SalesForce Development

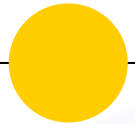
Module 1

Introduction to Web Development

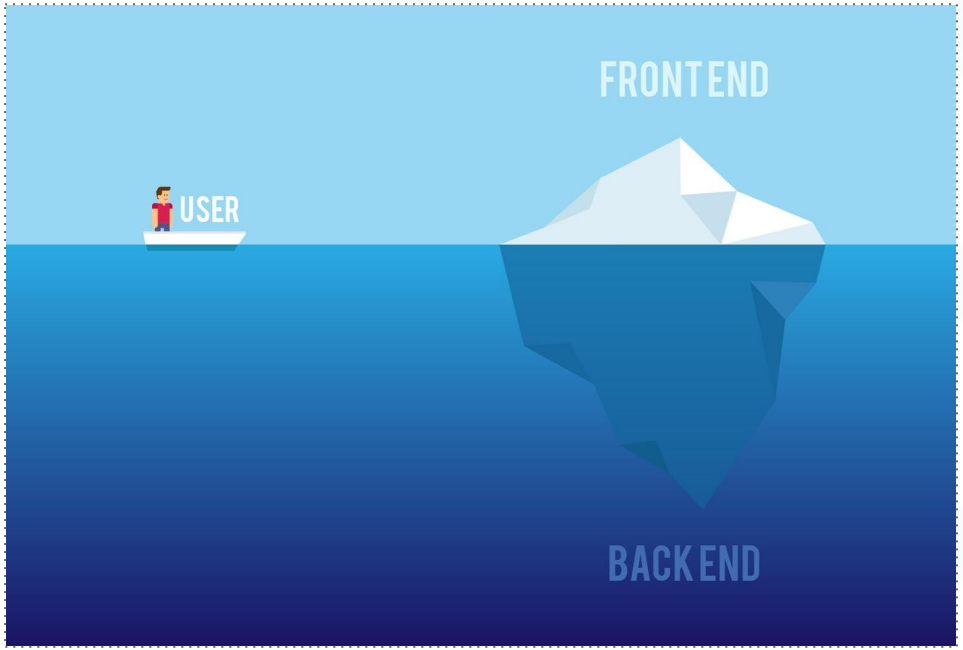
Topics to be covered

- Web Applications Overview
- Salesforce Introduction
- Org Types in Salesforce
- Code Editors (IDEs) for Salesforce
- Basic terminologies and keyword
- Introduction To Apex

