APACHE TOMCAT:

**1) What is Apache Tomcat?**

Apache Tomcat is basically a Web Server and Servlet system which is an open-source (i.e. freely available on the internet) and is created by Apache Software Foundation. It is the server mostly used by Java Developers.

The server is nothing but a computer program that provides service to other computers.

There are basically two types of server:

Application Server

Web Server

Apache Tomcat offers HTTP protocol, which means the user can connect with the server from anywhere by the URL provided and can access the Java application.

This is very easy and simple to install and is compatible with any Operating System.

**2) Why do we require Apache Tomcat?**

Answer: It is required to run Java Web Applications on the host and server-based systems. It also helps to run JSP and Servlets.

**3) What is the name of inbuilt Web Container in Tomcat?**

The name of the inbuilt Web Container in Tomcat is Catalina which is present in the bin directory.

Catalina is used for loading all the requests related to HTTP and can instantiate the objects of GET () and POST () methods.

**4) What are the types of batch file with the help of which we can Start and Stop Apache Tomcat Server?**

There are basically two types of batch files with which we can Start and Stop the Server.

They are as follows:

Startup.bat

Shutdown.bat

**5) Which is the vital configuration file that is used in Apache Tomcat?**

Answer: The vital configuration file that is used in Apache Tomcat is httpd.conf

**6) Mention the configuration files of Catalina.**

The configurations files of Catalina include:

XML

Properties

Policy

Tomcat-users.xml

**7) What are the vital benefits of Running Tomcat as service?**

The benefits of Running Tomcat as service are:

Automatic Startup – If tomcat window service starts up automatically then it would be helpful when we want to start the system remotely.

Security – It allows you to execute under a special account which is protected from the other accounts.

Starting off the server without active user login: So even if there is no active user, the available server can be started.

**8) What is the deployment process of web application using the WAR file?**

There is a Web apps directory in Tomcat under which all the web components JSP, Servlets, HTML are placed. Hereby putting all the files into a single folder we can compress the files into a single unit which has .WAR extension.

Now, we can easily deploy the web application by putting the WAR file in the Web apps directory. And, when the server starts it extracts all the web components.

**9) What are the configured Tomcat Valve’s?**

There are basically four configured Tomcat Valves which are mentioned below:

Access Log

Remote Host Filter

Remote Address filter

Request Dumper

**10) What do you mean by Tomcat Coyote and what is its use?**

Tomcat Coyote is basically an HTTP connector based on HTTP/ 1.1 configuration which accepts and sends the web request to the Tomcat engine and again reverts to the client which makes the request.

**11) What are the different ways in which we can secure the websites hosted on Tomcat Server?**

Answer: There are multiple ways to do it and some of them are mentioned below:

Implementing SSL

Make use of Cloud-based security provider.

Integrating with Web Application Firewall.

**12) How is Apache Tomcat different from Apache Web Server?**

Apache Tomcat is used to host the web contents whereas Apache Web server is an HTTP server that is built to serve the static contents.

There is always a possibility to integrate Apache Tomcat and Apache Web Server.

**13) Apart from Apache Tomcat, what are the different kinds of Web Servers?**

There are many web servers as mentioned below:

LiteSpeed Web Server

GWS Web Server

Microsoft IIS Web Server

Nginx Web Server

Jigsaw Web Server

Sun Java System Web Server

Lighttpd Web Server

**14) Which version of Apache have you worked on?**

For this, we can say that we have worked on httpd – 2.2.3

**15) What will happen if we have added “logLevel Debug” in httpd. conf file?**

Adding the logLevel Debug provides you with more information in the error log in order to debug an issue.

**16) Can we serve Content out of a directory other than the Document Root directory?**

Yes, it is possible to serve the Content out of a directory other than the Document Root directory with the help of “Alias” command.

**17) Is there any chance to cache files which are viewed frequently?**

Yes, there is a chance to cache files which are viewed frequently by using

Mod\_file\_cache module.

