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Link github: <https://github.com/ngatdo3003/validation-exceptionHandler-example>

1. Validation Annotation

ANNOTATION	USAGE
@AssertFalse	The annotated element must be false.
@AssertTrue	The annotated element must be true.
@DecimalMax	The annotated element must be a number whose value must be lower or equal to the specified maximum.
@DecimalMin	The annotated element must be a number whose value must be higher or equal to the specified minimum.
@Future	The annotated element must be an instant, date or time in the future.
@Max	The annotated element must be a number whose value must be lower or equal to the specified maximum.
@Min	The annotated element must be a number whose value must be higher or equal to the specified minimum.
@Negative	The annotated element must be a strictly negative number.
@NotBlank	The annotated element must not be <code>null</code> and must contain at least one non-whitespace character.
@NotEmpty	The annotated element must not be <code>null</code> nor empty.
@NotNull	The annotated element must not be <code>null</code> .
@Null	The annotated element must be <code>null</code> .
@Pattern	The annotated CharSequence must match the specified regular expression.
@Positive	The annotated element must be a strictly positive number.
@Size	The annotated element size must be between the specified boundaries (included).

2. Cấu hình file pom.xml

```

<properties>
  <java.version>1.8</java.version>
  <lombok.version>1.18.12</lombok.version>
</properties>

<dependencies>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter</artifactId>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-data-jpa</artifactId>
  </dependency>
  <dependency>
    <groupId>mysql</groupId>
    <artifactId>mysql-connector-java</artifactId>
    <scope>runtime</scope>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-devtools</artifactId>
    <scope>runtime</scope>
    <optional>true</optional>
  </dependency>
  <!-- https://mvnrepository.com/artifact/javax.validation/validation-api -->
  <dependency>
    <groupId>javax.validation</groupId>
    <artifactId>validation-api</artifactId>
    <version>2.0.1.Final</version>
  </dependency>

  <!-- https://mvnrepository.com/artifact/com.fasterxml.jackson.core/jackson-databind -->
  <dependency>
    <groupId>com.fasterxml.jackson.core</groupId>
    <artifactId>jackson-databind</artifactId>
    <version>2.10.2</version>
  </dependency>

  <!-- https://mvnrepository.com/artifact/org.projectlombok/lombok -->
  <dependency>
    <groupId>org.projectlombok</groupId>
    <artifactId>lombok</artifactId>
    <version>1.18.12</version>
    <scope>provided</scope>
  </dependency>
</dependencies>
<dependencyManagement>
  <dependencies>

```

```
<dependency>
  <groupId>org.springframework.cloud</groupId>
  <artifactId>spring-cloud-dependencies</artifactId>
  <version>${spring-cloud.version}</version>
  <type>pom</type>
  <scope>import</scope>
</dependency>
</dependencies>
</dependencyManagement>
<build>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-compiler-plugin</artifactId>
      <version>3.8.1</version>
      <configuration>
        <!-- put your configurations here -->
        <source>1.8</source>
        <target>1.8</target>
        <annotationProcessorPaths>
          <path>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
            <version>${lombok.version}</version>
          </path>
        </annotationProcessorPaths>
      </configuration>
    </plugin>
  </plugins>
</build>
```

3. Cấu hình file application.properties

```
# =====
# DATABASE
# =====

spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
spring.datasource.url=jdbc:mysql://localhost:3306/test2
spring.datasource.username=root
spring.datasource.password=123456

# =====
# JPA / HIBERNATE
# =====

spring.jpa.show-sql=true
spring.jpa.hibernate.ddl-auto=update
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL5Dialect
```

4. Entity

Tạo class UserEnt cùng với các annotation của JPA và Validation

```
@Entity
@Data // lombok annotation for auto-generate getter/setter/constructor
@Table(name = "users", schema = "test2", catalog = "")
public class UserEnt implements Serializable {
    @Id
    @Column(name = "id", updatable = false, nullable = false)
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    @Basic
    @Column(name = "userid")
    @NotBlank
    private String userid;

    @Basic
    @Column(name = "password")
    @Size(min = 6, max = 20)
    private String password;

    @Basic
    @Column(name = "email")
    @Email(message = "email should be a valid email")
    private String email;

    @Basic
    @Column(name = "phone")
    @Pattern(regexp = "[0-9]{10}")
    private String phone;

    @Basic
    @Column(name = "firstName")
    @NotBlank(message = "first name must not be blank")
    private String firstName;

    @Basic
    @Column(name = "lastName")
    @NotBlank(message = "last name must not be blank")
    private String lastName;

    @Basic
    @Column(name = "expired")
    private int expired;

    @Basic
    @Column(name = "disabled")
    private int disabled;

    @Basic
    @Column(name = "age")
    @Min(13)
    @Max(99)
    private int age;
}
```

