Spring MVC File Upload

Last Updated : 27 Aug, 2025

Spring MVC provides built-in multipart handling via the Jakarta Servlet API, so you can upload files using MultipartFile and StandardServletMultipartResolver. This article walks through enabling multipart in web.xml (or Java config), registering StandardServletMultipartResolver, building a controller to accept uploads, and managing files efficiently (images, documents, large files) with limits, validation, and storage options.

Pre-requisites:

- Eclipse IDE (or any other IDE of your choice)
- Apache Maven for dependency management
- Java 11 or higher
- Apache Tomcat 10 or higher (for deploying the application)

Steps to Create a Spring MVC File Uploading Project

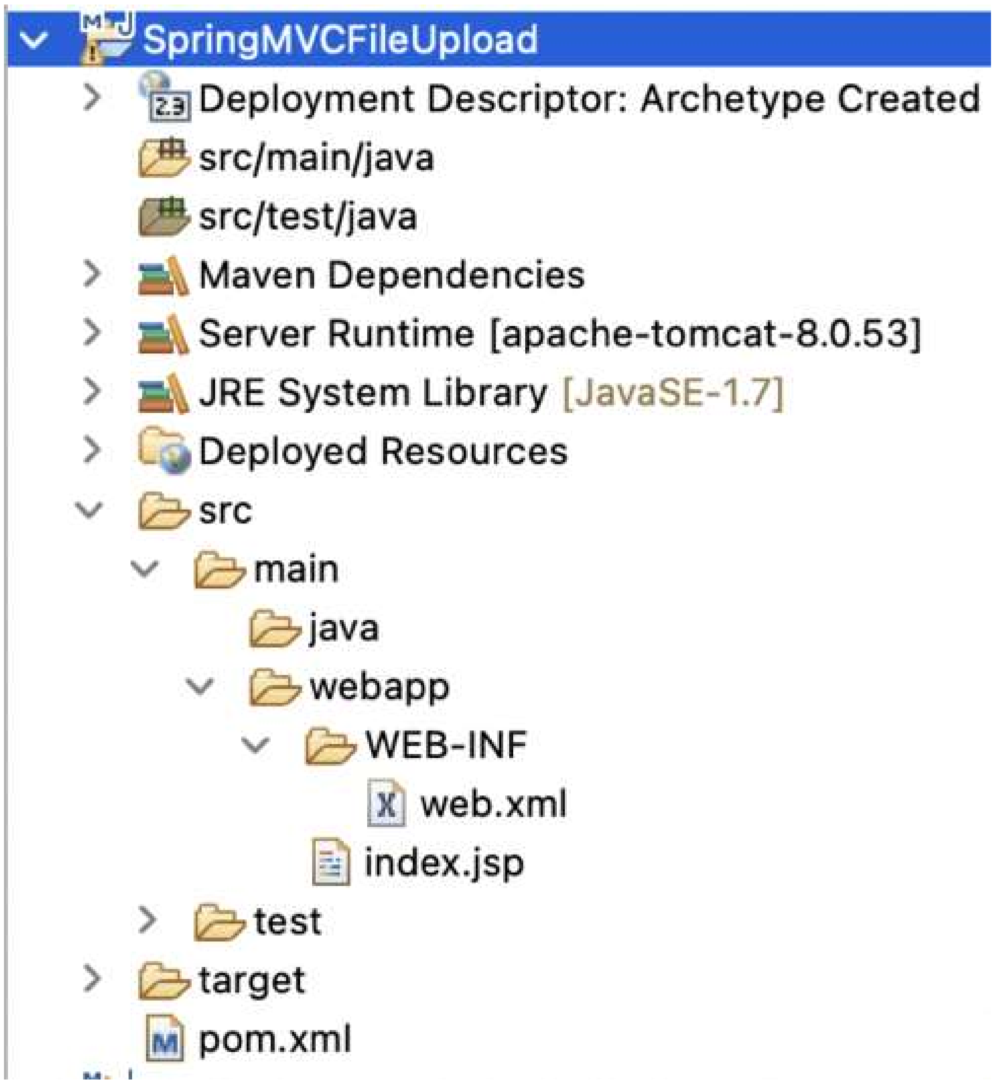
Spring MVC framework provides support for CommonsMultipartResolver for uploading any kind of file for a web-based application. Here we will be creating a Spring MVC web application and configuring MultipartResolver to upload files (image) and also show them on the web.