Web Applications Overview



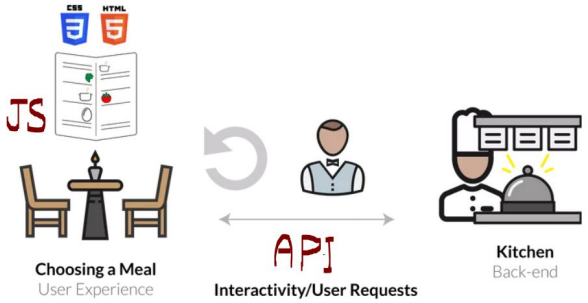
Illustration



How the websites work

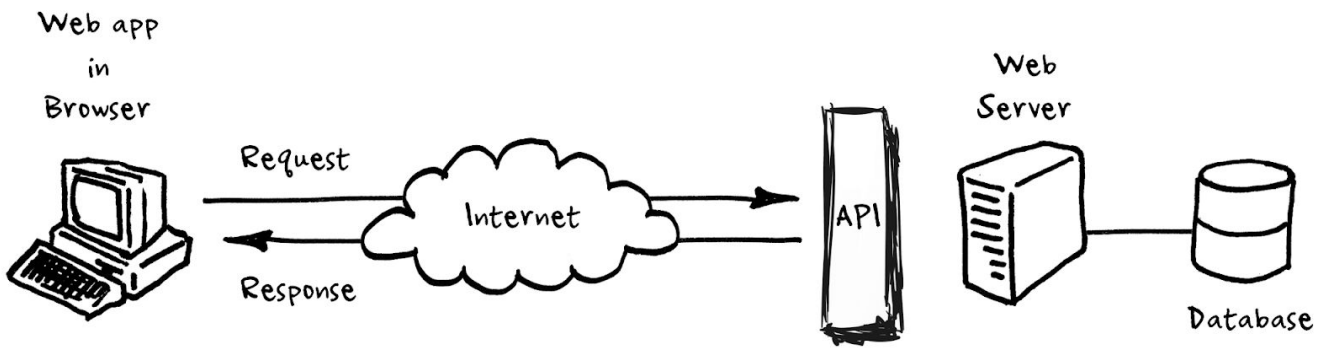
Just like restaurants

- Menu content (entrees) → are like **HTML**
- The fancy styles and designs on the menu → are like **CSS**
- You selecting an entree and ordering via your waiter → is like **Javascript**
  - This is done via frameworks like (JQuery, Angular, React etc.)



- Waiter taking your order and passing it to kitchen → is like an **API**
- Kitchen that prepares your food based on your request → is like a **Backend/Database**

Web Application Architecture!



Front End

Typical Web Applications consists of **Front End, API, Back End/ Database**

Front End → Client-Side (browser side)

- The frontend of a website is **what you see and interact with on your browser**.

- Also referred to as **“client-side”**, it includes everything the user experiences directly:
  - from **text and colors to buttons, images, and navigation menus**.

Car Example

HTML

The structure of the car

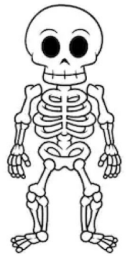
HTML + CSS

Color, rims etc. design of the car

HTML + CSS + JavaScript

Driving of the car

HTML - CSS - JavaScript



HTML

HTML + CSS

HTML+CSS+JavaScript

- Front End includes following languages:
  - **HTML** ⟶ For **content** displayed in the webpage
  - **CSS** ⟶ For **styling** of web page, to make it look nice
  - **Javascript** ⟶ For **interactions** on the webpage.

- The front end needs to be able to **communicate with the user and also with the back end**.
- In Salesforce, we will use HTML+CSS+Javascript combination to configure custom UI pages and layouts that is requested by the company

Backend

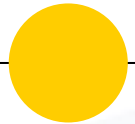
- **Backend** → Server Side
- Backend is the portion of the website you don't see.
- Site needs to **have backend components** to make it a **dynamic web application**

- Dynamic application → has content that can change **based on what is in its database**, and that **can be modified by user input**.
    - Note the difference from from a **static website**, which doesn't require a database because its **content generally stays the same**.
- Backend technologies usually consist of languages like **PHP, Ruby, Python, Java, Node.js** etc.
- In salesforce we will use **Apex** language to configure custom logic

Questions

- Which Language is used to display content on the webpage?
- Which language is used for styling of a webpage?
- Which language is used for interaction on the webpage?
- Name three languages which is used at Server Side (Backend).
- Which language is used to configure custom logic in Salesforce?

Salesforce Introduction



CRM

- What is **CRM** (Customer Relationship Management) ?

CRM

What is CRM?

- As the name suggests, Customer Relationship Management (CRM) is an application that manages the company's relationship with its customers.
- CRM is a tool through which the company and its employees can analyze customer interactions, churn rate, buying patterns by maintaining a database.
- Hence, this application helps the companies understand consumer behavior and analyze them.
- Moreover, it also helps manage a huge database of the customer and maintain a healthy relationship with them.

CRM

Ex. **Coca** **Cola**

- While expanding the company they started to use CRM strategy which helped the company to grow better.
- They provided a unique pin number in the bottle. Customers could use these pin numbers to get 75 cent off from their phone bill.
- They used the IT system to get feedback and also made a quality monitoring in customer service. This in turn, made the customer more satisfied.
- They also used Facebook Fan page as a biggest promotion centre and provided some seek peek for customer. Coca Cola fan page is the one of the largest fan page in Facebook.
- CRM strategies help Coca Cola to achieve their goal without losing their market.

