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Spring Boot Reactive - Mr. RAGHU

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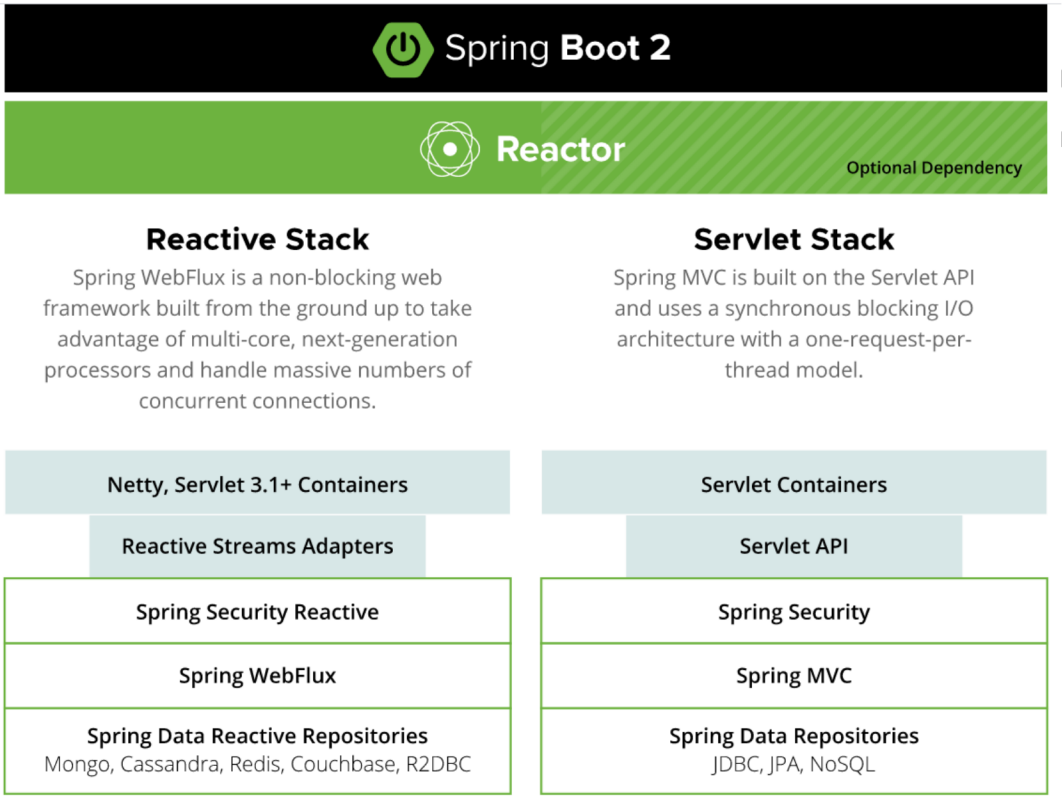
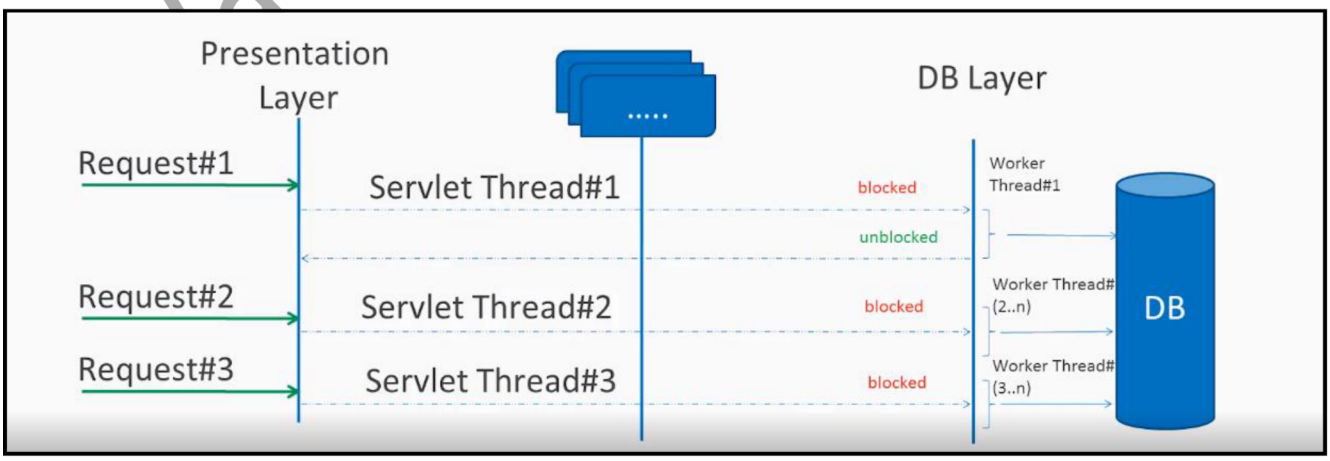
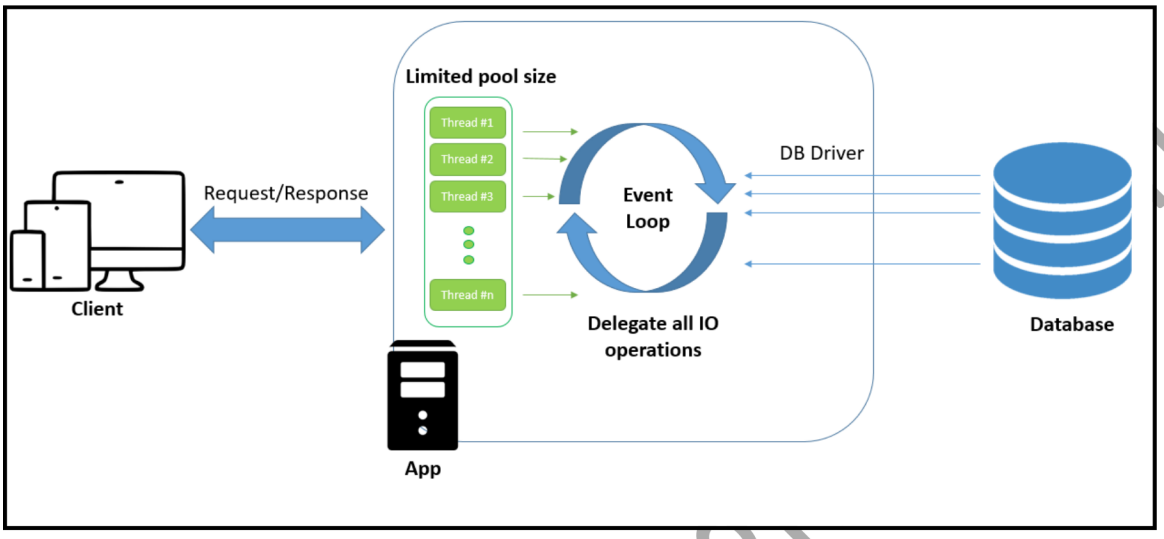


