, reflection as well as dynamic runtime extensions. The idea is assigning value automatically without user intervention.

4.Simple Testing Tool:

Ruby on Rails also comes with a unit testing setup called RSpec. Since it is plain Ruby, you can use it to test the functions employed in the application by separately calling them.

5.Automated Deployment:

With just an initial one-time setup, it deploys every change you have done to the production, all of this with just a single line on the command interface.

**Why should you use Ruby on Rails?**

With this framework you can make complex web applications very easily. Also the language allows you to do lots of things very quickly and easily with just some code lines. By last Ruby on Rails gives you the facility of protection against common cyber attacks.

**Advantages of Ruby on Rails:**

- Cost-effective. The Ruby on Rails framework is 100% free and runs on Linux, which is an open-source framework.
- Built on model-View-Controller (MVC) architecture.
- Easy to manage changes.
- Security
- Performance
- Productivity
- Consistency

**Disadvantages of using Ruby on Rails:**

- Runtime Speed and Performance
- Lack of Flexibility
- High cost of wrong decisions in development
- Documentation

**What is the Spring framework?**

The Spring Framework is a powerful, retaure-rich, and well-designed framework for the java platform. It offers a collection of programming and configuration models that aim to simplify and streamline the development process of robust and testable applications in java

**Features of Spring Framework:**

1.Lightweight:

A lightweight framework helps in reducing complexity in application code. It also helps in avoiding unnecessary complexity in its own functioning and it can run in any environment.

2.Non-intrusive:

The object in a Spring-enabled application typically has no dependencies on any predefined interface or calls given by Spring API.

3.Inversion of Control (IoC):

IoC is an architectural pattern that describes the Dependency injection that needs to be done by an external entity rather than creating the dependencies by the component itself.

4.Aspect-Oriented Programming (AOP):

It allows a developer to build the core functionality of a system without being aware of additional requirements.

5.Spring MVC Framework:

This helps in building robust and maintainable web applications. It uses IoC that provides separation of controller logic.

6.Spring Security:

This provides a declarative security mechanism for Spring-based applications, which is a critical aspect of many applications.

**Why should you use Spring Framework?**

Spring is a lightweight framework that also contains multiple modules, such as WEB MVC, LOC, DAO, AOP, Contest, and ORM. Spring helps create scalable, secure, and robust business-based web applications.

**Advantages of using spring Framework:**

- lightweight
- Flexibility
- Loose Coupling
- Powerful Abstraction
- Declarative Support
- Configuration
- Lifecycle
- Easier testing
- Fast
- Secure

**Disadvantages of using Spring Framework:**

- Complexity
- Parallel Mechanism
- No Specific Guidelines
- High Learning Curve
- Lots of XML

**Conclusion:**

I have thought about the facility that RoR would give to the development environment. Also the opportunity to learn new technologies is a really appreciable experience that can increase my panoram to new concepts so, I concluded that it is a very good idea to select RoR for the following of this course.