**18) How can we put a restriction to upload files on our web server?**

Yes, we can restrict the user to upload files on our web server by using the “LimitRequestBody” directive.

Example: LimitRequestBody 20000

Now I have put a limit of 20000 files, so when this mark is reached then the user will not be able to upload any more files in the server.

**19) How can an Apache Service be stopped by its control script?**

The Apache Service is controlled using a script called the apachectl.

So, to stop the service, we need to run the below-mentioned commands.

#apachectl stop [for Ubuntu based system]

# /etc/inid.t/httpd.stop [for red hat based system]

**20) Apache runs as which user and what is the location of the main configuration file?**

Apache runs with a user “nobody” and httpd daemon.

The location of the main configuration file is:

# /etc/httpd/conf/httpd.conf

# /etcapache2.conf

**21) What Is Default Session Time Out In Tomcat?**

The default session timeout 30 minutes in tomcat and can change in $TOMCAT\_HOME/conf/web.xml via modify below entry

<session-config>

<session-timeout>30</session-timeout>

</session-config>

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**23) How Do You Create Multiple Virtual Hosts?**

If you want tomcat to accept requests for different hosts e.g. www.myhostname.com then you must

Create ${catalina.home}/www/appBase , ${catalina.home}/www/deploy, and ${catalina.home}/conf/Catalina/www.myhostname.com

Add a host entry in the server.xml file

Create the the following file under conf/Catalina/www.myhostname.com/ROOT.xml

Add any parameters specific to this hosts webapp to this context file

Put your war file in ${catalina.home}/www/deploy

When tomcat starts, it finds the host entry, then looks for any context files and will start any apps with a context.

**24) Suppose When We Are Starting Startup.bat File Of Tomcat Server It Is Not Started. Dos Window Appears For A Second Only. What We Need Do?**

Your set up might have been not done well.

Make sure you have added tomcat root directory path in the CATALINA\_HOME environment variable and added the bin path in the path variable.

**25) How Do I Can Change The Default Home Page Loaded By Tomcat?**

We can easily override home page via adding welcome-file-list in application $TOMCAT\_HOME/webapps//WEB-INF /web.xml file or by editing in container $TOMCAT\_HOME/conf/web.xml

In $TOMCAT\_HOME/conf/web.xml, it may look like this:

index.html

index.htm

index.jsp

Request URI refers to a directory, the default servlet looks for a “welcome file” within that directory in following order: index.html, index.htm and index.jsp

**26) How To We Can Change Tomcat Default Port?**

8080 is the default HTTP port that Tomcat attempts to bind to at startup. To change this, we need to change port in $ TOMCAT\_HOME /conf/server.xml, in that we can search 8080 and after getting below statement

We can change 8080 to other port like 8081, we need to restart tomcat to take effect. We required changes in URL as http://localhost:8081/.

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**29) Explain what is the purpose of NAT protocol?**

The purpose of NAT protocol is to hide private IP address from public IP address and give a certain level of security to the organization.

**30) Explain The Concepts Of Tomcat Servlet Container.?**

Tomcat Servlet Container is a servlet container. The servlets runs in servlet container.

The implementation of Java Servlet and the Java Server Pages is performed by this container.

Provides HTTP web server environment in order to run Java code.

Reduces garbage collection

Native Windows and Unix wrappers for platform integration

**31) Can I Set Java System Properties Differently For Each Webapp?**

No. If you can edit Tomcat’s startup scripts, you can add “-D” options to Java. But there is no way to add such properties in web.xml or the webapp’s context.

**32) How Web Server Handles Multiple Requests For Same Action Class(struts) Concurrently?**

Struts or any webserver makes new thread for each new request. so multiple request is served with new request object.

**33) Explain When You Can Use . And When You Can Use []?**

If you are running a bean property, use the .operator, and if you are executing a map value or an array index, it is preferred to use the [] operator. Although you can use these operators interchangeably.

**34) What Is Webservers? Why It Is Used?**

Transaction with HTTP request and HTTP response is called webserver.

