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WEB SERVICES - INTRODUCTION

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Web Services Introduction

- Servlets, JSP along with JDBC helps to develop Web Application
- However "Web Services" a.k.a "Application Services" helps web applications to interact with any other applications (Mobile Apps / Desktop Applications / Web Applications)
- Web Services, as name implies, they are the services available in "Web". They take the request from Applications, via any communication protocol such as HTTP & generate Response
- Web Services, is a concept, are independent of
  - Platform
  - Programing Languages &
  - Applications
- Web Services take Web-applications to the Next Level!!!
- Unlike Web Applications, Web Services do not provide the user with a GUI. In other words Web services are meant for "Inter-System Communication / Application-to-Application Interactions but not for Users"
- Hence Web Services do not require the use of browsers or HTML
- Few real time examples of Web Services
  - Mobile Apps (ex: Gmail App) communicate with their corresponding Web Applications ex: Gmail) using Web Services
  - Uber / OLA Mobile Apps/Web Application interact with Google Maps using Web Services
  - BookMyShow Web Application / Mobile Application interact with PVR Web Application using Web Services
- Web Service has two participants:
  1. Service Provider / Producer
  2. Service Consumer / Requester
- Service Provider exposes the "Service on Web" & Service Consumer uses this "Web Service"
- Service Provider should be a Web Application; however Service Consumer can be Desktop/Mobile Application or Web Application
- There are 2 types of Web Services
  - RESTful Web Services
  - SOAP Web Services / XML Web Services

- Java provides 2 API's to develop these web services
  1. "JAX-RS" API for developing "RESTful Web Services"
  2. "JAX-WS" API for developing "SOAP Web Services"

- "javax.ws.rs.*" is the package representation of JAX-RS API
  "javax.jws.*" is the package representation of JAX-WS API

Why Web Services / Advantages of Web Services

1. Web Services Interoperability (WS-I)

- Web Services are "Application, Platform and Technology Independent"
- Ex: VB / .NET applications can talk to Java Web Services and vice versa. Thus helping the organisations to use existing applications which are developed using other technologies (may be legacy)
- Also Web Services helps/allows different applications to share data among themselves
- Ex: Uber / OLA and Google Maps shares the data among each other

2. Loosely Coupled

- Each application is independent of one another. Hence changes done to one application will not impact the "unrelated areas"
  Ex: Changes / Modifications done at Uber / OLA will not impact Google Maps

3. No need of re-inventing the wheel

- Web Services reduces the software development time

- This helps the other business partners to quickly develop application and start doing business

- This helps business to save time and money by cutting development time
  Ex: Uber / OLA can make use of Google Maps

4. Business Opportunity

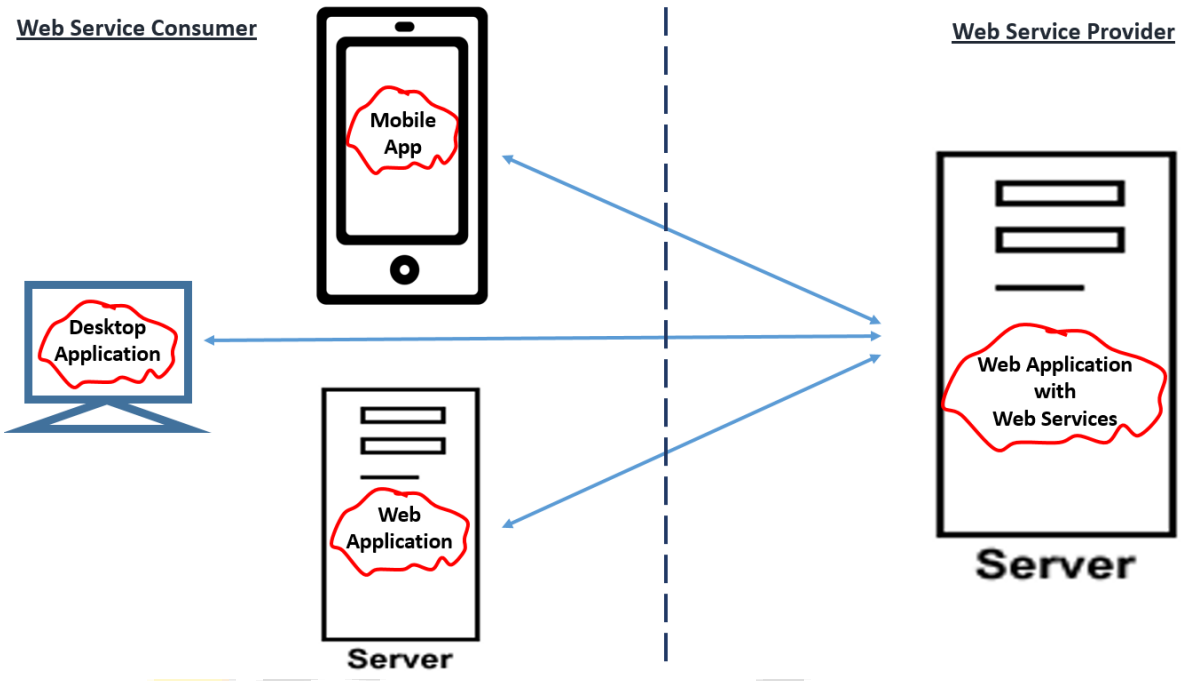
- Web Services will open the door for new business opportunities by making it easy to connect with partners
  Ex: Dominos can get the order from Food Panda / Swiggy along with getting orders from its own site

5. Service Reuse

- Web Services takes code reuse a step further

- A specific service within the organisation is only coded once and used over and over again by other applications
  Ex: An organization can have a "Single Payment Gateway service" which helps other web applications of that organization to interact with "Payment Gateways"

Web Services Architecture



Note:

- Web Service Producer MUST be a Web Application
- However Web Service Consumer can be
  - Web Application OR
  - Desktop Application OR
  - Mobile Application
- Web Application can "Produce" some web services as well as "Consume" some other web services. In other words, web application can have both "Producers and Consumers"