Step 1: Create a Maven Web Application Project

Open Eclipse IDE and create a new **Maven project**. Select the **maven-archetype-webapp** archetype. Enter the **Group Id** (e.g., com.gfg) and **Artifact Id** (e.g., SpringMVCFileUpload). Click Finish to create the project.

Step 2: Project Structure

The project structure would look something like this:



Step 3: Add Dependencies in pom.xml

Let's start by adding some dependencies into the pom.xml already created after creating a maven project. The pom.xml defines all the dependencies that maven has to get and manage for you. We are going to add dependencies for Spring MVC, jakarta EE and file upload libraries.

pom.xml:

```
<project xmlns="https://maven.apache.org/POM/4.0.0"
xmlns:xsi="https://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="https://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>

  <groupId>com.gfg</groupId>
  <artifactId>SpringMVCFileUpload</artifactId>
  <version>0.0.1-SNAPSHOT</version>
```

```
<packaging>war</packaging>

<name>SpringMVCFileUpload Maven Webapp</name>
<url>http://www.example.com</url>

<properties>
  <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
  <maven.compiler.source>11</maven.compiler.source>
  <maven.compiler.target>11</maven.compiler.target>
</properties>

<dependencies>
  <!-- Spring MVC -->
  <dependency>
    <groupId>org.springframework</groupId>
    <artifactId>spring-webmvc</artifactId>
    <version>5.3.23</version>
  </dependency>

  <!-- Jakarta Servlet API -->
  <dependency>
    <groupId>jakarta.servlet</groupId>
    <artifactId>jakarta.servlet-api</artifactId>
    <version>5.0.0</version>
    <scope>provided</scope>
  </dependency>

  <!-- Jakarta JSTL -->
  <dependency>
    <groupId>jakarta.servlet.jsp.jstl</groupId>
    <artifactId>jakarta.servlet.jsp.jstl-api</artifactId>
    <version>2.0.0</version>
  </dependency>

  <!-- Apache Commons FileUpload -->
  <dependency>
    <groupId>commons-fileupload</groupId>
    <artifactId>commons-fileupload</artifactId>
    <version>1.5</version>
  </dependency>

  <!-- Apache Commons IO -->
  <dependency>
    <groupId>commons-io</groupId>
    <artifactId>commons-io</artifactId>
    <version>2.11.0</version>
  </dependency>

  <!-- JUnit for Testing -->
  <dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>
    <version>4.13.2</version>
    <scope>test</scope>
  </dependency>
</dependencies>
```

```
  <build>
    <finalName>SpringMVCFileUpload</finalName>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.8.1</version>
        <configuration>
          <source>11</source>
          <target>11</target>
        </configuration>
      </plugin>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-war-plugin</artifactId>
        <version>3.3.1</version>
      </plugin>
    </plugins>
  </build>
</project>
```

Step 4: Configure web.xml

The **web.xml** file in the **WEB-INF** folder defines mapping with different URLs and servlets to handle requests for those URLs. In this configuration file, we have used Jakarta EE namespace and configure the DispatcherServlet.

web.xml:

```
<web-app xmlns="https://jakarta.ee/xml/ns/jakartaee/"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee/
https://jakarta.ee/xml/ns/jakartaee/web-app_5_0.xsd"
         version="5.0">

    <display-name>Spring MVC File Upload</display-name>

    <servlet>
        <servlet-name>gfg</servlet-name>
        <servlet-
class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
        <init-param>
            <param-name>contextConfigLocation</param-name>
            <param-value>/WEB-INF/gfg-servlet.xml</param-value>
        </init-param>
        <load-on-startup>1</load-on-startup>
        <multipart-config>
            <max-file-size>5242880</max-file-size> <!-- 5 MB -->
            <max-request-size>20971520</max-request-size> <!-- 20 MB -->
            <file-size-threshold>0</file-size-threshold>
        </multipart-config>
    </servlet>

    <servlet-mapping>
        <servlet-name>gfg</servlet-name>
        <url-pattern>/</url-pattern>
    </servlet-mapping>
</web-app>
```

