# CS 305 Project One Template

## Document Revision History

| **Version** | **Date** | **Author** | **Comments** |
| --- | --- | --- | --- |
| **1.0** | **7/18/2024** | **Carter W** | **Document Release** |

## Client



## Instructions

Submit this completed vulnerability assessment report. Replace the bracketed text with the relevant information. In this report, identify your security vulnerability findings and recommend the next steps to remedy the issues you have found.

* Respond to the five steps outlined below and include your findings.
* Respond using your own words. You may also include images or supporting materials. If you include them, make certain to insert them in the relevant locations in the document.
* Refer to the Project One Guidelines and Rubric for more detailed instructions about each section of the template.

## Developer

Carter Williams

**1. Interpreting Client Needs**

Determine your client’s needs and potential threats and attacks associated with the company’s application and software security requirements. Consider the following questions regarding how companies protect against external threats based on the scenario information:

* What is the value of secure communications to the company?
* Are there any international transactions that the company produces?
* Are there governmental restrictions on secure communications to consider?
* What external threats might be present now and in the immediate future?
* What modernization requirements must be considered, such as the role of open-source libraries and evolving web application technologies?

Artemis Financial focuses on topics including investing, retirement planning, insurance, and savings. This company develops [mostly custom] financial strategy for its clients. The thing is, external threats that target customer information offer significant dangers, given the critical requirement to secure all types of very sensitive data. Secure communication procedures are crucial as the information they handle is sensitive, which could be personnel files. Just as well, given the current state of the online environment and the need for bug patches and stronger security measures, they should look to make regular maintenance checks is a pretty high priority. The protection of confidential information in communications is a crucial situation that the company needs to go through. So, strong encryption becomes necessary to protect sensitive data from unwanted outsiders.

**2. Areas of Security**

Refer to the vulnerability assessment process flow diagram. Identify which areas of security apply to Artemis Financial’s software application. Justify your reasoning for why each area is relevant to the software application.

* **APIs**: Proper handling of user sessions is essential for preventing session-related threats, whether that's session fixation, phishing attempts, or other forms of attacks. This would include secure connection to the interface with proper maintenance.
* **Cryptography:** Given that numerous currencies could possibly be involved here, encrypting code within the company would be a big win in ensuring that user information is much less likely to be hacked. This makes it much harder to crack for anybody looking to get into the system.
* **Client/Server:** To avoid unwanted access or data breaches, client information should be appropriately protected at all times, and in all steps along the way.
* **Code Quality & Code Error:** Data should not be allowed for anyone to reach; Clients should only be allowed to access their own through verification. Because of quality, we can allow us to manage what users can do, over approachable access, while putting debugging systems keep our code from faulty interface interactions and tell us where the problems lie in the overall system.

**3. Manual Review**

Continue working through the vulnerability assessment process flow diagram. Identify all vulnerabilities in the code base by manually inspecting the code.

* Not much input validation
* Lacks code error management on Greeting Controller
* Code quality could have been improved on Greeting Controller
* A lot of file versions needing updates
* User input isn’t secure on API

**4. Static Testing**

Run a dependency check on Artemis Financial’s software application to identify all security vulnerabilities in the code. Record the output from the dependency-check report. Include the following items:

* The names or vulnerability codes of the known vulnerabilities
* A brief description and recommended solutions provided by the dependency-check report
* Any attribution that documents how this vulnerability has been identified or documented previously