Blocking:



Non Blocking:



Spring WebFlux

Spring WebFlux is the new reactive web framework that comes with Spring 5. It is not a replacement for Spring MVC but a fully non-blocking, Reactive Streams back pressure supporting framework that is run on servers like Netty, Jetty, Undertow, etc. Spring WebFlux majorly uses two publishers:

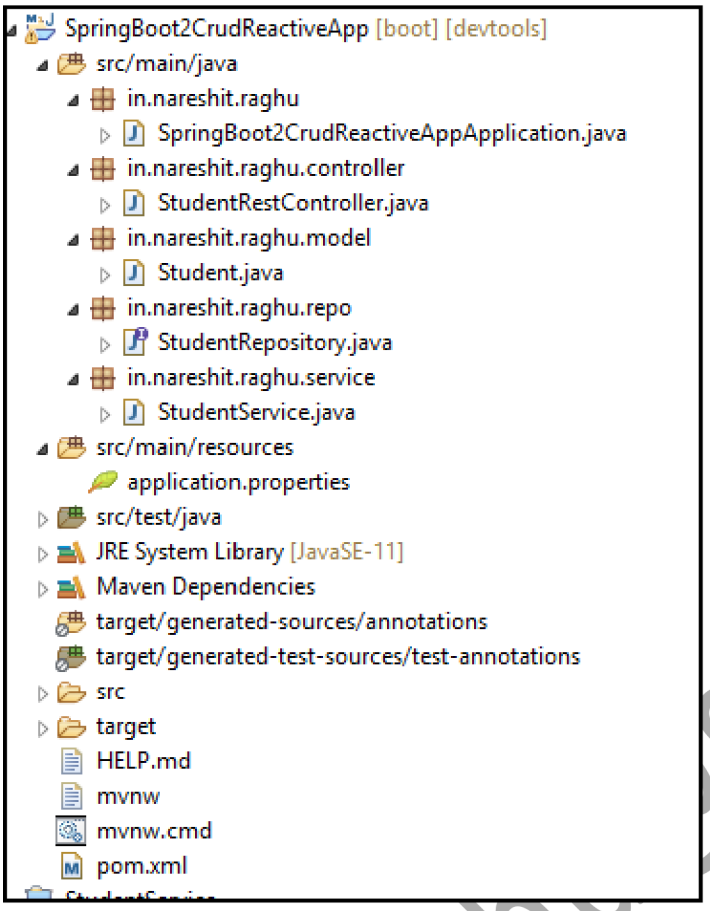
The Mono

Mono: Returns 0 or 1 element. The Mono API allows producing only one value. Mono mono = Mono.just("Spring Framework"); Mono mono = Mono.empty(); This is limited to no more than one element.

The Flux

Flux: Returns 0...N elements. The Flux can be endless, it can produce multiple values. Here, we have a static stream of the three elements. Flux flux = Flux.just("One", "Two", "Three");

Provider Application



pom.xml:-

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
	xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
	<modelVersion>4.0.0</modelVersion>
	<parent>
		<groupId>org.springframework.boot</groupId>
		<artifactId>spring-boot-starter-parent</artifactId>
		<version>2.3.6.RELEASE</version>
		<relativePath/> <!-- lookup parent from repository -->
	</parent>
	<groupId>in.nareshit.raghu</groupId>
	<artifactId>SpringBoot2CrudReactiveApp</artifactId>
	<version>1.0</version>
	<name>SpringBoot2CrudReactiveApp</name>
	<description>Demo project for Spring Boot</description>

	<properties>
```

```
		<java.version>11</java.version>
	</properties>

	<dependencies>
		<dependency>
			<groupId>org.springframework.boot</groupId>
			<artifactId>spring-boot-starter-data-mongodb-
reactive</artifactId>
		</dependency>
		<dependency>
			<groupId>org.springframework.boot</groupId>
			<artifactId>spring-boot-starter-
webflux</artifactId>
		</dependency>

		<dependency>
			<groupId>org.springframework.boot</groupId>
			<artifactId>spring-boot-devtools</artifactId>
			<scope>runtime</scope>
			<optional>true</optional>
		</dependency>
		<dependency>
			<groupId>org.projectlombok</groupId>
			<artifactId>lombok</artifactId>
			<optional>true</optional>
		</dependency>
		<dependency>
			<groupId>org.springframework.boot</groupId>
			<artifactId>spring-boot-starter-test</artifactId>
			<scope>test</scope>
			<exclusions>
				<exclusion>
					<groupId>org.junit.vintage</groupId>
					<artifactId>junit-vintage-
engine</artifactId>
				</exclusion>
			</exclusions>
		</dependency>
		<dependency>
			<groupId>io.projectreactor</groupId>
			<artifactId>reactor-test</artifactId>
			<scope>test</scope>
		</dependency>
	</dependencies>

	<build>
		<plugins>
```

```
                <plugin>
                    <groupId>org.springframework.boot</groupId>
                    <artifactId>spring-boot-maven-
plugin</artifactId>
                </plugin>
            </plugins>
        </build>