Step 5: Configure gfg-servlet.xml

This is the gfg-servlet.xml file located in "**/src/main/webapp/WEB-INF/gfg.servlet.xml**". This file handles all HTTP requests for web applications. The annotation-driven enable the spring @Controller function, resource-mapping helps in handling HTTP requests for all resources. The bean configuration helps in identifying and scanning the jsp located in the views folder. The component-scan locates and allocated beans according to the mentioned annotation. Also added a resource mapping to map all the resources to the view a page.

gfg-servlet.xml:

A bean with id as **multipartResolver** will help in instantiating the **CommonsMultipartResolver**.

```
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:context="http://www.springframework.org/schema/context"
       xmlns:mvc="http://www.springframework.org/schema/mvc"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:schemaLocation="
        http://www.springframework.org/schema/beans
https://www.springframework.org/schema/beans/spring-beans.xsd
        http://www.springframework.org/schema/mvc
https://www.springframework.org/schema/mvc/spring-mvc.xsd
        http://www.springframework.org/schema/context
https://www.springframework.org/schema/context/spring-context.xsd">

    <context:component-scan base-package="com.gfg" />
    <mvc:resources mapping="/resources/**" location="/WEB-INF/resources/"
cache-period="31556926"/>
    <mvc:annotation-driven />

    <bean
class="org.springframework.web.servlet.view.InternalResourceViewResolver">
        <property name="prefix" value="/WEB-INF/views/" />
        <property name="suffix" value=".jsp" />
    </bean>

    <!-- Modern MultipartResolver -->
    <bean id="multipartResolver"

class="org.springframework.web.multipart.support.StandardServletMultipartReso
lver"/>
</beans>
```

Step 6: Create the Controller

The **UploadFileController** class in the **com.gfg.controller** has was methods for two requests to be mapped. The upload method is a get mapping and simple redirects to the **fileform.jsp** view page. The **fileUpload** method sends a **Post** request and redirects the showupload page. This class has three parameters **CommonsMultipartFile** gets the uploaded file. The file is converted into a **bytes array** and saved into a file using **FileOutputStream**, the model param is used to add the file name as an attribute in the showupload.jsp file.

UploadFileController:

```
package com.gfg.controller;

import java.io.File;
import java.io.FileOutputStream;
import javax.servlet.http.HttpSession;

import org.springframework.stereotype.Controller;
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.multipart.MultipartFile;

@Controller
public class UploadFileController {

    @GetMapping("/upload")
    public String upload() {
        return "fileform";
    }

    @PostMapping("/uploadfile")
    public String fileUpload(@RequestParam("thisfile") MultipartFile file,
HttpSession session, Model model) {
        if (file.isEmpty()) {
            model.addAttribute("message", "Please select a file to upload!");
            return "fileform";
        }

        try {
            String uploadPath = session.getServletContext().getRealPath("/")
+
                    "WEB-INF" + File.separator + "resources" + File.separator
+ "image";
            File dir = new File(uploadPath);
            if (!dir.exists()) dir.mkdirs();

            File serverFile = new File(dir, file.getOriginalFilename());
            try (FileOutputStream fos = new FileOutputStream(serverFile)) {
                fos.write(file.getBytes());
            }

            model.addAttribute("imgName", file.getOriginalFilename());
            model.addAttribute("message", "File uploaded successfully!");

        } catch (Exception e) {
            e.printStackTrace();
            model.addAttribute("message", "File upload failed: " +
e.getMessage());
        }

        return "showupload";
    }
}
```

Step 7: Create JSP Views

The **fileform.jsp** in the **views** folder defines the upload form with enctype as **multipart/form-data.** We've used bootstrap for the proper styling of the page.