| **Dependency↑** | **Vulnerability IDs** | **Description** |  |  | **Solutions** |  |
| --- | --- | --- | --- | --- | --- | --- |
| [bcprov-jdk15on-1.46.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l1_991c96a4e31e6c19e2b9136c8955bd423f2dc4c7) | cpe:2.3:a:bouncycastle:bouncy-castle-crypto-package:1.46:\*:\*:\*:\*:\*:\*:\* cpe:2.3:a:bouncycastle:bouncy\_castle\_crypto\_package:1.46:\*:\*:\*:\*:\*:\*:\* [cpe:2.3:a:bouncycastle:bouncy\_castle\_for\_java:1.46:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Abouncycastle&cpe_product=cpe%3A%2F%3Abouncycastle%3Abouncy_castle_for_java&cpe_version=cpe%3A%2F%3Abouncycastle%3Abouncy_castle_for_java%3A1.46) [cpe:2.3:a:bouncycastle:legion-of-the-bouncy-castle-java-crytography-api:1.46:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Abouncycastle&cpe_product=cpe%3A%2F%3Abouncycastle%3Alegion-of-the-bouncy-castle-java-crytography-api&cpe_version=cpe%3A%2F%3Abouncycastle%3Alegion-of-the-bouncy-castle-java-crytography-api%3A1.46) cpe:2.3:a:bouncycastle:the\_bouncy\_castle\_crypto\_package\_for\_java:1.46:\*:\*:\*:\*:\*:\*:\* | The Bouncy Castle Crypto package is a Java implementation of cryptographic algorithms. This jar contains JCE provider and lightweight API for the Bouncy Castle Cryptography APIs for JDK 1.5 to JDK 1.7. - The software communicates with a host that provides a certificate, but the software does not properly ensure that the certificate is actually associated with that host. |  |  | The best solution for this would be to upgrade Bouncy Castle JCE to any version after 1.55. |  |
| [hibernate-validator-6.0.18.Final.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l3_7fd00bcd87e14b6ba66279282ef15efa30dd2492) | [cpe:2.3:a:redhat:hibernate\_validator:6.0.18:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aredhat&cpe_product=cpe%3A%2F%3Aredhat%3Ahibernate_validator&cpe_version=cpe%3A%2F%3Aredhat%3Ahibernate_validator%3A6.0.18) | Hibernate's Bean Validation (JSR-380) reference implementation. - A flaw was found in Hibernate Validator version 6.1.2.Final. A bug in the message interpolation processor enables invalid EL expressions to be evaluated as if they were valid. This flaw allows attackers to bypass input sanitation (escaping, stripping) controls that developers may have put in place when handling user-controlled data in error messages. |  |  | V6.0.2 is the best version to upgrade to for Hibernate-Validator |  |
| [jackson-databind-2.10.2.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l5_0528de95f198afafbcfb0c09d2e43b6e0ea663ec) | [cpe:2.3:a:fasterxml:jackson-databind:2.10.2:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Afasterxml&cpe_product=cpe%3A%2F%3Afasterxml%3Ajackson-databind&cpe_version=cpe%3A%2F%3Afasterxml%3Ajackson-databind%3A2.10.2) cpe:2.3:a:fasterxml:jackson-modules-java8:2.10.2:\*:\*:\*:\*:\*:\*:\* | General data-binding functionality for Jackson: works on core streaming API - A flaw was found in FasterXML Jackson Databind, where it did not have entity expansion secured properly. This flaw allows vulnerability to XML external entity (XXE) attacks. The highest threat from this vulnerability is data integrity. |  |  | Upgrade Jackson-Databind to latest version |  |
| [log4j-api-2.12.1.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l10_a55e6d987f50a515c9260b0451b4fa217dc539cb) | [cpe:2.3:a:apache:log4j:2.12.1:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aapache&cpe_product=cpe%3A%2F%3Aapache%3Alog4j&cpe_version=cpe%3A%2F%3Aapache%3Alog4j%3A2.12.1) | The Apache Log4j API - Improper validation of certificate with host mismatch in Apache Log4j SMTP appender. This could allow an SMTPS connection to be intercepted by a man-in-the-middle attack which could leak any log messages sent through that appender. Fixed in Apache Log4j 2.12.3 and 2.13.1 |  |  | Upgrade Apache Log4j to 2.13.1, or 2.13.2 (or newer). |  |