Using the internet listening the HTTP request and providing the HTTP response is also called webserver.It gives only html output.It will not process business logic .They can provide Http server.They are static.

**35) Explain What Is Tomcat Coyote?**

Tom coyote is an HTTP connector based on HTTP/ 1.1 specification which receives and transport web requests to the Tomcat engine by listening to a TCP/IP port and sent request back to the requesting client.

**36) Mention What Are The Connectors Used In Tomcat?**

In Tomcat, two types of connectors are used:

HTTP Connectors: It has many attributes that can be changed to determine exactly how it works and access functions such as redirects and proxy forwarding

AJP Connectors: It works in the same manner as HTTP connectors, but they practice the AJP protocol in place of HTTP. AJP connectors are commonly implemented in Tomcat through the plug-in technology mod\_jk.

**37) What Is Different Between Webserver And Application Server?**

The basic difference between a web server and an application server is Webserver can execute only web applications i,e servlets and JSPs and has only a single container known as Web container which is used to interpret/execute web applications. Application server can execute Enterprise application, i,e (servlets, jsps, and EJBs)

it is having two containers:

Web Container(for interpreting/executing servlets and jsps)

EJB container(for executing EJBs).

it can perform operations like load balancing , transaction demarcation etc.

**38) Explain When To Use Ssl With Tomcat?**

You would use Tomcat to handle connection, when you are running Tomcat as a stand-alone web server.

**39) Mention With How Many Valves Does Tomcat Configured With?**

Four types of valves Tomcat is configured with:

Access Log

Remote Address Filter

Remote Host Filter

Request Dumper

**40) Explain What Is Tomcat Valve?**

A tomcat valve- a new technology is introduced with Tomcat 4 which enables you to link an instance of a Java class with a specific Catalina container.

**41) Can I Set Java System Properties Differently For Each Webapp?**

No. If you can edit Tomcat’s startup scripts, you can add “-D” options to Java. But there is no way to add such properties in web.xml or the webapp’s context.

**42) How To Communicate Between Two Web Servers In Two Diff Systems?**

Answer :

By using plug module

**43) Mention What Is The Output Of Select \* From Tab?**

It displays the default tables in the database.

**44) Explain how you can configure Tomcat to work with IIS and NTLM?**

You have to follow the standard instructions for when the isapi\_redirector.dll

Configure IIS to use “integrated windows security”

Ensure that in the server.xml you have disable tomcat authentication

**45) Explain when you can use . and when you can use []?**

If you are running a bean property, use the .operator, and if you are executing a map value or an array index, it is preferred to use the [] operator. Although you can use these operators interchangeably.

**46) Mention what is the default port for Tomcat?**

The default port for Tomcat is 8080. After initialising Tomcat on your local machine, you can verify if Tomcat is running the URL: http://localhost:8080

**47) Mention what are the connectors used in Tomcat?**

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**48) Explain how running Tomcat as a windows service provides benefits?**

Running Tomcat as a windows service provides benefits like

Automatic startup: It is crucial for environment where you may want to remotely re-start a system after maintenance

Server startup without active user login: Tomcat is run oftenly on blade servers that may not even have an active monitor attached to them. Windows services can be started without an active user

Security: Tomcat under window service enables you to run it under a special system account, which is protected from the rest of the user accounts

**49) Explain how you can deploy a web application using WAR files?**

JSPs, servlets, and their supporting files are placed in the proper subdirectories under the web apps directory in Tomcat. You can make all the files under the web apps directory into one compressed file, which ends with .war file extension. You can execute a web application by placing a WAR file in the webapps directory. When a web server starts executing, it pulls out the WAR file’s contents into the appropriate webapps sub-directories.

**50) Explain what is Tomcat Valve?**

A tomcat valve- a new technology is introduced with Tomcat 4 which enables you to link an instance of a Java class with a specific Catalina container.