fileform.jsp:

```
<!doctype html>
<html lang="en">
  <head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1,
shrink-to-fit=no">

    <!-- Bootstrap CSS -->
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/css/bootstrap.min.css
" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
```

```
crossorigin="anonymous">

    <title>File uploader</title>
  </head>
  <body>
    <h1>Upload File</h1>
    <form action="uploadfile" method="post" enctype="multipart/form-data">
        <div class="form-group">
          <label for="formFile" class="form-label">Upload Your file</label>
          <input name="thisfile" class="form-control" type="file"
id="formFile">
        </div>
        <button class="btn btn-secondary">Upload</button>
    </form>

    <!-- Optional JavaScript -->
    <!-- jQuery first, then Popper.js, then Bootstrap JS -->
    <script src="https://code.jquery.com/jquery-3.3.1.slim.min.js"
integrity="sha384-
q8i/X+965DzO0rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1Pi6jizo"
crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/popper.js@1.14.7/dist/umd/popper.min.js"
integrity="sha384-
UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz0W1"
crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/js/bootstrap.min.js"
integrity="sha384-
JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xIM+B07jRM"
crossorigin="anonymous"></script>
  </body>
</html>
```

The **showupload.jsp** page displays the uploaded image using jsp to map the image URL.

showupload.jsp:

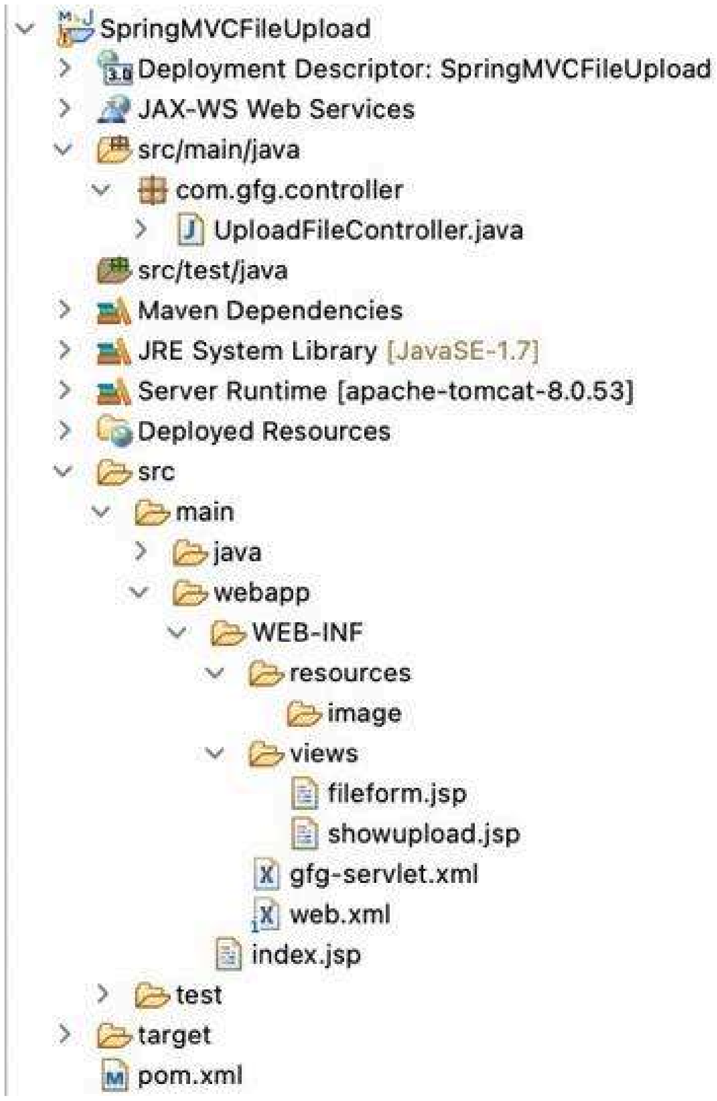
```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<%@ taglib prefix="c" uri="http://www.oracle.com/technetwork/java/index.html"
%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>

    <h1>File Uploaded</h1>

    <img src="<c:url value="resources/image/${imgName}"/>"/>
```

```
</body>
</html>
```

Note: After adding all the classes and configuration file, the project structure should look something like this:



```
SpringMVCFileUpload
  Deployment Descriptor: SpringMVCFileUpload
  JAX-WS Web Services
  src/main/java
    com.gfg.controller
      UploadFileController.java
  src/test/java
  Maven Dependencies
  JRE System Library [JavaSE-1.7]
  Server Runtime [apache-tomcat-8.0.53]
  Deployed Resources
  src
    main
      java
      webapp
        WEB-INF
          resources
            image
          views
            fileform.jsp
            showupload.jsp
          gfg-servlet.xml
          web.xml
        index.jsp
    test
  target
  pom.xml
```