Salesforce Technologies:

- **About Salesforce :**

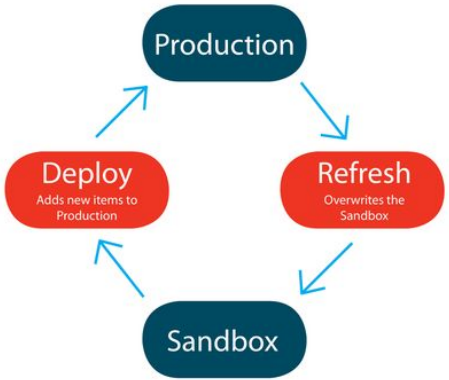
- Salesforce is a famous American cloud-based software company that provides CRM services. Salesforce is a popular CRM tool for support, sales, and marketing teams worldwide.
- Salesforce is SAAS (Software as a Service) where user can directly obtain the built-in software and make use of it.

Org Types in Salesforce

Types of Org in Salesforce

- A Salesforce org is an entity which consists of the users, data, automation corresponding to an individual organization.
- An Org is your specific organization's data and metadata.
  - Salesforce has multiple orgs residing on the same instance.
- Salesforce.com provides many sorts of Organizations that may be used for a variety of reasons.
  - Firms have different kinds of organizations, and an additional charge must be paid according on the necessity.

Types of Orgs in Salesforce



- **Production Organization :**
  - Sometimes referred to as “production” or “prod”, these orgs Keep your business alive. This is where your employees create pipeline, close deals, and support your customers.
  - Users can login at: https://login.salesforce.com
- **Sandbox Organization :**
  - Salesforce sandbox organisations may make several clones of your production Org for development, configuration, testing, and/or training without compromising your production configuration and data.
    - Full Copy Sandbox
    - Partial Copy Sandbox
    - Developer
    - Developer Pro
  - Users can log into sandboxes at https://test.salesforce.com
    This is not same org as we created in Admin class

Types of Orgs in Salesforce

- **Partner Developer Organization :**
  - Partner Developer Organization is a free Developer Organization that provides additional storage, functionality, and licences to firms who participate in the partner programme.

- **Pre Release Organization :**
  - A pre-release Organization is a limited-time Organization that allows users to test new features or capabilities linked with a pilot programme or a forthcoming release. (UAT)

Types of Orgs in Salesforce

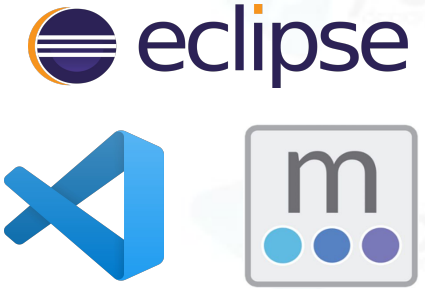
- **Developer Organization :**
  - A developer Organization is a free, non-expiring replica of an Enterprise Edition environment that you can use to begin creating, testing, and deploying your apps.
  - Salesforce Developer Edition orgs are a free tool that developers can use if they don't have access to a sandbox (which is a copy of their Salesforce production instance).
  - Only Developer and Partner Developer Orgs can generate and distribute managed packages.
    (This is the same org we created in Admin class)

Assignment

- What is an Org in Salesforce?
- Which org contains the live data & configuration of any business?
- Which org for development and testing without compromising the live data & configuration?
- Which org is used by Salesforce Partners?
- Which org is free and used for creating, testing and deploying apps?

