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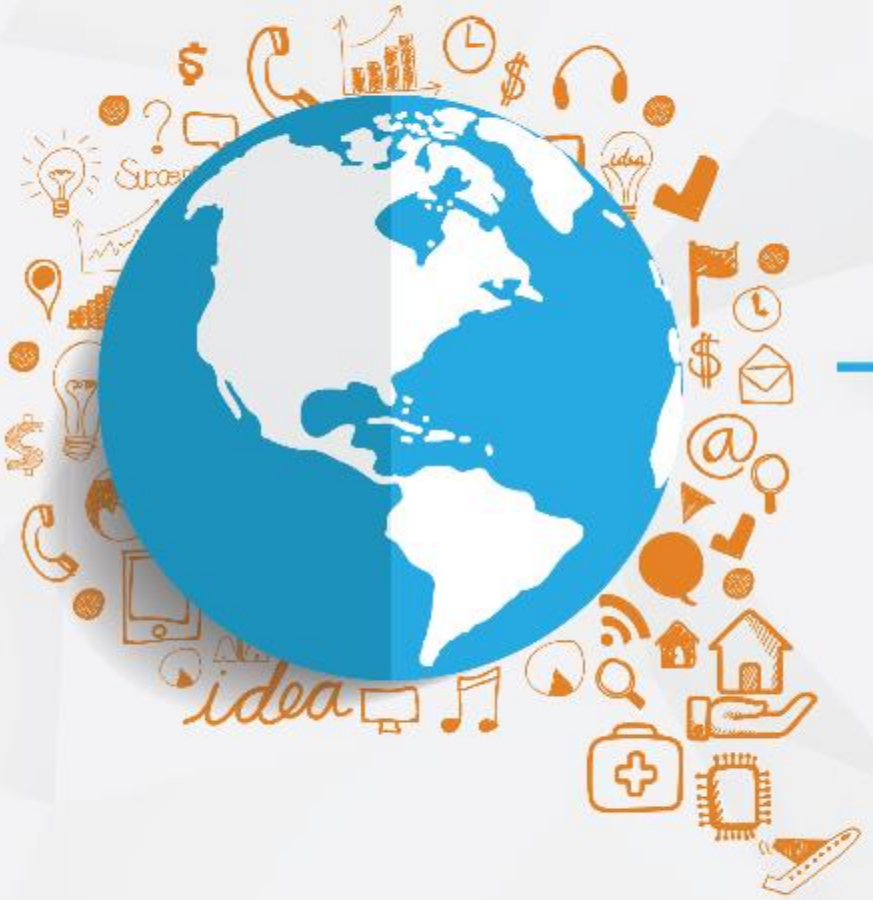

Spring Security

Objectives

- Introduction to Spring Security
- Use default Configuration
- Customize Default Spring Security Configuring
- In memory and Data Base Authentication

- **What is API Security**
  - It is a powerful framework that focuses on providing authentication and access control to secure Spring-based Java web application.
  - This framework targets two major areas of application they are authentication and authorization.
  - Authentication is the process of knowing and identifying the user that wants to access a resource.
  - Authorization is the process to allow authority to perform actions in the application.

- **Spring Project Modules**
  - In Spring Security 3.0, the Security module is divided into separate jar files. Based on their functionalities, so, the developer can integrate according to their requirement.

- **The following are some jar files that are included into Spring Security module.**
  - spring-security-core.jar
  - spring-security-web.jar
  - spring-security-config.jar
  - spring-security-ldap.jar

Include Spring Security in your Project

- **To include spring security in your project, include below dependency:**
- **spring-security-core.jar**
  - core jar file is required for every application that wants to use Spring Security. This jar file includes **core access-control** and **core authentication classes** and interfaces.
- **spring-security-web**
  - This jar is useful for Spring Security web authentication and **URL-based access control**. It includes filters and **web-security infrastructure.**
  - All the classes and interfaces are located into the **org.springframework.security.web** package.
- **Spring-security-config**
  - This jar file is required for Spring Security configuration using **XML and Java** both. It includes Java configuration code and security namespace parsing code. All the classes and interfaces are stored in **org.springframework.security.config** package.

HTTP Basic Authentication

- **HTTP Basic Authentication**
  - Basic authentification is a standard **HTTP** header with the user and **password** encoded in **base64**
  - The userName and password is encoded in the format **username:password.**
  - This is one of the technique to protect the REST resources because it does not require cookies. session identifiers or any login pages.
  - In case of basic authentication, the username and password is only encoded with Base64, but not encrypted or hashed in any way.

Configuring Spring Web Security

- **Environment Setup**
  - 1. JDK 8
  - 2. Spring Boot
  - 3. STS and Maven Dependencies

- **Maven Dependencies**
  - **spring-boot-starter**-parent: provides useful Maven defaults.
  - **spring-boot-starter-web:** includes all the dependencies required to create a web app. This will avoid lining up different spring common project versions.
  - **spring-boot-starter-tomcat:** enable an embedded Apache Tomcat 7 instance, by default.
  - **spring-boot-starter-security:** take care of all the required dependencies related to spring security.

Configuring Spring Web Security(Contd..)

- **Define Spring Security Configuration File**

WebSecurityConfig.java

```
@Configuration
@EnableWebSecurity
public class WebSecurityConfig extends WebSecurityConfigurerAdapter {
        Override   Required  Web Security Configuration Method


         }
}
```

- **The Configuration class is annotated with**
  - This configuration creates a Servlet Filter known as the **springSecurityFilterChain** which is responsible for all the security (protecting the application URLs, validating submitted username and passwords, redirecting to the log in form, etc) within your application.
  - **@EnableWebSecurity** to enable Spring web security support.
  - The **WebSecurityConfigurerAdapter** to override spring features with our custom requirements.