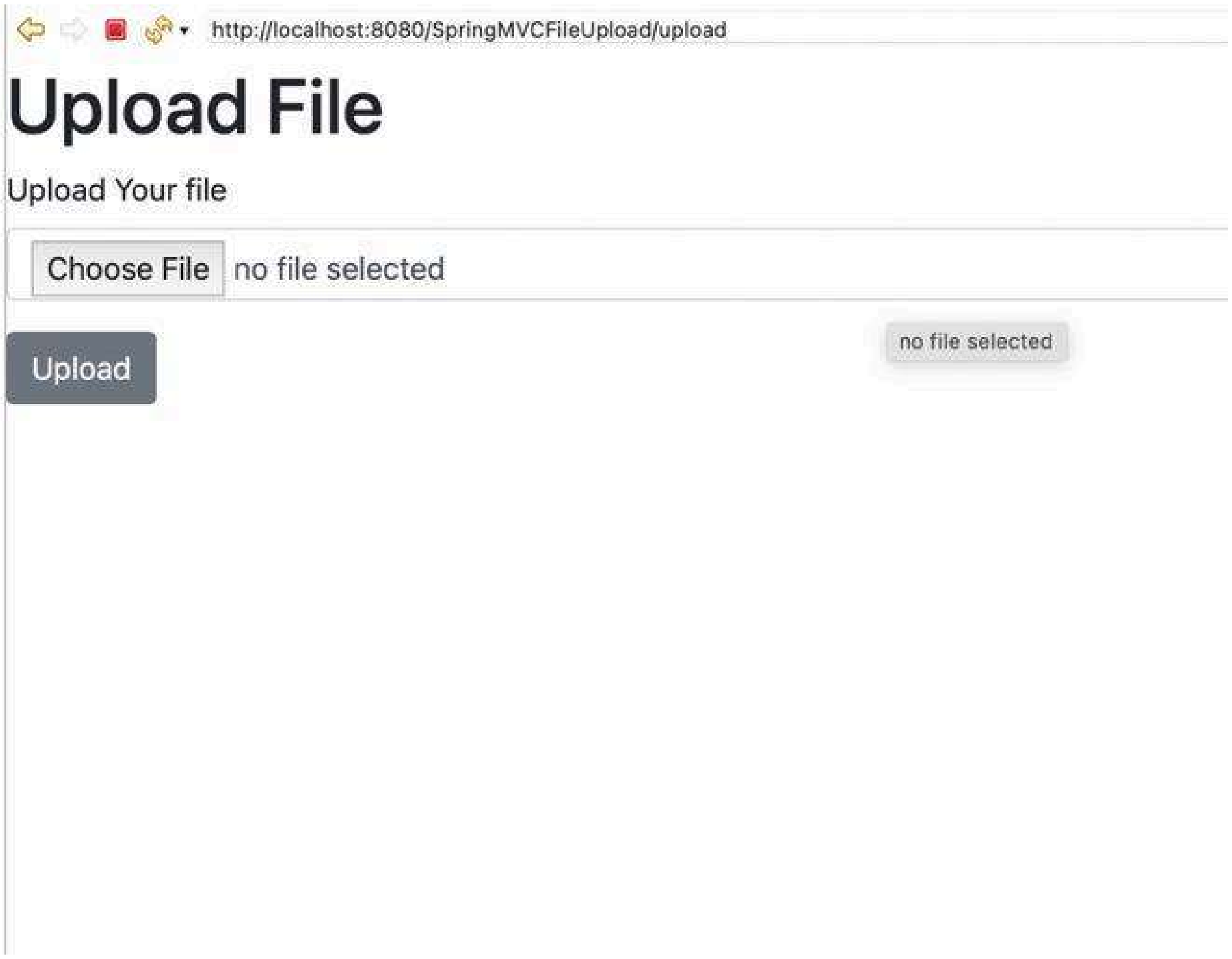
> ***Note:*** *Before running the application, you need to manually create a folder named image inside the WEB-INF/resources directory. This folder will be used to store the uploaded files (e.g., images). If the folder does not exist, the application will throw an error when trying to save the uploaded file.*