5. Repository

Kế thừa lớp JpaRepository gồm các thao tác với csdl cơ bản:

```
public interface UserRepository extends JpaRepository<UserEnt, Long> {  
}
```

6. Customized Exception

a. RecordNotFoundException

```
@ResponseStatus(HttpStatus.NOT_FOUND)  
public class RecordNotFoundException extends RuntimeException {  
    public RecordNotFoundException(String exception) {  
        super(exception);  
    }  
}
```

b. InvalidUseridException

```
@ResponseStatus(HttpStatus.NOT_ACCEPTABLE)  
public class InvalidUserIDException extends RuntimeException {  
    public InvalidUserIDException(String exception) {  
        super(exception);  
    }  
}
```

c. CustomExceptionHandler

```
@SuppressWarnings({"unchecked", "rawtypes"})  
@ControllerAdvice  
public class CustomExceptionHandler extends ResponseEntityExceptionHandler  
{  
    @ExceptionHandler(Exception.class)  
    public final ResponseEntity<Object> handleAllExceptions(Exception ex,  
WebRequest request) {  
        List<String> details = new ArrayList<>();  
        details.add(ex.getLocalizedMessage());  
        ErrorResponse error = new ErrorResponse("Server Error", details);  
        return new ResponseEntity(error, HttpStatus.INTERNAL_SERVER_ERROR);  
    }  
  
    @ExceptionHandler(RecordNotFoundException.class)  
    public final ResponseEntity<Object>  
handleUserNotFoundException(RecordNotFoundException ex, WebRequest request) {  
        List<String> details = new ArrayList<>();  
        details.add(ex.getLocalizedMessage());  
        ErrorResponse error = new ErrorResponse("Record Not Found", details);  
        return new ResponseEntity(error, HttpStatus.NOT_FOUND);  
    }  
  
    @ExceptionHandler(InvalidUserIDException.class)  
    public final ResponseEntity<Object>  
handleInvalidUserIDException(InvalidUserIDException ex, WebRequest request) {  
        List<String> details = new ArrayList<>();  
        details.add(ex.getLocalizedMessage());  
    }  
}
```

Validation Entity – Exception Handler

```
        ErrorResponse error = new ErrorResponse("Invalid userID ", details);
        return new ResponseEntity(error, HttpStatus.NOT_ACCEPTABLE);
    }

    @Override
    protected ResponseEntity<Object>
    handleMethodArgumentNotValid(MethodArgumentNotValidException ex, HttpHeaders
    headers, HttpStatus status, WebRequest request) {
        List<String> details = new ArrayList<>();
        for (ObjectError error : ex.getBindingResult().getAllErrors()) {
            details.add(error.getDefaultMessage());
        }
        ErrorResponse error = new ErrorResponse("Validation Failed",
        details);
        return new ResponseEntity(error, HttpStatus.BAD_REQUEST);
    }
}
```

7. ValidatingService

```
/**
 * Service validate dữ liệu dựa trên annotation @NotNull @NotBlank @Size @Min
 * @Max...
 */
@Service("ValidatingService")
@Validated
public class ValidatingService {
    /**
     * Hàm validate theo các Annotation
     * @param input
     */
    public void validate(@Valid Object input){
    }

    /**
     * Hàm validate theo Annotation và thêm điều kiện là userID phải bắt đầu
     * bằng ABC
     * @param user
     * @return
     */
    public void customizedValidate(@Valid UserEnt user) throws
    InvalidNameException {
        if(!(user.getUserid()).startsWith("ABC")) throw new
        InvalidNameException(user.getUserid() + " is invalid");
    }
}
```

8. Controller

```
@RestController
public class UserController {

    @Autowired
    UserRepository userRepository;

    @Autowired
```

Validation Entity – Exception Handler

```
ValidatingService validatingService;

/**
 * Service thêm mới user
 * validate dữ liệu (chỉ validate dựa trên các annotation trong Entity)
 ngay từ khi convert từ JSON sang Ent
 * @param user
 * @return
 */
@PostMapping(value = "/user/add/1")
public ResponseEntity<UserEnt> addUser1(@RequestBody @Valid UserEnt user)
{
    user.setExpired(1);
    user.setDisabled(0);
    userRepository.save(user);
    return new ResponseEntity<UserEnt>(user, HttpStatus.OK);
}

/**
 * Service thêm mới user
 * Không validate dữ liệu khi convert từ JSON sang Ent
 * Validate dữ liệu sau đó dùng validatingService(validate dựa trên
 annotation trong Entity và customized validation
 * @param user
 * @return
 */

@PostMapping(value = "/user/add/2")
public ResponseEntity<UserEnt> addUser2(@RequestBody UserEnt user)
throws InvalidNameException {
    user.setExpired(1);
    user.setDisabled(0);
    try {
        validatingService.customizedValidate(user);
        userRepository.save(user);
    } catch (InvalidNameException ex) {
        throw new InvalidNameException("Userid must start with ABC");
    }
    return new ResponseEntity<UserEnt>(user, HttpStatus.OK);
}

/**
 * Service lấy thông tin User theo id
 * @param id
 * @return
 */
@GetMapping(value = "/user/{id}")
public ResponseEntity<UserEnt> findById (@PathVariable("id") Long id)
{
    Optional<UserEnt> user = userRepository.findById(id);
    if(!user.isPresent()) {
        throw new RecordNotFoundException("Invalid user id : " + id);
    }
    return new ResponseEntity<UserEnt>(user.get(), HttpStatus.OK);
}
}
```