Code Editors (IDEs) for Salesforce

Visual Studio Code



Web Browsers

For viewing result of our our code (rendering)

Visual Studio Code

For writing, debugging, executing our code

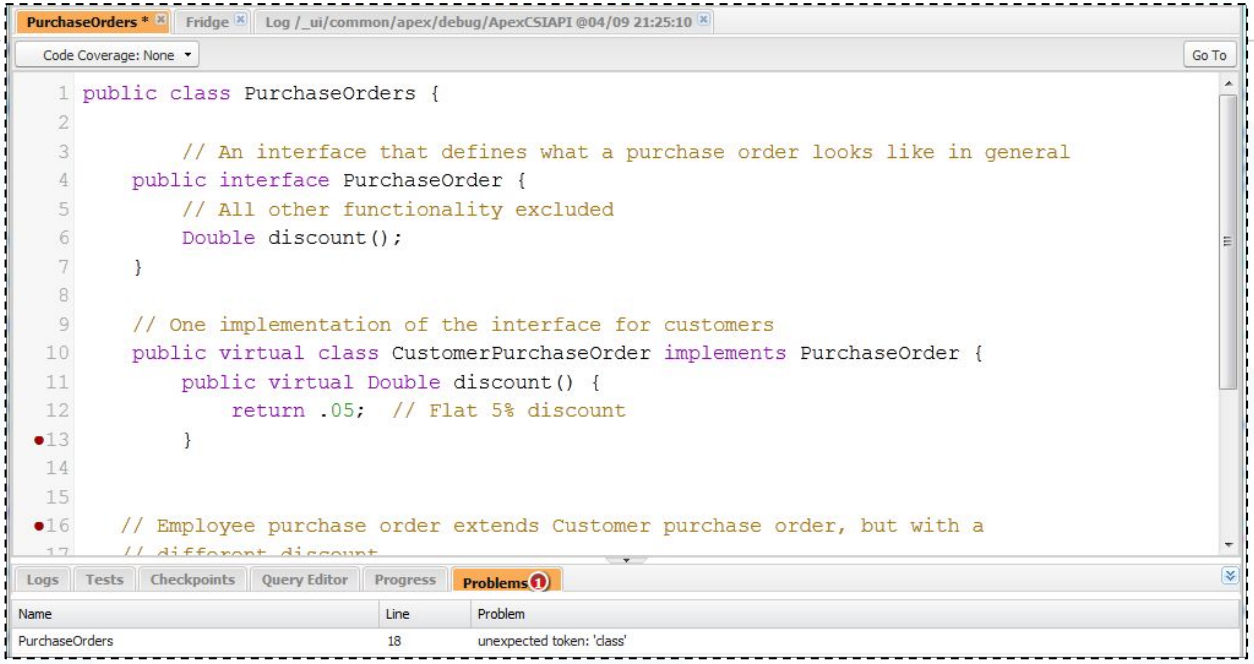
Code Editors for Salesforce Development

- **Eclipse :**
  - This was first and official IDE for Salesforce and enjoyed the monopoly for many years.
  - It provides an environment for development, compile, test, package and deploy all from within IDE.
  - Initially, Eclipse was used by developer but now other IDEs have replace it.

Code Editors for Salesforce Development

- **Developer Console :**
  - It helps to debug, and test applications in your Salesforce org.
  - It perform tasks such as Debugging and Troubleshooting, Editing and Navigating Source Code, Testing and Validating Performance, Executing SOQL and SOSL Queries.
  - It is free.
  - You can open it in Salesforce from following path.

    “Go to Gear Icon → Developer Console".


PurchaseOrders *
Fridge
Log /_ui/common/apex/debug/ApexCSIAPI @04/09 21:25:10
Code Coverage: None
Go To
1 public class PurchaseOrders {
2
3 // An interface that defines what a purchase order looks like in general
4 public interface PurchaseOrder {
5 // All other functionality excluded
6 Double discount();
7 }
8
9 // One implementation of the interface for customers
10 public virtual class CustomerPurchaseOrder implements PurchaseOrder {
11 public virtual Double discount() {
12 return .05; // Flat 5% discount
13 }
14
15
16 // Employee purchase order extends Customer purchase order, but with a
Logs
Tests
Checkpoints
Query Editor
Progress
Problems 1
Name
Line
Problem
PurchaseOrders
18
unexpected token: 'class'

VS Code

- **Visual Studio Code :**
  - Visual Studio Code provides the simple lightweight solution a code editor.
  - Also has powerful developer tooling, like IntelliSense code completion and debugging.
  - First and foremost, it is an editor that gets out of your way.
  - It doesn't have overhead so developer can simply focus on writing code rather than dealing with environment issues.