</project>
```

application.properties :-

```
spring.data.mongodb.host=localhost
spring.data.mongodb.port=27017
spring.data.mongodb.database=nitdb
```

Model class:-

```
package in.nareshit.raghu.model;

import org.springframework.data.annotation.Id;
import org.springframework.data.mongodb.core.mapping.Document;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import lombok.NonNull;
import lombok.RequiredArgsConstructor;

@Data
@AllArgsConstructor
@RequiredArgsConstructor
@NoArgsConstructor
@Document
public class Student {

    @Id
    private String id;
    @NonNull
    private String name;
    @NonNull
    private Double fee;

}
```

Repository Interface:-

```
package in.nareshit.raghu.repo;

import
org.springframework.data.mongodb.repository.ReactiveMongoReposit
ory;

import in.nareshit.raghu.model.Student;

public interface StudentRepository extends
ReactiveMongoRepository<Student, String> {

}
```

Service class:-

```
package in.nareshit.raghu.service;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import in.nareshit.raghu.model.Student;
import in.nareshit.raghu.repo.StudentRepository;
import reactor.core.publisher.Flux;
import reactor.core.publisher.Mono;

@Service
public class StudentService {
	@Autowired
	private StudentRepository repo;

	public Mono<Student> save(Student student) {
		return repo.save(student);
	}

	public Mono<Student> getOne(String id) {
		return repo.findById(id).switchIfEmpty(Mono.empty());
	}

	public Flux<Student> findAll() {
		return repo.findAll().switchIfEmpty(Flux.empty());
```

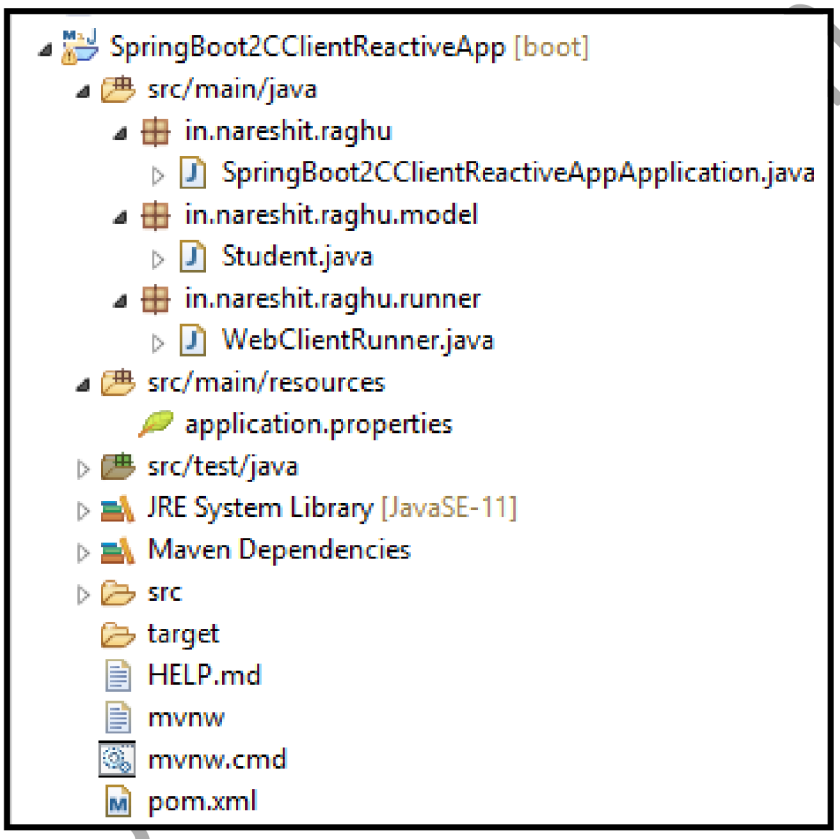
```
	}

	public Mono<Void> delete(String id) {
		return repo.deleteById(id);
	}
}
```

Controller class:-

```
package in.nareshit.raghu.controller;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.DeleteMapping;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import in.nareshit.raghu.model.Student;
import in.nareshit.raghu.service.StudentService;
import reactor.core.publisher.Flux;
import reactor.core.publisher.Mono;

