To **force the use of encryption (HTTPS)** between a **web application and the client browser** in **Tomcat**, you must:

**✅ 1. Configure SSL (HTTPS) Connector in Tomcat**

Edit conf/server.xml:

<Connector port="8443" protocol="org.apache.coyote.http11.Http11NioProtocol"

maxThreads="150" SSLEnabled="true"

scheme="https" secure="true"

keystoreFile="conf/keystore.jks" keystorePass="changeit"

clientAuth="false" sslProtocol="TLS"/>

* port="8443" — standard HTTPS port
* keystoreFile — your server certificate (generated via keytool)
* keystorePass — password used to protect your keystore

**✅ 2. Generate a Keystore (if not already)**

keytool -genkeypair -alias tomcat -keyalg RSA -keysize 2048 \

-keystore conf/keystore.jks -validity 3650 \

-storepass changeit -keypass changeit \

-dname "CN=localhost, OU=IT, O=YourOrg, L=City, S=State, C=IN"

**✅ 3. Enforce HTTPS in web.xml**

Force encryption using a **security constraint**:

<security-constraint>

<web-resource-collection>

<web-resource-name>Secure Area</web-resource-name>

<url-pattern>/\*</url-pattern> <!-- apply to all URLs -->

</web-resource-collection>

<user-data-constraint>

<transport-guarantee>CONFIDENTIAL</transport-guarantee>

</user-data-constraint>

</security-constraint>

🔐 This tells the container: “If a request is HTTP (not encrypted), redirect it to HTTPS.”

**✅ 4. Redirect from HTTP to HTTPS (Optional Fallback)**

If your app also runs on port 8080 (HTTP), redirect users manually using a web.xml constraint **or** a filter:

<security-constraint>

<web-resource-collection>

<web-resource-name>Redirect HTTP</web-resource-name>

<url-pattern>/\*</url-pattern>

</web-resource-collection>

<user-data-constraint>

<transport-guarantee>CONFIDENTIAL</transport-guarantee>

</user-data-constraint>

</security-constraint>

**✅ 5. Restart Tomcat**

After changes to server.xml, restart Tomcat:

bin/shutdown.sh

bin/startup.sh

**✅ 6. Access via HTTPS**

Open in browser:

https://localhost:8443/YourWebApp

If you're using a **self-signed certificate**, the browser will show a warning (you can bypass this in development).