PHASE 1-HTML FUNDAMENTALS:

1. What are the basic Features of HTTP?

Ans: The basic features of HTTP are:

- HTTP is a request and response protocol.
- HTTP is a media independent protocol.
- HTTP is a stateless protocol.

2. What are request methods in HTTP?

Ans.

- **GET-** It is used to send data in URL
- **HEAD-** It only transfers status line and header section as a request.
- **POST-** It is used to send data to the server.
- **PUT-** It is used to send entire updated data to the server. DELETE. Delete method sends a request to the server to perform delete operation.
- **CONNECT-** It is used to establish connection to the server.
- **OPTIONS-** Option method describes communication options for target resource.
- **TRACE-** It performs message loop-back test along the path to the target resource.

3. What are the differences between GET and POST methods?

Ans.

Get	**Post**
It is cached.	It cannot be cached.
It sends data using url in the browser.	It does not send data into the url.
It can send limited amount of data to the server.	We can send data in bulk to the server.

4. What is status code in HTTP?

Ans. It is a Standard response code given by web server on Internet. It helps to identify the cause of problem when web page or other resource does not load properly.

5. What are the header fields in HTTP?

   HTTP headers fields allow the client and server to pass information with the request and response message.

   General header- It applies for both request and response message.
   Request header- It contains information for the request message.
   Response header- It is used to contain response header information sent by the web server.
   Entity header- It is used to contain more information about the body of the entity.

6. What is URI?

Ans. URI (Uniform Resource Identifier) is used to define the identity of something on the web. It can represent a piece of an url.

7. What are Idempotent methods and why do we call them?

Ans. In idempotent methods, for the multiple requests, we get exact same result. It would no matter if the request is called one or ten times, the result should be same.

8. Explain HTTP Request & Response Messages

Ans. Request message from a client computer : A request line to get a required resource. Response from the server.

9. What is HTTPS?

Ans. HyperText Transport Protocol Secure is the same thing as HTTP, but uses a secure socket layer (SSL) for security purposes.

INTRODUCTION TO API:

1. Explain REST and RESTFUL?

Ans. REST represents Representational State Transfer, it's a web API. RESTFUL is referred for web services written by applying REST architectural concept are called RESTful service

2. Mention what are the HTTP methods supported by REST?

   Ans. **GET:** It requests a resource at the request URL.
   - **POST:** It submits information to the service for processing; it should typically return the modified or new resource
   - **PUT:** At the request URL it update the resource
   - **DELETE:** At the request URL it removes the resource
   - **OPTIONS:** It indicates which techniques are supported
   - **HEAD:** About the request URL it returns meta information

3. Explain the architectural style for creating web API?

Ans. HTTP for client server communication

XML/JSON as formatting language

Simple URI as the address for the services

Stateless communication

4. Explain the RESTFul Web Service?

Ans.**Restful Web Service** is a lightweight, maintainable, and scalable service that is built on the REST architecture. Restful Web Service, expose API from your application in a secure, uniform, stateless manner to the calling client

5. Explain what is a "Resource" in REST?

Ans. Resources are identified by logical URLs; it is the key element of a RESTful design.

6. Which protocol is used by RESTful web services?

Ans. Restful web services make use of HTTP protocol as a medium of communication between client and server.

7. What is messaging in RESTful web services?

Ans. A client sends a message in form of a HTTP Request and server responds in form of a HTTP Response. This technique is termed as Messaging. These messages contain message data and metadata i.e. information about message itself.

8. State the core components of an HTTP Request?

Ans. A HTTP Request has five major parts −

- **Verb** − Indicate HTTP methods such as GET, POST, DELETE, PUT etc.
- **URI** − Uniform Resource Identifier (URI) to identify the resource on server.
- **HTTP Version** − Indicate HTTP version, for example HTTP v1.1 .
- **Request Header** − Contains metadata for the HTTP Request message as key-value pairs. For example, client (or browser) type, format supported by client, format of message body, cache settings etc.
- **Request Body** − Message content or Resource representation.

9. State the core components of an HTTP response?

Ans. A HTTP Response has four major parts −

- **Status/Response Code** − Indicate Server status for the requested resource. For example 404 means resource not found and 200 means response is ok.
- **HTTP Version** − Indicate HTTP version, for example HTTP v1.1 .
- **Response Header** − Contains metadata for the HTTP Response message as key-value pairs. For example, content length, content type, response date, server type etc.
- **Response Body** − Response message content or Resource representation

10. What do you understand about payload in RESTFul web service?

Ans. JSON formatted data

11. Explain the caching mechanism?

Ans. Caching refers to storing server response in client itself so that a client needs not to make server request for same resource again and again.