Apache Tomcat is a widely used web server and servlet container that implements Java Servlet, JavaServer Pages (JSP), and Java Expression Language (EL) technologies. If you're looking to deepen your understanding or prepare for an interview, here are some important questions you might encounter:

### Basic Concepts

1. \*\*What is Apache Tomcat, and what role does it play in a Java web application?\*\*

- Apache Tomcat is an open-source implementation of Java Servlet, JSP, and EL specifications. It acts as a web server and servlet container, managing the execution of servlets and JSPs.

2. \*\*Explain the difference between Tomcat and a full Java EE application server like JBoss or WebLogic.\*\*

- Tomcat is a servlet container and web server that handles servlets and JSPs. In contrast, full Java EE application servers provide additional features like EJB (Enterprise JavaBeans), JMS (Java Message Service), and more.

3. \*\*What are servlets and JSPs? How does Tomcat handle them?\*\*

- Servlets are Java classes that handle HTTP requests and responses. JSPs are text-based documents that support dynamic content creation using Java code. Tomcat compiles JSPs into servlets and manages their lifecycle.

### Configuration and Deployment

4. \*\*How do you configure Tomcat for a production environment?\*\*

- Configuration involves setting up server.xml and web.xml files, tuning performance parameters (like thread pools and memory), configuring security (such as SSL), and managing resources (databases, JMS).

5. \*\*What are the key files in a Tomcat installation?\*\*

- Important files include `server.xml` (main server configuration), `web.xml` (deployment descriptor for web applications), `context.xml` (context-specific settings), and `catalina.out` (log file).

6. \*\*Describe how to deploy a web application on Tomcat.\*\*

- You can deploy a web application by placing a WAR file (Web Application Archive) in the `webapps` directory of Tomcat. Tomcat will automatically extract and deploy it.

### Performance and Scalability

7. \*\*How can you optimize the performance of a Tomcat server?\*\*

- Optimization can include adjusting JVM settings (heap size, garbage collection), tuning Tomcat's connector settings (maxThreads, connectionTimeout), enabling caching, and using a load balancer.

8. \*\*What are the different types of connectors in Tomcat, and how do they impact performance?\*\*

- Tomcat connectors include HTTP, AJP (Apache JServ Protocol), and others. They manage incoming requests and affect performance based on their configuration (e.g., thread pools, connection settings).

### Security

9. \*\*What security features does Tomcat offer?\*\*

- Tomcat supports SSL/TLS for secure communication, role-based access control through the `web.xml` and `context.xml` files, and various security configurations for preventing common vulnerabilities.

10. \*\*How can you secure a Tomcat server?\*\*

- Secure a Tomcat server by configuring SSL/TLS, setting up proper authentication and authorization mechanisms, keeping Tomcat and its components updated, and using security headers and filters.

### Troubleshooting and Maintenance

11. \*\*How do you troubleshoot a Tomcat server issue?\*\*

- Troubleshooting involves checking log files (`catalina.out`, `localhost.log`, etc.), examining error messages, reviewing configuration files, and using tools like `jstack` for thread dumps.

12. \*\*What are some common issues that can occur in Tomcat, and how can they be resolved?\*\*

- Common issues include memory leaks, connection problems, and deployment errors. Solutions involve adjusting configurations, optimizing memory usage, and reviewing application code for issues.

### Advanced Topics

13. \*\*What is the role of the Tomcat Manager application?\*\*

- The Tomcat Manager application allows administrators to manage deployed applications, deploy new applications, and monitor server status through a web interface.

14. \*\*How do you implement clustering in Tomcat?\*\*

- Clustering in Tomcat involves configuring session replication and load balancing. This usually requires setting up a cluster of Tomcat servers and configuring them to replicate sessions across the cluster.

15. \*\*Can you explain the Tomcat lifecycle for servlets and JSPs?\*\*

- The lifecycle includes servlet initialization (`init()`), request handling (`service()`), and destruction (`destroy()`). For JSPs, the lifecycle involves translation to a servlet, initialization, request handling, and destruction.

Understanding these questions and their answers will provide a solid foundation in working with Apache Tomcat. If you need more details on any of these topics or have specific scenarios in mind, feel free to ask!