MODULE - I
---

2 types of computer application
==========
1) Desktop applications :
    applications installed in the computer
    eg: photoshop, vs code

2) Web applications:
    web applications are deployed remotely in any cloud storage space, and we are accessing
    it via internet using web browser
    eg: facebook, youtube

For creating an application , there are lot of programming languages
    java
    javascript
    .net
    c
    c++
    python

Web application architecture
---
1) front end
2) back end
3) database

Web Application - Application that can be viewd using a browser

 1) frontend - which the user can view
                Technologies - HTML CSS BOOTSRTAP JAVASCRIPT
                               ANGULAR and REACT
 2) Backend -server - to resolve the request - node.js - express.js

 3) DataBase - to store the data   - mongodb, mysql

 MEARN:

MongoDB
Express: node js framework for creating backend
Angular:
React js
Nodejs

Framework:
    A framework is a programming tool, that provides ready-made components or solutions
    that are cutomized to speed up the development

Who is a fullstack developer:
    A person who have knowledge in front-end, back-end and database

IDE:

Integrated development environment
-code editor
eg: Visual Studio code
    intelliJ

Different Layers in a Web application
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1) Presentation layer: front-end
    This part is, where the user is interact with
2) Application Layer: backend
        It resolve request from presentation layer/user
3) Data Layer : Database
    It stores and manages data

API - Application programming interface - to connect with the frontend and the server available in the internet

http - Hypertext transfer protocol - sets of rules to transfer data over the Web
        1) get - to retrieve data
        2) post - to add data
        3) put - to update data
        4) delete - to remove data

JSON - the formate of sharing data through internet. javascript object notation
```
{
    "name":"john",
    "age":25,
    "location":"kakknad"

}
```

Software development methdology
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1) waterfall methdology

2) agile methdology

    HTML
==================================
- Hypertext markup language
- Used to create the structure of a web page/ skelton of a webpage
- css is used to style this skelton

Diffrence between markup language and programming language:
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markup language:
    - to to create the structure of a web page and design it
    - browser can be used to run it
    - eg: HTML, XML, SGML

programming language

 - used to perform logical operations
   to give some intructions to computer inorder to perform some task
 - need a compiler to run
 eg: Java, javascript

 ** markup languages are also called Tag based language
 - because different tags are used to design the webpage
  <p> <head> <body>

   <tagname>
   ---
   type of tag
   ---
   1) opening tag <tagname>
   2) closing tag </tagname>
   eg html <html></html>
   3) self closing tags <tagname/> eg : <input/>
   ---

html tags
---
extension for an html page .html
 Basic html page structure:
 <html>
    <head>
        // configurations, title, importing styles, importing google fonts, js code
    </head>
    <body>
        // this part is visible to the user
        // heading, paragraph, images, videos
    </body>
 </html>
** to load basic structure of html 5 page shortcut: shift+1-> select !

1) a : anchor tag - to add links in html page
    target="_blank" : to open page in new tab
2) h1 to h6 : for giving heading
    h1 - biggest size
    h6 - smallest size

3) p - to add paragraph
4) br - for line break
5) sup : superscript - to add raised value
6) sub : subscript - to add
7) video : to add videos in html page
8) audio : to add audio in html page
9) hr : horizontal tag - to add a horizontal line
10) img : to add an image , alt : to display some text to user, if image is not loaded
11) figure : to display an image and its caption (figcation tag is used to give caption)
12) iframe: to place youtube videos, google maps, etc
        1) Youtube video: right click on specific video and select "copy embed code", then paste
        wherever we need to display
        2) Google map: search specific palce or location in google maps
            share-> embed a map -> copy html , then paste it in the page
13) list
        ordered list (ol)
            list items with numbering (1, i, I,a, A)
        unordered list (ul)
            list items with bullettin
14) Table
      to display items in tabel like structure
      table must be enclosedin <table></table>
      tr: is used to create table row
      th: is used to create heading
      td: is used to create table data
15) form
        - used to create forms
        - form must be enclosed in <form></form>
        label: to diplay text related to that particular input field
        <input type="text"> : for input field
        <input type="password"> : for input password field
        Different Input Types:
        ----
        text
        password
        texarea : <textarea></textarea>
        number
        email
        tel
        date
        file
        radio: for selecting only one value, we group every radio button by same name attribute
        checkbox
        for dropdown: <select> <option></option> </select>
16) css : cascaded style sheet
          used for styling html elements

```
        3 ways, we can style Html page
            1. Inline css:  we are applying the style inside the tag, ie in same
line
            eg: <h1 style="color: red; background-color: aqua;">Hello</h1>
            2. Internal css:  we are applying styles in head tag
            eg:    <style>
                        h3{
                            color: orange;
                            background-color: blueviolet;
                        }
                        h2{
                            color: green;
                        }
                   </style>
            3. External css
             - style are written in seperate file and import it to the head tag of
                corresponding html file
             - most commonly used method in styling web page
             - it reduces the code complexity
             - code become more clean and neat
        CSS selectors: to select a html element
            1) tag selector h1, h2, img
            2) id selector: to uniquely identify a Html element. Id must be unique
                    # is used to denote an id
            3) class selector: to select a group of Html elements
                    we can apply same class name to multiple html elements
                    . is used to denote a class
            4) universal selector:
                denoted by *
                to apply style to entire html document
    17) span
            span tag is used to wrap section of a text

   18) CSS Box Model
    -------------
    1) margin
    2) border
    3) padding
        if take an html element it consist of padding, border and margin.
        (this padding and margin can be zero or have some values)
        border-:imaginary border between html content
        padding: distance between border and html content
        margin: distance between border and screen or other html element

    padding 4 type:
        padding-top,
        padding-left,
        padding-right,
        padding-bottom,
```