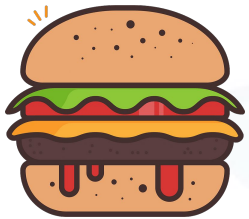
Questions

- Which was the first official IDE for Salesforce?
- Which IDE is available built-in in the Salesforce Org?

Basic terminologies and keyword

Basic terminologies and keyword in Programming :

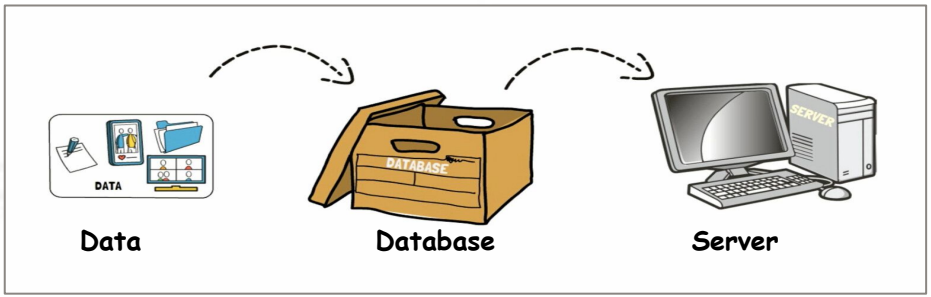
- **Request and Response :**
  - Let's understand it with an example.



  - Suppose you go to any restaurant and order food as 'Burger'. So, you are requesting waiter to make order of 'Burger.' This is **Request from your side**.
  - You told waiter to add extra cheese. So, cheese, Bun, tomatoes, patty, onion, etc.. are parameters of your Request.
  - Now, waiter serves you your Burger. So, this is Response from waiter's side.This is **Response**.
  - In programing terminology, a developer make request to server and a server gives response according to the request.

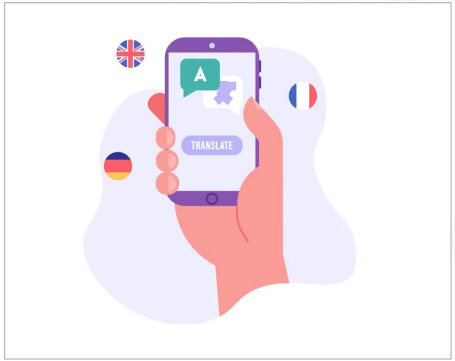
Database

- A **database** used to store data, files and information.
- It provide the services to insert the data, delete the data, update the data and other operations.
- It stores the data such as sales transactions, customer data, financials and product information, etc..
- So, database is used to store the information and to retrieve the information as per need quickly.



Compiler

- Ex. Suppose Alex knows English very well. He wants to learn French.
- So he downloads an app to his phone which help him to convert English (High level language for Alex - which is easily understand by him) into French (Low level language for Alex).
- When Alex makes any mistake while speaking French to someone, the app also warns him mistake (Error).
- So, this app behaves as Compiler for Alex.

