Servlet Terminology

1. Website: static vs. dynamic
- Collection of related web pages that may contain text, images, audio and video.

    Static website
        - Basic type of website that is easy to create
        - No programming and database design
        - Web pages are coded in HTML
        - Information in the page does not changes
        - Looks like a printed page.
        - content only changes when someone publishes and updates the file and send it to the
web server.
        - Flexibility

    Dynamic website
        - Collection of dynamic web pages whose content change dynamically
        - Accesses database or content manager for its web content.
        - Changes/updates from the database will also changes/updates the website.
        - Uses client-side scripting or server-side scripting, or both to generate dynamic content.
        - Uses server side languages (PHP, SERVLET, ASP, etc.) for developing website.
        - Content Management System.

    - Servlet are popular in generating dynamic content on websites.

2. HTTP
- Data communication protocol that are used to create a communication between client and server.

    Basic Characteristics of HTTP
        Media independent - HTTP can handle any media type, but the server and client must be
able to handle the data content.

        Connectionless - i.e. when a user tries to access a website using browser; the browser
initiates the HTTP request; Server gives response and display what information is requested; and client
will disconnect from the server.

        Stateless - during a request that's the only time the client and server are aware of each
other. After the request they forget each other. This means if the transaction ends the connection
between browser and server are lost.

3. HTTP Request
- A request contains all sorts of information that is sends by a computer to a web server.

    Forms of request message that is send by the HTTP client to the server:

    - The Request-line

- The analysis of source IP address, proxy and port
- The analysis of destination IP address, protocol, port and host
- The Requested URI (Uniform Resource Identifier)
- The Request Method and Content
- The User-Agent header
- The Connection control header
- The Cache Control Header

HTTP request methods:

GET – request to get the resource at the requested URL

POST – request the server to accept the data in the body of the request message. (Store)

HEAD – request for specific part (header) of what will a GET request will return. HEAD and GET are almost the same but HEAD is GET with no body.

TRACE – this method are used in debugging that will returns back and input back to the user.

PUT – put the body (enclosed info) at the requested URL.

DELETE – remove/delete resource at the requested URL.

OPTIONS – request for HTTP methods list which the request URL can respond.

3. Get vs. Post

GET
- Parameters are save in browser history
- Can be add bookmark
- application/x-www-form-urlencoded
- Easier to hack
- ASCII characters only
- Less secure
- Visible
- Can be cached

POST
- Parameters are not saved in browser history
- Cannot be add to bookmark

- For binary data it uses multipart encoding multipart/form-data or application/x-www-form-urlencoded
- Difficult to hack
- No restrictions on form of data type. Binary data are allowed
- POST is a more safer than GET because parameters are not saved in browser history
- Not visible
- Cannot be cached

4. Container
- Dynamically generate the web pages on the server side that are being used in java.

Three (3) Types of Servlet Container States:
- Standalone
A typical Java-based server, which integral part of a program is the servlet container and web servers.
- In-process
Has a different program that runs within the address space of the main server as plug-in that why it is separated from the web server.
- Out-of-process
Web server and servlet container are considered as different a program that runs in different process. Servlet container provides plug-in that web server uses to established connection between them.

Operations perform by Servlet Container:

- Life Cycle Management
Servlet Life Cycle:
-- **init()** method called to initialized servlet.
-- **service()** method are called by servlet to process the client's request.
-- **destroy()** method are called to terminate the servlet.
-- And last, the JVM garbage collector considers the servlet as garbage and collects it.

- Multithreaded support
- Object Pooling
- Security
- Etc…

5. Server: Web vs. Application
Server
- Accepts/respond from the request made by client.
- Manages network resources.
- Runs the software/program that provides services.

Two (2) types of Server:
1. Web Server
   - Contains web or servlet container.
   - Can be used for servlet, jsf, jsp, struts etc.

- Can't be used for EJB.
- Web content can be stored here.
- Can used to host the web sites.
- E.g. Apache Tomcat and Resin.

2. Application server
   - Contains and Web and EJB containers.
   - Can be used for servlet, struts, jsf, jsp, ejb etc.
   - Component based product (middle-tier of a server centric architecture)
   - State maintenance, security, persistence, and data access are provided with middleware services.
   - Install, operate and host (server design)
   - E. g. JBoss, Glassfish, Weblogic, and Websphere.

6. Content Type
- Also known as multipurpose internet Mail Extension (MIME).
- HTTP header which provides description about what you are sending to the browser.
- By allowing the insertion of sounds, images and text in a message it allows to extend the capabilities of an email.

Features provided by MIME to the email services:
- Supports non-ASCII characters
- Supports multiple attachments in one message.
- Supports attachments like executable audio, images, video and etc.

List of Commonly used Content Types:

- text/html
- text/plain
- application/msword
- application/vnd.msword
- application/jar
- application/pdf
- images/jpeg
- images/png
- images/gif
- audio/mp3
- video/mp4
- etc.