**Q1. Describe the difference between dynamic polymorphism and static polymorphism with examples**

Answer:

**Polymorphism** is the notion that an object can in fact be multiple things at the same time.

Consider an instance of a Painting object named $guernica created as follows:

$guernica = new Painting("1937",$picasso,"Guernica","Oil on canvas");

The variable $guernica is both a *Painting* object and an *Art* object due to its inheritance.

The advantage of polymorphism is that we can manage a list of Art objects, and call the same overridden method on each.

**Example for polymorphism:**

$picasso = new Artist("Pablo","Picasso","Malaga","oct 25, 1881","Apr 8,1973");

// create the paintings

$guernica = new painting("1937", $picasso,""Gurnica","oil on canvas");

$chicago = new Sculpture("1967",$picasso,"Chicago",454);

//create an array of art

$works = array();

$work[0] = $guernica;

$work[1] = $chicago ;

// to test polymorphism, loop through art array

foreach ($works as $art)

{

echo $art;

}

$picasso->addwork($guernica);

$picasso->addwork($chicago);

foreach ($picasso->getwork() as $art)

{

eacho $art;

}

**Dynamic polymorphism** is also called runtime polymorphism since it exists at run-time. Java compiler doesn't know which technique is called at the season of assemblage. JVM settles on a choice with respect to which strategy is called at run-time.

**Example:**

A case of element/runtime polymorphism is technique abrogating in light of the fact that strategy authoritative between technique call and strategy definition happens at run time and it depends on the protest of the class.

**Static polymorphism** is also called compile time polymorphism since it is exists at accumulate time. Java compiler knows which strategy is called.

**Example:**

A case of static/aggregate time polymorphism is strategy over-burdening on the grounds that technique authoritative between technique call and technique definition happens at assemble time and it depends on the reference of the class.

**Q2. What is the difference between Client, Server, and SQL Server?**

Answer:

1. The server and client are basically two segments of a conveyed PC display.
2. A client uses a customer PC which sends solicitations to the server.
3. Then the server forms the client's demand and sends the reaction back to the customer.
4. It is visit the customer that begins the association and not the server. The server basically burglary for solicitations to be adjusted.
5. The server is in control for the information preparing, information operations while the customer handles the introduction.

Server-side insinuates performing operations by the server in a client–server relationship in PC organizing. Ordinarily, a server is a product program, similar to web server, that continues running on a remote server, reachable from a customer's neighborhood PC or workstation.

Client side suggests performing operations by the customer in a client–server relationship in a PC arrange. Normally, a customer is a PC application, similar to web program, that continues running on a client's nearby PC or workstation and interfaces with a server as fundamental.

SQL Server is a social database administration framework created by Microsoft. As a database server, it is a product item with the basic limit of securing and recouping data as requested by other programming applications—which may run either on a similar PC or on another PC over a framework (checking the Internet).

The key contrasts are:

1. Web server uses a run of the mill dialect in condition of PHP, HTTP, ASP or JSP and any web program can discover the web server on the off chance that it is using an alternate supportable dialect. Though SQL server has its own specific program dialect.
2. SQL server makes do with the putting away and managing the data of a PC or PC programs while web server is used to spare the static and element substance and site pages.
3. SQL server can manage the undertaking based, business based or electronic administrations in the meantime while web server can just manage the online administrations.

Q3. What is a web server? and make sure to list the two well-known web servers.

Answer: A PC program which uses HTTP (Hypertext Transfer Protocol) to convey Web pages to clients, because of their solicitations, which are sent by their PC's HTTP customers is known as web server. The Web server comprises of working framework, equipment, and TCP/IP conventions, Web server programming, Web pages, pictures and different documents. All PCs that host Web destinations must have Web server programs. A better definition might be that a Web server is an Internet server that responds to HTTP requests to deliver content and services.

There are different types of web servers available in open market. The most popular web servers are Apache, IIS Web Server.

**Apache Web Server**: Apache is the most popular web server in the world developed by the Apache Software Foundation. It is more stable than any other web servers and is easier to solve administrative issues. It can be install on multiple platforms successfully.

**IIS Web Server**: IIS is a Microsoft product. IIS server has all the features just like Apache. But it is not an open source

**Q4. What code or pages files can be executed by web servers?**

Answer:

Web servers can execute:

* Python and Ruby
* PHP
* ASP
* JSP,
* Node.js,
* Perl
* **Python**: This terse, object-oriented programming language has many uses, including being used to create web applications. It is also used in a variety of web development frameworks such as Django and Pyramid.
* **Ruby on Rails**. This is a web development framework that uses the Ruby programming language. It integrates features such as templates and engines that aim to reduce the amount of development work required in the creation of a new site.
* **PHP**. Like ASP, PHP is a dynamically typed language that can be embedded directly within the HTML, though it now supports most common object-oriented features, such as classes and inheritance. By default, PHP pages are compiled into an intermediary representation called **opcodes** that are analogous to Java’s byte-code or the .NET Framework’s MSIL. Originally, PHP stood for *personal home pages*, although it now is a recursive acronym that means *PHP: Hypertext Processor*.
* **Perl**. Until the development and popularization of ASP, PHP, and JSP, Perl was the language typically used for early server-side web development. As a language, it excels in the manipulation of text. It was commonly used in conjunction with the **Common Gateway Interface (CGI)**, an early standard API for communication between applications and web server software.