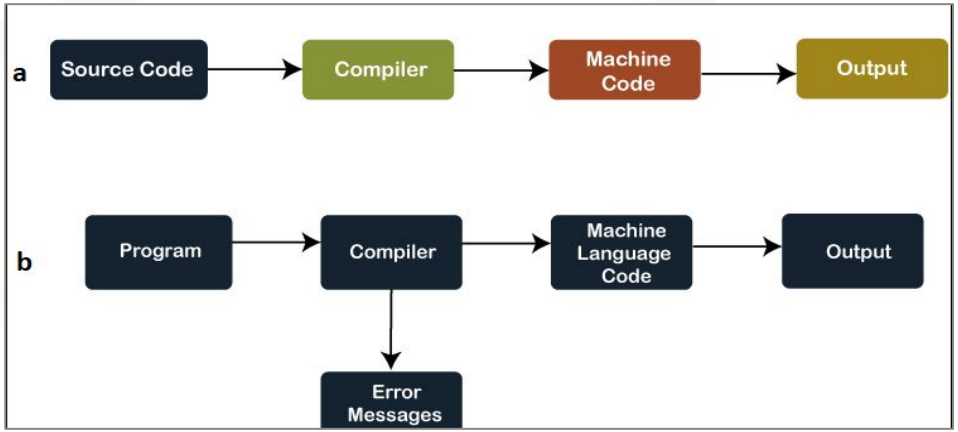


Compiler

- **Compiler** is a computer software that translates (compiles) source code written in a high-level language (e.g., Java) into a set of machine language instructions that can be understood by a digital computer's CPU.
- Compilers are very large programs, with error-checking and other abilities.

a.) If there is not any error present in the program, then compiler will compile program successfully.

b) If there is any error present in the program,then compiler will throw an error.



Interpreter

Interpreter is same as compiler but it translates just one statement of the program at a time into machine code.

Compiler	Interpreter
Translate the whole source code at once	Translate the source code line by line
Compilers takes more time to analyze source code but it's overall speed is faster than interpreter	Interpreter takes less time in comparative to compiler to analyze source code, but overall speed is slower than compiler
Compiler shows all error at once, making it harder to debug	As the interpreter runs the code line by line, it displays the error when it gets it. Which makes it easier to debug
Ex. C, C++, Java, Apex	Ex. PHP, JavaScript, Python

Metadata

- Metadata is data that describes other data.
- For example, in a Salesforce org, there is a standard object called **Account**. When you add a record with a customer's contact information to an Account, you are adding metadata and data.
- Ex. Field names, such as first name and last name are metadata. The values in those fields, such as Alex and Harry are data.

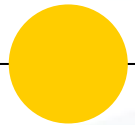
Roll No	Name	Subject
10	Alex	Maths
20	Harry	English

In this table,
Metadata → is RollNo,Name,Subject.
Data → is 10, Alex, Maths, 20, Harry, English

Assignment

- What is a Database?
- Name some languages which are Compiled.
- Name some languages which are Interpreted.
- Which takes more time to analyze the code: Compiler or Interpreter?
- Which one has an overall fast speed: Compiler or Interpreter?

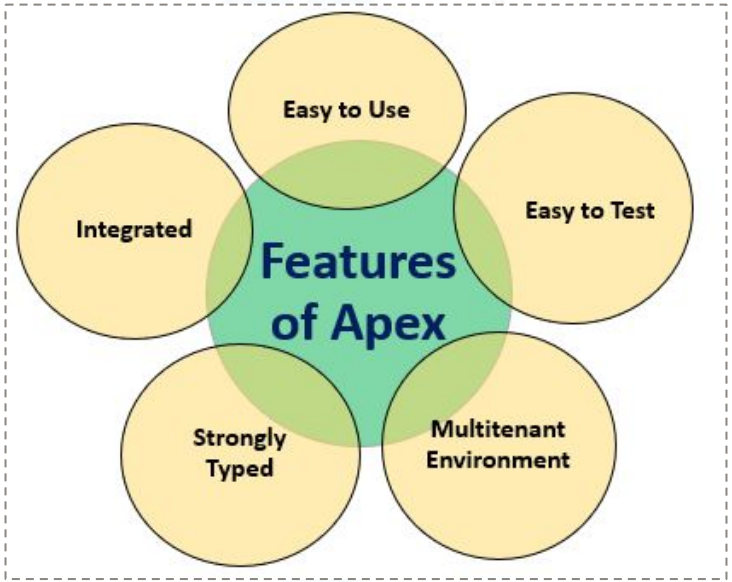
Introduction To Apex



What is Apex and when should we use it?