| [logback-core-1.2.3.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l12_864344400c3d4d92dfeb0a305dc87d953677c03c) | [cpe:2.3:a:qos:logback:1.2.3:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aqos&cpe_product=cpe%3A%2F%3Aqos%3Alogback&cpe_version=cpe%3A%2F%3Aqos%3Alogback%3A1.2.3) | logback-core module - A serialization vulnerability in logback receiver component part of  logback version 1.4.11 allows an attacker to mount a Denial-Of-Service  attack by sending poisoned data. |  |  | Upgrade to at least a version later than 1.2.7, but v2.0 or newer is recommended. |  |
| [snakeyaml-1.25.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l14_8b6e01ef661d8378ae6dd7b511a7f2a33fae1421) | [cpe:2.3:a:snakeyaml\_project:snakeyaml:1.25:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Asnakeyaml_project&cpe_product=cpe%3A%2F%3Asnakeyaml_project%3Asnakeyaml&cpe_version=cpe%3A%2F%3Asnakeyaml_project%3Asnakeyaml%3A1.25) | YAML 1.1 parser and emitter for Java - SnakeYaml's Constructor() class does not restrict types which can be instantiated during deserialization. Deserializing yaml content provided by an attacker can lead to remote code execution. We recommend using SnakeYaml's SafeConsturctor when parsing untrusted content to restrict deserialization. We recommend upgrading to version 2.0 and beyond. |  |  | Upgrade to v2.0 or newer. |  |
| [spring-boot-2.2.4.RELEASE.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l15_225a4fd31156c254e3bb92adb42ee8c6de812714) | [cpe:2.3:a:vmware:spring\_boot:2.2.4:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Avmware&cpe_product=cpe%3A%2F%3Avmware%3Aspring_boot&cpe_version=cpe%3A%2F%3Avmware%3Aspring_boot%3A2.2.4) | Spring Boot - In Spring Boot versions 3.0.0 - 3.0.5, 2.7.0 - 2.7.10, and older unsupported versions, an application that is deployed to Cloud Foundry could be susceptible to a security bypass. Users of affected versions should apply the following mitigation: 3.0.x users should upgrade to 3.0.6+. 2.7.x users should upgrade to 2.7.11+. Users of older, unsupported versions should upgrade to 3.0.6+ or 2.7.11+. |  |  | Upgrade Spring Boot to v2.7.11+ |  |
| [spring-boot-starter-web-2.2.4.RELEASE.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l16_ec75d01d212b5229c16d872fb127744c0ed46ed8) | [cpe:2.3:a:vmware:spring\_boot:2.2.4:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Avmware&cpe_product=cpe%3A%2F%3Avmware%3Aspring_boot&cpe_version=cpe%3A%2F%3Avmware%3Aspring_boot%3A2.2.4) [cpe:2.3:a:web\_project:web:2.2.4:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aweb_project&cpe_product=cpe%3A%2F%3Aweb_project%3Aweb&cpe_version=cpe%3A%2F%3Aweb_project%3Aweb%3A2.2.4) | Starter for building web, including RESTful, applications using Spring MVC. Uses Tomcat as the default embedded container - In Spring Boot versions 3.0.0 - 3.0.5, 2.7.0 - 2.7.10, and older unsupported versions, an application that is deployed to Cloud Foundry could be susceptible to a security bypass. Users of affected versions should apply the following mitigation: 3.0.x users should upgrade to 3.0.6+. 2.7.x users should upgrade to 2.7.11+. Users of older, unsupported versions should upgrade to 3.0.6+ or 2.7.11+. |  |  | Upgrade Spring Boot to v2.7.11+ |  |