Step 8: Run the Application

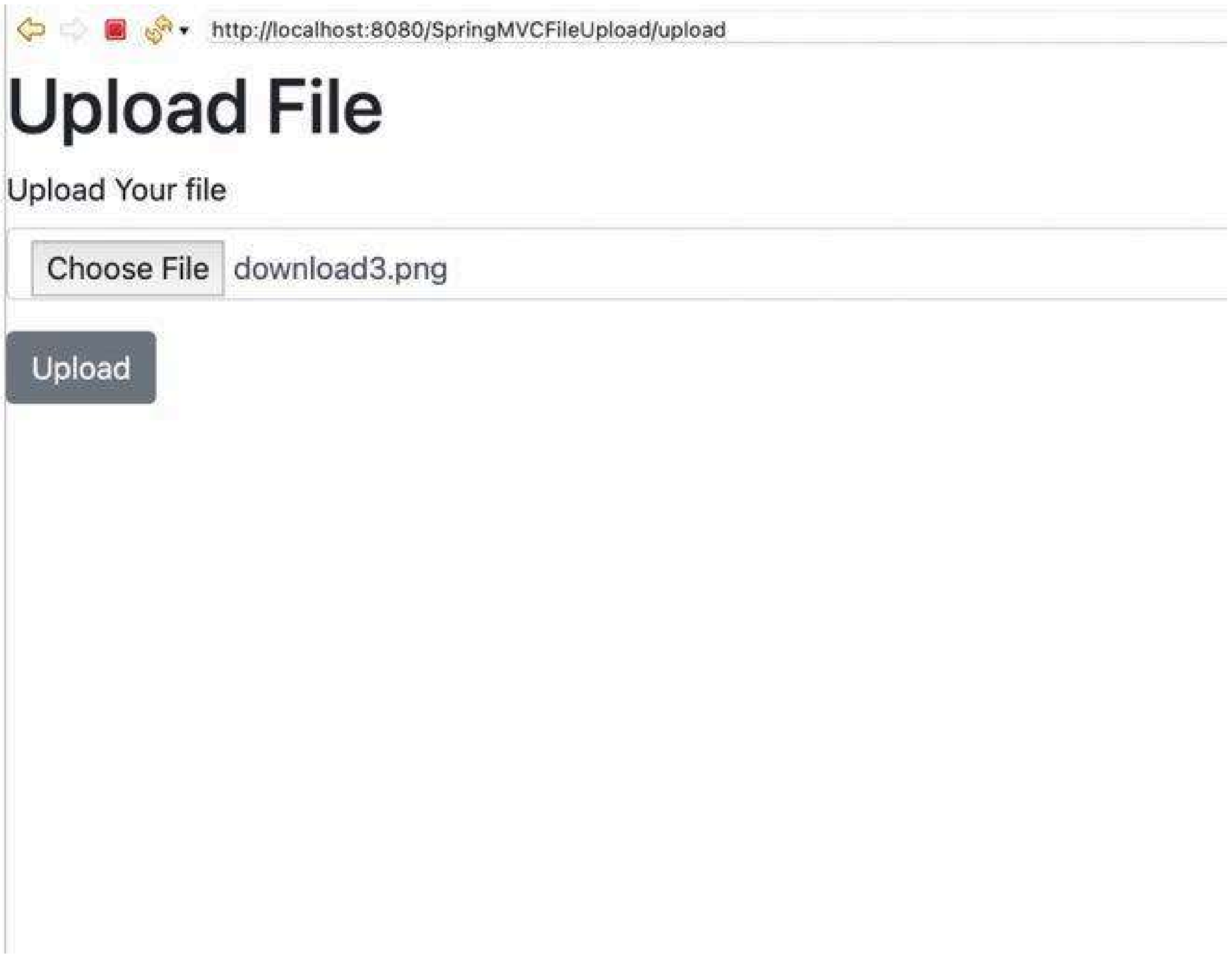
Now it's time to run your project, start the **Tomcat Server** and run your application, now type *"http://localhost:8080/SpringMVCFileUpload/upload"* in any browser.

Output:

The below image demonstrates a file upload form in a Spring MVC application where users can select and upload a file.