- Apex is a strongly typed, object-oriented programming language.
- It uses syntax that looks like Java.
- It enables developers to execute complex logic and transaction control statements on Force.com platform.
- It Runs natively on the server.
- It is integrated with Database and provide direct access to records and their fields.

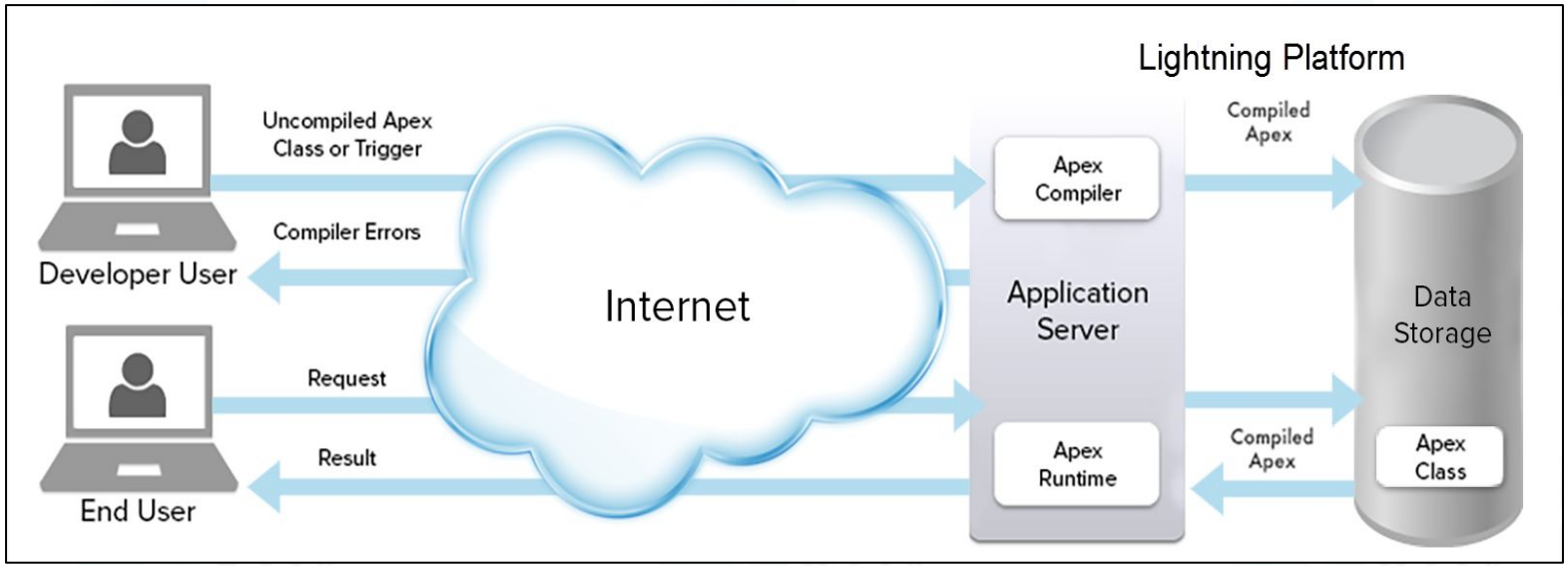
Features of Apex



How does Apex Work? (Continue)

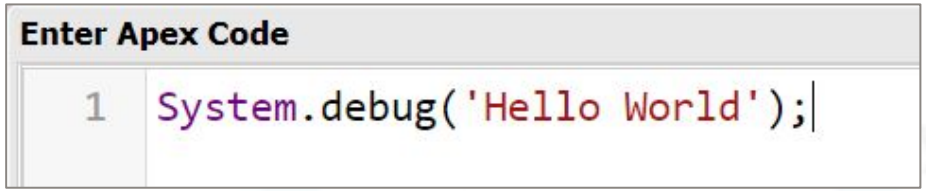
- In Apex, all the code(data) is saved on the cloud. So, there is no overhead of storing the code and maintaining it.
- **For Developers :**
  - When a developer writes code and submits it to the platform application server, the server compiles it into a set of instructions that the **Apex runtime interpreter** can understand and then saves those instructions as metadata (data).
- **For End-Users :**
  - When an end-user initiates the execution of Apex code, the platform application server retrieves the compiled instructions recorded as metadata and transmits(send) them to the runtime interpreter, which then provides the output to the clients.