9. Demo

- Gọi đến web service add1 với các field không hợp lệ, ta được kết quả:

POST http://localhost:8080/user/add/1

```

1 {
2   "userid": "A1234",
3   "password": "1234",
4   "email": "abcm@gmail.com",
5   "phone": "1213",
6   "firstName": "Do",
7   "lastName": "",
8   "age": 12
9 }

```

Body Cookies Headers (4) Test Results Status: 400 Bad Request Time: 23 ms

Pretty Raw Preview Visualize JSON

```

1 {
2   "message": "Validation Failed",
3   "details": [
4     "email should be a valid email",
5     "must match \"[0-9]{10}\"",
6     "last name must not be blank",
7     "size must be between 6 and 20",
8     "must be greater than or equal to 13"
9   ]
10 }

```

- Gọi đến web service add2 với các field không hợp lệ, ta sẽ được báo lỗi của các field được validate theo annotation trước

POST http://localhost:8080/user/add/2 Send Save

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies Code

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```

1 {
2   "userid": "A1234",
3   "password": "1234",
4   "email": "abcm@gmail.com",
5   "phone": "1213",
6   "firstName": "Do",
7   "lastName": "",
8   "age": 12
9 }

```

Body Cookies Headers (4) Test Results Status: 500 Internal Server Error Time: 1052 ms Size: 506 B Save Response

Pretty Raw Preview Visualize JSON

```

1 {
2   "message": "Server Error",
3   "details": [
4     "customizedValidate.user.phone: must match \"[0-9]{10}\"", customizedValidate.user.lastName: last name must not be blank,
5     customizedValidate.user.email: email should be a valid email, customizedValidate.user.password: size must be between 6 and 20,
6     customizedValidate.user.age: must be greater than or equal to 13"
7   ]
8 }

```

- Sau khi nhập dữ liệu hợp lệ, chỉ trừ field userid, ta sẽ thấy thông báo lỗi:

Validation Entity – Exception Handler

POST http://localhost:8080/user/add/2

Params Authorization Headers (9) **Body** Pre-request Script Tests Settings

● none ● form-data ● x-www-form-urlencoded ● raw ● binary ● GraphQL **JSON**

```
1 {
2   "userid": "A1234",
3   "password": "123456",
4   "email": "abc@gmail.com",
5   "phone": "1234567890",
6   "firstName": "Do",
7   "lastName": "Ngat",
8   "age": 21
9 }
```

Body Cookies Headers (4) Test Results Status: 500 Internal Server Error Time: 258 ms Size: 221 B Save

Pretty Raw Preview Visualize JSON

```
1 {
2   "message": "Server Error",
3   "details": [
4     "Userid must start with ABC"
5   ]
6 }
```

- Nhập đúng dữ liệu, gửi request thành công:

GET http://localhost:8080/user/2

Params Authorization Headers (7) **Body** Pre-request Script Tests Settings

● none ● form-data ● x-www-form-urlencoded ● raw ● binary ● GraphQL

This request does not have a body

Body Cookies Headers (5) Test Results Status: 200 OK Time: 83 ms Size: 325 B Save

Pretty Raw Preview Visualize JSON

```
1 {
2   "id": 2,
3   "userid": "ABC1234",
4   "password": "123456",
5   "email": "abc@gmail.com",
6   "phone": "1234567890",
7   "firstName": "Do",
8   "lastName": "Ngat",
9   "expired": 1,
10  "disabled": 0,
11  "age": 21
12 }
```

- Gọi web service lấy thông tin một user không có trong DB

Validation Entity – Exception Handler

GET ▼ http://localhost:8080/user/3 Send ▼

Params Authorization Headers (7) **Body** Pre-request Script Tests Settings

☒ none ☐ form-data ☐ x-www-form-urlencoded ☐ raw ☐ binary ☐ GraphQL

This request does not have a body

Body Cookies Headers (5) Test Results Status: 404 Not Found Time: 585 ms Size: 235 B Sav

Pretty Raw Preview Visualize JSON ▼

```
1 {
2   "message": "Record Not Found",
3   "details": [
4     "Invalid user id : 3"
5   ]
6 }
```