Upload the image and click on upload this will redirect you to the showupload page

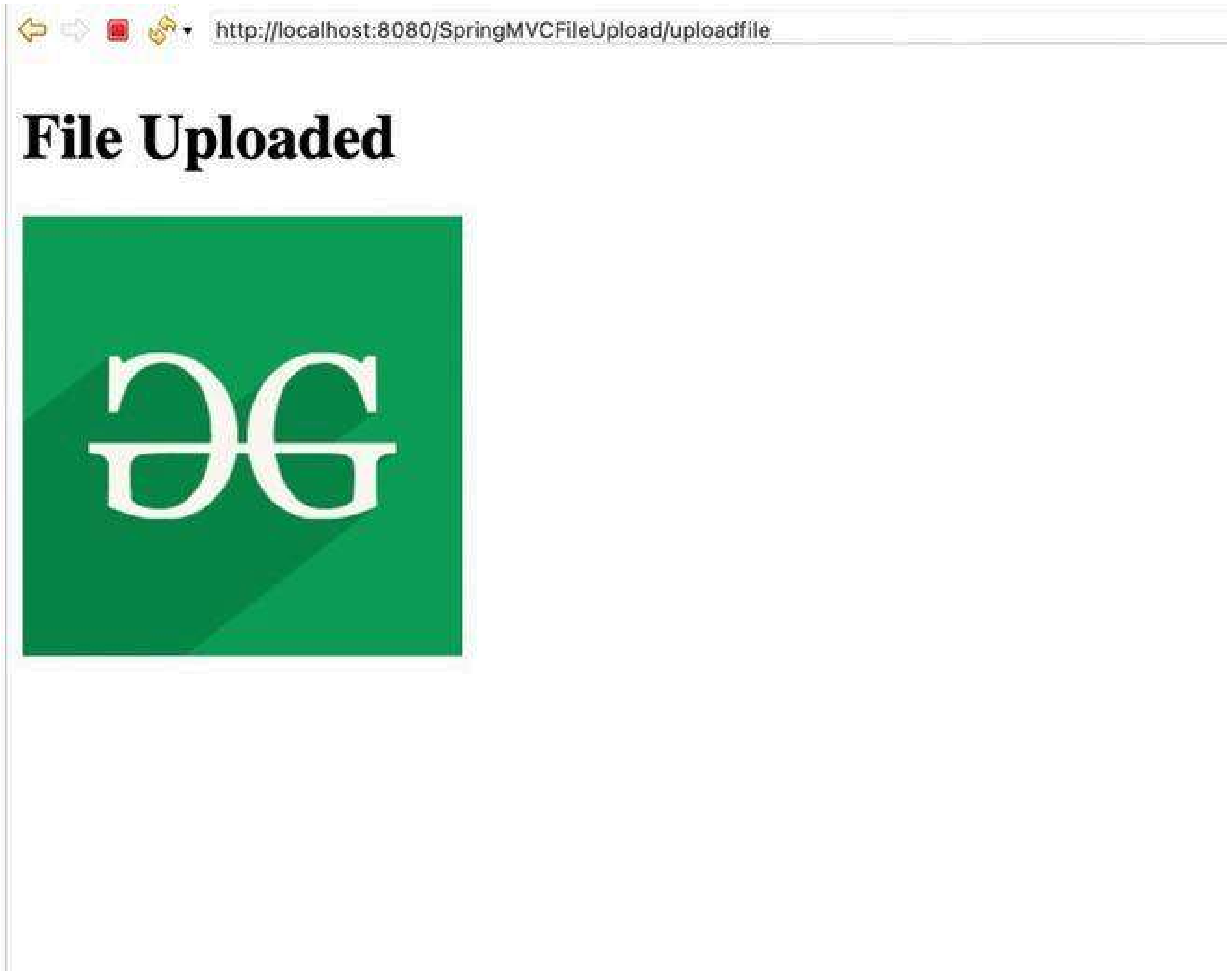


http://localhost:8080/SpringMVCFileUpload/upload

Upload File

Upload Your file

Now, you will see your uploaded image.



File Uploaded

Output

So we have created a Spring MVC web application with an upload form and displayed the uploaded image on the web.