How does Apex Work ?



Our First Apex Code :

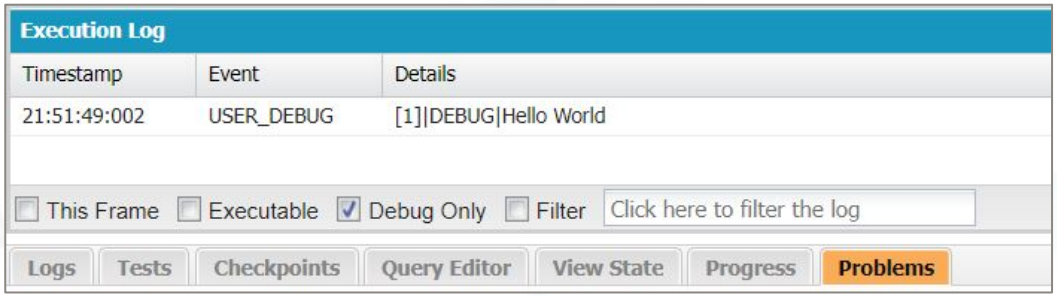
- You can write any Apex Code in Developer Console.
- Path to open the Developer Console is “Click on Gear Icon → Developer Console” from Developer Org.
- For trying the Apex code Anonymous Window is used. From Developer Console, it can be opened by “Clicking on Debug → Open Execute Anonymous Window”.



Output: Hello World

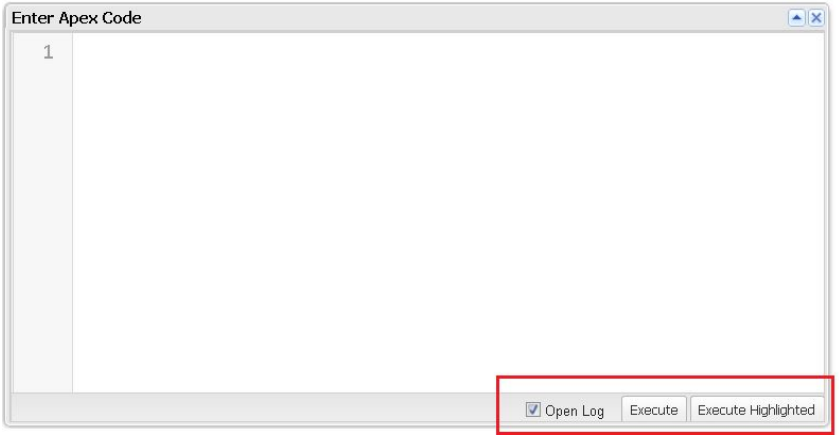
Our First Apex Code

- System.debug() is used to print the content. By clicking on the “Execute” button, a person can execute the code which is written on Anonymous Window.
- One new tab will be open and a person can see the result by checked in “Debug Only”.



Anonymous Window

- “Execute” button executes all the statements present in the Anonymous Window, where as “Execute Highlighted” executes on the selected statement.
- If “Open Log” checkbox is checked then it will open the logs directly on executing the code.



Assignment

- Add two debug statements and print the following content

  Hello Apex

  My name is <YOUR_NAME>
- Without removing any statement from the anonymous window just print the following content.

  My name is <YOUR_NAME>

Interview Questions:

- What is the use of a CRM Software?
- Differentiate between Production and Sandbox Org.
- Differentiate between Compilers and Interpreters.