@RestController
@RequestMapping("/student")
public class StudentRestController {
	@Autowired
	private StudentService service;

	@PostMapping
	public Mono<Student> save(@RequestBody Student student) {
		return service.save(student);
	}

	@GetMapping("/{id}")
	public Mono<Student> getOne(@PathVariable String id) {
		return service.getOne(id);
	}

	@GetMapping
	public Flux<Student> findAll() {
		return service.findAll();
```

```
	}

	@DeleteMapping("/{id}")
	public Mono<Void> delete(@PathVariable String id) {
		return service.delete(id);
	}


}
```

Client Application



pom.xml:-

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
    xsi:schemaLocation="http://maven.apache.org/POM/4.0
.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-
parent</artifactId>
        <version>2.3.6.RELEASE</version>
        <relativePath/> <!-- lookup parent from
repository -->
    </parent>
    <groupId>in.nareshit.raghu</groupId>
    <artifactId>SpringBoot2CClientReactiveApp</artifact
Id>
    <version>1.0</version>
    <name>SpringBoot2CClientReactiveApp</name>
    <description>Demo project for Spring
Boot</description>

    <properties>
        <java.version>11</java.version>
    </properties>

    <dependencies>
        <dependency>

    <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-
webflux</artifactId>
        </dependency>

        <dependency>

    <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-
test</artifactId>
            <scope>test</scope>
            <exclusions>
                <exclusion>
```

```
        <groupId>org.junit.vintage</groupId>
                        <artifactId>junit-vintage-
engine</artifactId>
                    </exclusion>
                </exclusions>
            </dependency>
            <dependency>
                <groupId>io.projectreactor</groupId>
                <artifactId>reactor-test</artifactId>
                <scope>test</scope>
            </dependency>
            <dependency>
                <groupId>org.projectlombok</groupId>
                <artifactId>lombok</artifactId>
            </dependency>
        </dependencies>

        <build>
            <plugins>
                <plugin>

        <groupId>org.springframework.boot</groupId>
                    <artifactId>spring-boot-maven-
plugin</artifactId>
                </plugin>
            </plugins>
        </build>

</project>
```

Model class:-

```
package in.nareshit.raghu.model;

import lombok.Data;
import lombok.NoArgsConstructor;
import lombok.NonNull;
import lombok.RequiredArgsConstructor;
```

```
@Data
@NoArgsConstructor
@RequiredArgsConstructor
public class Student {

    private String id;
    @NonNull
    private String name;
    @NonNull
    private Double fee;

}
```

Runner class:-

```
package in.nareshit.raghu.runner;

import org.springframework.boot.CommandLineRunner;
import org.springframework.stereotype.Component;
import
org.springframework.web.reactive.function.client.WebCli
ent;

import reactor.core.publisher.Mono;

@Component
public class WebClientRunner implements
CommandLineRunner {

    @Override
    public void run(String... args) throws Exception {

        WebClient client =
WebClient.create("http://localhost:8080");

        //Get All
        /*
```

```
        Flux<Student> flux = client
        .get()
        .uri("/student")
        .retrieve()
        .bodyToFlux(Student.class);

        flux.doOnNext(System.out::println).blockLast();
         */
        /*
        Mono<Student> mono = client
                .get()

    .uri("/student/5fc3debaa3e8810895545f74")
                .retrieve()
                .bodyToMono(Student.class);

        mono.subscribe(System.out::println);
         */

        /*
        Mono<Student> mono =client.post()
        .uri("/student")
        .body(Mono.just(new Student("JJ",2500.0)),
Student.class)
        .retrieve()
        .bodyToMono(Student.class);

        mono.subscribe(System.out::println);
         */

        Mono<Void> mono =client.delete()

    .uri("/student/5fc3e0aca3e8810895545f75")
                .retrieve()
                .bodyToMono(Void.class);

        mono.subscribe(System.out::println);
    }

}
```

application.properties:-

```
server.port=3000
```

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THANK YOU!!