HTTP Security

- To enable HTTP Security in Spring, we need to extend the **WebSecurityConfigurerAdapter** and Override the default configuration in the **configure(HttpSecurity http)** method:

```
protected void configure(HttpSecurity http) throws Exception {
   http.authorizeRequests()
    .anyRequest().authenticated()
    .and().httpBasic();
}
```

- The above default configuration makes sure any request to the application is authenticated with HTTP basic authentication.

Spring Security Authentication Details Storage

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- In memory
- database
- **Spring Security using In memory Authentication**
  - Store the user details inside Security Config file

```
@Configuration
@EnableWebSecurity
public class WebSecurityConfig extends WebSecurityConfigurerAdapter {

    @Override
  public void configure(AuthenticationManagerBuilder auth) throws Exception {
    auth.inMemoryAuthentication().withUser("abc").password("abc").roles("USER");

  }
}
```

Authorization with Roles

- **Let's now configure some simple authorization on each URL using roles:**

```
protected void configure(HttpSecurity http) throws Exception {
   http.authorizeRequests()
    .antMatchers("/", "/home").access("hasRole('USER')")
    .antMatchers("/admin/**").hasRole("ADMIN");
    }
```

Spring Security using Database Authentication

- **Spring Security using Database Authentication**
  - We need to store user and user roles inside tables
  - Than register a bean which type of **DriverManagerDataSource** inside Spring context

- **DriverManagerDataSource**
  - Used to contain the information about the database such as driver class name, connection URL, username and password

- **Create a datasource for the database connection**
  - driverClassName = oracle.jdbc.driver.OracleDriver
  - url = jdbc:oracle:thin:@localhost:1521:xe
  - username = system
  - password = password

Declare DriverManagerDataSource Bean

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- **Java Based Configuration**

```
@Configuration
public class DataSouceConfig {
        @Bean(name = "dataSource")
        public DriverManagerDataSource dataSource() {
           DriverManagerDataSource driverManagerDataSource = new DriverManagerDataSource();
           driverManagerDataSource.setDriverClassName("oracle.jdbc.driver.OracleDriver");
           driverManagerDataSource.setUrl("jdbc:oracle:thin:@127.0.0.1:1521:XE");
           driverManagerDataSource.setUsername(“dbuser");
           driverManagerDataSource.setPassword(“dbpassword");
           return driverManagerDataSource;
        }
}
```

Autowire DriverManagerDataSource Bean

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- **Autowire DriverManagerDataSource Bean inside web security config File**

```
@Configuration
@EnableWebSecurity
public class SecurityConfig extends WebSecurityConfigurerAdapter {
        @Autowired
        DataSource dataSource;
                @Override
        public void configure(AuthenticationManagerBuilder auth) throws Exception {
         auth.jdbcAuthentication().dataSource(dataSource)
        .usersByUsernameQuery(
         "select username,password, enabled from logins where username=?")
        .authoritiesByUsernameQuery(
         "select l.username, r.role from logins l, roles r where l.login_id = r.login_id and l.username =?");
        }
}
```

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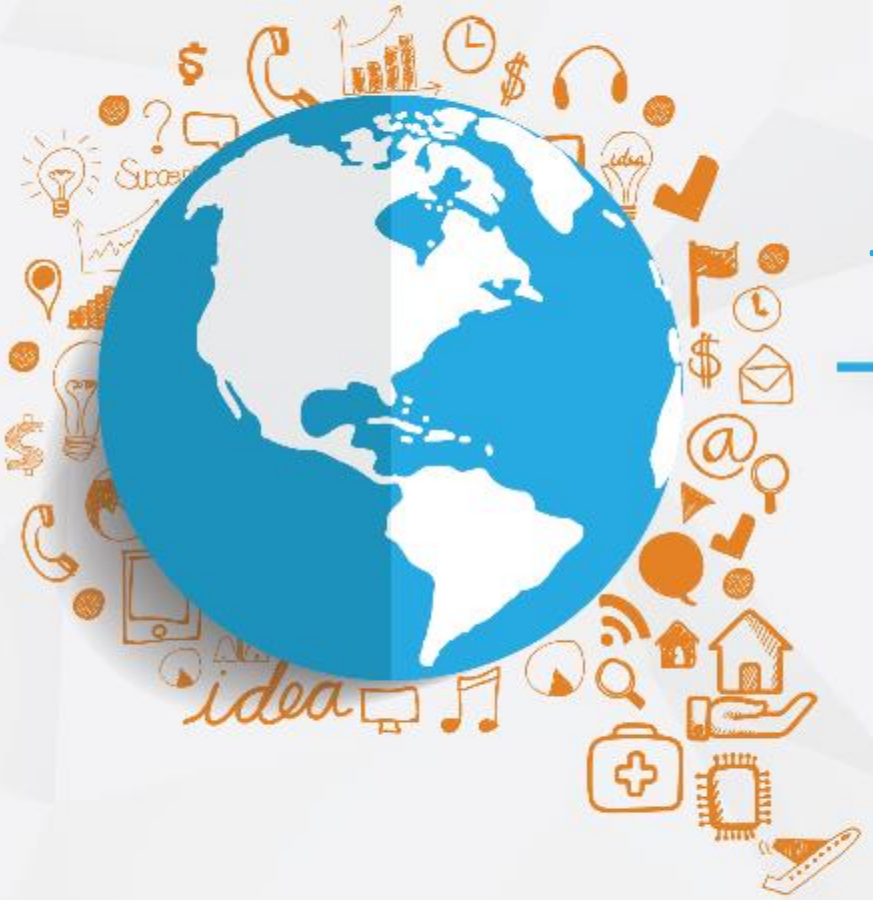

Thank You

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