12. List the main differences between SOAP and REST?

Ans.

SOAP	**REST**
Language, platform, and transport independent	REST requires use of HTTP
Works well in distributed enterprise environments	REST assumes direct point-to-point communication
SOAP uses XML for all messages	REST can use smaller message formats

13. Enlist advantages and disadvantages of ‘Statelessness’.

Ans.

Advantage	**Disadvantage**
Web services can treat each method request independently.	Web services need to get extra information in each request and then interpret to get the client's state in case client interactions are to be taken care of.
Web services need not to maintain client's previous interactions. It simplifies application design	
As HTTP is itself a statelessness protocol, RESTful Web services work seamlessly with HTTP protocol.	

Object Oriented Programming Fundamentals

1. What is the main difference between a class and an object?

Ans. A class is simply a representation of a type of object. It is the blueprint/plan/template that describes the details of an object. An object is an instance of a class. It has its own state, behavior, and identity.

2. What is Encapsulation? Explain with a used case

Ans. Encapsulation is an attribute of an object, and it contains all data which is hidden. That hidden data can be restricted to the members of that class.

Talking about Bluetooth which we usually have it in our mobile. When we switch on a Bluetooth, I am able to connect to another mobile or bluetooth enabled devices but I'm not able to access the other mobile features like dialing a number, accessing inbox etc. This is because, Bluetooth feature is given some level of abstraction.

3. What is Polymorphism? Explain with a used case

Ans. Polymorphism is nothing but assigning behavior or value in a subclass to something that was already declared in the main class. Simply, polymorphism takes more than one form.

Let's say Samsung mobile has a 5MP camera available i.e. – it is having a functionality of CameraClick(). Now same mobile is having Panorama mode available in camera, so functionality would be same but with mode

4. Explain Overriding & Overloading and its advantages

Ans Method overloading is a feature of OOPs which makes it possible to give the same name to more than one methods within a class if the arguments passed differ. Resolved during compile-time

Method overriding is a feature of OOPs by which the child class or the subclass can redefine methods present in the base class or parent class. Here, the method that is overridden has the same name as well as the signature meaning the arguments passed and the return type. Resolved during run-time

5. What is Inheritance and different types of inheritance? Explain with a used case

Ans. It is the ability to extend the functionality from base entity in new entity belonging to same group. This will help us to reuse the functionality which is already defined before and extend into a new entity.

In Single level inheritance, there is single base class & a single derived class i.e. - A base mobile features is extended by Samsung brand.

In Multilevel inheritance, there is more than one single level of derivation. i.e. - After base features are extended by Samsung brand. Now Samsung brand has manufactured its new model with new added features or advanced OS like Android OS, v4.4.2 (kitkat). From generalization, getting into more specification.

In this type of inheritance, multiple derived class would be extended from base class, it's similar to single level inheritance but this time along with Samsung, Nokia is also taking part in inheritance.

Single, Multilevel, & hierarchal inheritance all together construct a hybrid inheritance.

6. What is an abstract class?

Ans An abstract class is a class that consists of abstract methods. These methods are basically declared but not defined. If these methods are to be used in some subclass, they need to be exclusively defined in the subclass.

7. What is an interface and how multiple inheritance is achieved with this?

Ans. Multiple inheritance in Java programming is achieved or implemented using interfaces. Java does not support multiple inheritance using classes.

8. What are the access modifiers?

Ans. Access modifiers determine the scope of the method or variables that can be accessed from other various objects or classes. There are five types of access modifiers, and they are as follows:

- Private
- Protected
- Public
- Friend
- Protected Friend

9. What are the various types of constructors?

Ans.

There are three types of constructors:

Default Constructor – With no parameters.

Parametric Constructor – With Parameters. Create a new instance of a class and also passing arguments simultaneously.

Copy Constructor – Which creates a new object as a copy of an existing object.

10. What is static and dynamic Binding?
Ans. Connecting a method call to the method body is known as binding.
Static: When type of object is determined at compile time it called static binding.
Dynamic: When type of object is determined at run time it called static binding.

11. What is ‘this’ pointer?
Ans. THIS pointer refers to the current object of a class. THIS keyword is used as a pointer which differentiates between the current object with the global object. It refers to the current object.

12. How many instances can be created for an abstract class and why?
Ans. No you can’t, instead you can create instance of all other classes extending that abstract class.

Because it's abstract and an object is concrete. An abstract class is sort of like a template, or an empty/partially empty structure, you have to extend it and build on it before you can use it.

13. Which OOPS concept is used as a reuse mechanism and explain with a use case
Ans.Inheritance is the OOPS concept that can be used as reuse mechanism.