| [spring-core-5.2.3.RELEASE.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l17_3734223040040e8c3fecd5faa3ae8a1ed6da146b) | [cpe:2.3:a:pivotal\_software:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Apivotal_software&cpe_product=cpe%3A%2F%3Apivotal_software%3Aspring_framework&cpe_version=cpe%3A%2F%3Apivotal_software%3Aspring_framework%3A5.2.3) [cpe:2.3:a:springsource:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aspringsource&cpe_product=cpe%3A%2F%3Aspringsource%3Aspring_framework&cpe_version=cpe%3A%2F%3Aspringsource%3Aspring_framework%3A5.2.3) [cpe:2.3:a:vmware:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Avmware&cpe_product=cpe%3A%2F%3Avmware%3Aspring_framework&cpe_version=cpe%3A%2F%3Avmware%3Aspring_framework%3A5.2.3) | Spring Core - A Spring MVC or Spring WebFlux application running on JDK 9+ may be vulnerable to remote code execution (RCE) via data binding. The specific exploit requires the application to run on Tomcat as a WAR deployment. If the application is deployed as a Spring Boot executable jar, i.e. the default, it is not vulnerable to the exploit. However, the nature of the vulnerability is more general, and there may be other ways to exploit it. |  |  | Upgrade to any version newer than 5.1.17. |  |
| [spring-web-5.2.3.RELEASE.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l18_dd386a02e40b915ab400a3bf9f586d2dc4c0852c) | [cpe:2.3:a:pivotal\_software:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Apivotal_software&cpe_product=cpe%3A%2F%3Apivotal_software%3Aspring_framework&cpe_version=cpe%3A%2F%3Apivotal_software%3Aspring_framework%3A5.2.3) [cpe:2.3:a:springsource:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aspringsource&cpe_product=cpe%3A%2F%3Aspringsource%3Aspring_framework&cpe_version=cpe%3A%2F%3Aspringsource%3Aspring_framework%3A5.2.3) [cpe:2.3:a:vmware:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Avmware&cpe_product=cpe%3A%2F%3Avmware%3Aspring_framework&cpe_version=cpe%3A%2F%3Avmware%3Aspring_framework%3A5.2.3) [cpe:2.3:a:web\_project:web:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aweb_project&cpe_product=cpe%3A%2F%3Aweb_project%3Aweb&cpe_version=cpe%3A%2F%3Aweb_project%3Aweb%3A5.2.3) | Spring Web - Pivotal Spring Framework through 5.3.16 suffers from a potential remote code execution (RCE) issue if used for Java deserialization of untrusted data. Depending on how the library is implemented within a product, this issue may or not occur, and authentication may be required. NOTE: the vendor's position is that untrusted data is not an intended use case. The product's behavior will not be changed because some users rely on deserialization of trusted data. |  |  | Upgrade to any version newer than 5.1.17. |  |
| [spring-webmvc-5.2.3.RELEASE.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l19_745a62502023d2496b565b7fe102bb1ee229d6b7) | [cpe:2.3:a:pivotal\_software:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Apivotal_software&cpe_product=cpe%3A%2F%3Apivotal_software%3Aspring_framework&cpe_version=cpe%3A%2F%3Apivotal_software%3Aspring_framework%3A5.2.3) [cpe:2.3:a:springsource:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aspringsource&cpe_product=cpe%3A%2F%3Aspringsource%3Aspring_framework&cpe_version=cpe%3A%2F%3Aspringsource%3Aspring_framework%3A5.2.3) [cpe:2.3:a:vmware:spring\_framework:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Avmware&cpe_product=cpe%3A%2F%3Avmware%3Aspring_framework&cpe_version=cpe%3A%2F%3Avmware%3Aspring_framework%3A5.2.3) [cpe:2.3:a:web\_project:web:5.2.3:release:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aweb_project&cpe_product=cpe%3A%2F%3Aweb_project%3Aweb&cpe_version=cpe%3A%2F%3Aweb_project%3Aweb%3A5.2.3) | Spring Web MVC - A Spring MVC or Spring WebFlux application running on JDK 9+ may be vulnerable to remote code execution (RCE) via data binding. The specific exploit requires the application to run on Tomcat as a WAR deployment. If the application is deployed as a Spring Boot executable jar, i.e. the default, it is not vulnerable to the exploit. However, the nature of the vulnerability is more general, and there may be other ways to exploit it. |  |  | Upgrade to any version newer than 5.1.17. |  |