**ASP (Active Server Pages)**:ASP stands for **A**ctive **S**erver **P**ages.ASP is a development framework for building web pages.Like PHP, ASP code (using the VBScript programming language) can be embedded within the HTML. ASP programming code is interpreted at run time, hence it can be slow in comparison to other technologies.

**JSP (Java Server Pages)**. JSP uses Java as its programming language and like ASP.NET it uses an explicit object-oriented approach and is used in large enterprise web systems and is integrated into the J2EE environment. Since JSP uses the Java Runtime Engine, it also uses a JIT compiler for fast execution time and is cross-platform. While JSP’s usage in the web as a whole is small, it has a substantial market share in the intranet environment, as well as with very large and busy sites.

**Node.js**. This is a more recent server environment that uses JavaScript on the server side, thus allowing developers already familiar with JavaScript to use just a single language for both client-side and server-side development

**Q5. What code or pages files can be executed by web browsers?**

* Answer: Web browsers can execute:
* HTML, CSS
* Ajax
* JavaScript,
* JQuery
* User Interface design

web servers mostly likely to use PHP Code If you double click on a HTML file (files with **.html** or **.htm** extension), it would open on your web browser. But same won’t happen if you double clicked on a PHP file (probably it would open in an [editor](https://www.phpknowhow.com/basics/choosing-a-php-editor/)). The reason is [PHP files first need be processed](https://www.phpknowhow.com/basics/role-of-php-in-web-applications/) in a web server before sending their output to the web browser. Therefore before running PHP files, they should be placed inside the web folder of a web server and then make a request to desired PHP file by typing its URL in the web browser. If you installed a web server in your computer, usually the root of its web folder can be accessed by typing **http://localhost** in the web browser. So, if you placed a file called **hello.php** inside its web folder, you can run that file by calling <http://localhost/hello.php.this> all process done by using XAMPP or MAMPP if u to install Apache (web server) in your computer then the web folder would be **htdocs** which is under the root directory of XAMPP.

**Q6. Explain the steps required to make your website accessible to public on the internet? If you decided to test the PHP website on your local machine explain how you can accomplish this?**

Answer:

**Steps required to make your website accessible to public on the internet:**

* Select and register a domain name. ...
* Find, choose and purchase web hosting. ...
* Make a backup copy of your website files. ...
* Strive to make your website easy to navigate. ...
* Validate your code. ...
* Implement a site map. ...
* Test your website in a variety of web browsers. ...
* Ensure that you're using SEO-friendly code.

By using IIS (Internet Information Services) we can run a website in local computer. For this we have to configure our machine and mainly IIS to identify and run the website placed in a directory. We will not discuss about basic html for designing a site here and we will only discuss on how to configure and run website by using IIS.   
IIS comes with Windows XP operating system and also with server operating system of Windows.

**Q7. Explain How Clients (Web browsers) in Europe can access your website that located in the USA? Make sure your answer covers the following: browser, web server, DNS, HTTP requests, and TCP/IP protocols.**

Answer:

* Setup a local HTTP server
* Allow inbound traffic on port 80
* Setup a free DNS service
* Setup an SSH server
* Forward requests to port 22 on your router to your computer

**Set up a local HTTP server**

Virtual hosts allow you to have multiple domains configured in your computer so you can have different web sites in different locations on your hard drive and keep your environment better organized when developing. Virtual servers are also used by shared web hosting companies to host multiple web sites in the same machine, the difference is that they deal with a bunch more stuff that I am not going to deal with in here. This guide should only be used to create virtual servers for local development.

**Allow inbound traffic on port 80**

To make your HTTP server available from the Internet you have to configure your router to send all incoming traffic on port 80 to your computer. The way to do this varies depending you router and ISP, but the steps are very similar most of the time:

* Go to your router configuration page on a web browser. A lot of times it is http://192.168.1.254/ or http://192.168.1.1/
* Go to firewall or DMZ setting
* There will probably be a section that says something similar to: “Allow device application traffic to pass through firewall” Then:
  + Choose your computer
  + Forward external TCP traffic on port 80 (If you are asked for a range choose 80 to 80) to port 80
  + Save

To test that everything went well you can search for “my ip” on Google and it will give you your public IP address. You can give this IP address to anyone and they will see you local server.

**Set up free DNS service**Since most internet providers give their customers a dynamic IP address it is not efficient to access your computer that using that number, since it may change at any time. Luckily there are some free services that allow to overcome this issue.

**Set up an SSH server**An SSH server makes your computer available via a terminal to other computers using an SSH client. You can install an SSH server on Ubuntu with this command:

|  |  |
| --- | --- |
| 1 | sudo apt-get install openssh-server |

Once the server is installed you can test it by trying to connect to it.

|  |  |
| --- | --- |
| 1 | ssh bhargavi@127.0.0.1 |

When prompted for a password enter your login password.

**Forward requests to port 22 on your router to your computer**You can follow the same procedure you used for port 80, just change it port 22. Now you can ssh to your machine using the subdomain you choose for your server.