| [tomcat-embed-core-9.0.30.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l20_ad32909314fe2ba02cec036434c0addd19bcc580) | [cpe:2.3:a:apache:tomcat:9.0.30:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aapache&cpe_product=cpe%3A%2F%3Aapache%3Atomcat&cpe_version=cpe%3A%2F%3Aapache%3Atomcat%3A9.0.30) [cpe:2.3:a:apache\_tomcat:apache\_tomcat:9.0.30:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aapache_tomcat&cpe_product=cpe%3A%2F%3Aapache_tomcat%3Aapache_tomcat&cpe_version=cpe%3A%2F%3Aapache_tomcat%3Aapache_tomcat%3A9.0.30) | Core Tomcat implementation - When using the Apache JServ Protocol (AJP), care must be taken when trusting incoming connections to Apache Tomcat. Tomcat treats AJP connections as having higher trust than, for example, a similar HTTP connection. If such connections are available to an attacker, they can be exploited in ways that may be surprising. In Apache Tomcat 9.0.0.M1 to 9.0.0.30, 8.5.0 to 8.5.50 and 7.0.0 to 7.0.99, Tomcat shipped with an AJP Connector enabled by default that listened on all configured IP addresses. It was expected (and recommended in the security guide) that this Connector would be disabled if not required. This vulnerability report identified a mechanism that allowed: - returning arbitrary files from anywhere in the web application - processing any file in the web application as a JSP Further, if the web application allowed file upload and stored those files within the web application (or the attacker was able to control the content of the web application by some other means) then this, along with the ability to process a file as a JSP, made remote code execution possible. It is important to note that mitigation is only required if an AJP port is accessible to untrusted users. Users wishing to take a defence-in-depth approach and block the vector that permits returning arbitrary files and execution as JSP may upgrade to Apache Tomcat 9.0.31, 8.5.51 or 7.0.100 or later. A number of changes were made to the default AJP Connector configuration in 9.0.31 to harden the default configuration. It is likely that users upgrading to 9.0.31, 8.5.51 or 7.0.100 or later will need to make small changes to their configurations. |  |  | Best solution for this would be to upgrade Apache Tomcat to v10.1.0 (or newer). |  |
| [tomcat-embed-websocket-9.0.30.jar](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html#l22_33157f6bc5bfd03380ebb5ac476db0600a04168d) | [cpe:2.3:a:apache:tomcat:9.0.30:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aapache&cpe_product=cpe%3A%2F%3Aapache%3Atomcat&cpe_version=cpe%3A%2F%3Aapache%3Atomcat%3A9.0.30) [cpe:2.3:a:apache\_tomcat:apache\_tomcat:9.0.30:\*:\*:\*:\*:\*:\*:\*](https://nvd.nist.gov/vuln/search/results?form_type=Advanced&results_type=overview&search_type=all&cpe_vendor=cpe%3A%2F%3Aapache_tomcat&cpe_product=cpe%3A%2F%3Aapache_tomcat%3Aapache_tomcat&cpe_version=cpe%3A%2F%3Aapache_tomcat%3Aapache_tomcat%3A9.0.30) | Core Tomcat implementation – (See previous) |  |  | Best solution for this would be to upgrade Apache Tomcat to v10.1.0 (or newer). |  |

**5. Mitigation Plan**

Interpret the results from the manual review and static testing report. Then identify the steps to mitigate the identified security vulnerabilities for Artemis Financial’s software application.

The best course of action would be to apply the suggested fixes given for each vulnerability to address the vulnerabilities found in the dependency-check report. This could include patching or updating any outdated libraries, frameworks, or just coding components. This is certainly a good starting point.

* Dependency Check (source) - [Dependency-Check Report](file:///C:\Users\carte\Documents\SNHU%20Homework\CS-305\CS%20305%20Project%20One%20Code%20Base\rest-service\target\dependency-check-report.html)