19) div - division
        - to wrap same html elements- same as like container, where we place
         related html elements
20) opacity: to set the visibity of an html element
    values ranges from 0 to 1
    0: item is invisble
    1: item is visible as normal
21) float: left - is used to align an element to the left within its containing
block,
                  allowing other elements to place on the right side of first
element, so on
22) display:flex - if the parent element has display flex property, then its child
element
                    will align in same line

23) different types of HTML elements:
            1) inline elements- inline elements start on same line
                    eg: span, button, label
            2) block elemnts - each block element start on new line
                        eg:h1 to h6, p, div
23) position:
    - This are used to control the position of an html element within a web page
    different positions are: relative, absolute, fixed, static
    - we can apply top, bottom, left, right properties to positioned elements
    1) position:relative
        - it positions an element ralative to its current position
        - it does not change the layout of html document
    2) position: absolute
        - it positions an element relative to the position of its parent element,
        - absolute ppty can be applied to an element, only if that element is
placed inside
          a postioned element
    3) position:fixed
        - it postions the element fixed on a place, even if we scroll
    4) postion:static
        - place the element as normal

24) nav tag: used to define block of navigation link within a document/html page
            - typically used to identify major navigation section in a webpage
25) section tag: In html, section tage is used to define section or group of
content
    within a document. It is typically used to logically organize related content
on a webpage
    - intended to structure a web page more meaningfully
26) transition: The transition property in CSS is used to specify how a CSS
property should change over time.
        eg: selector {
        transition: property duration;
        }
        eg:div {

```
        width: 100px;
        height: 100px;
        background: red;
        transition: background-color 2s;
      }

      div:hover {
        background-color:green
      }

Difference between section and div
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<div> tag is a generic conatiner used to group elements and apply styling
- it can be used to create any kind of layout or structure
- did does not convey any specific meaning about the content inside it

Media Queries
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Media queries are used to apply css styles depending on screen width of the device
or orientation of screen (landscape/portrait)

common media query resolutions
-------------------------------
1) @media (max-width:599px) : small devices - portrait Mode
2) @media (max-width: 899px) : small devices - landscape
3) @media (min-width:600px) and (max-width:959px) : Tab - portrait mode
4) @media (min-width:900px) and (max-width:1199) : Tab -  landscape mode
5) @media (min-width:1200px) : normal desktop


display:none
------------
display :none means, the html element is not rendered there,

 visibility:hidden
 --------------------
 visibility:hidden means, the html is rendred there also space is
 allocated for that element, but hidden from the user

psuedo classes:
------------------
 pseudo classes in css are keywords that specify a special state of the
 selected html element
 eg: hover
     focus
     visited

   uses:

    button:hover{
```

```
    }
    input:focus{

    }
```

Bootsrap

Bootsrap is a popular CSS framework developed by twitter
- it provide pre-designed templates and components (such as buttons, forms, carousel, etc)
  to help developers quickly and easily create responsive and mobile first website
- it also provide grid system that developers can easily use
- it includes different pre-defined classes, we can directly utilize this in our html
- CDN : content delivery newtwork (to get content from other website)
- to use bootstrap in our page, we have to import CDN of bootsrap into head section
    of our html page
- Bootstrap 5.3V is currently we are using
- https://getbootstrap.com/

Common classes in Bootsrap
==========
    1) container : it provide a margin along with padding on left and right
    2) container-fluid: - it provide a small padding on left and right

    default colors in bootstrap
    ---
    success - green
    primary - blue
    danger - red
    warning - orange
    dark - black
    light - white
    info - sky blue
    secondary - grey
3) text-center : to center a text in the containing div
4) m-1 to m-5 , eg: m-1, m-2, m-3, : to provide margin from all 4 directions
5) mt-5, mb-5, ms-4, me-5
        mt- margin top
        mb- margin bottom
        ms- margin left(start)
        me - margin right (end)
6) p-1 to p-5
7) pt, pb, ps, pe
8) border, border-success border-5
9) fs : font size values fs-1 fs-5, fs-1 is maximum value and fs-5 is minimum value
10) btn , btn-success, btn-sm - small btn, btn-lg - large button, btn-md - medium btn
11) width : w-25, w-50, w-75, w-100

Bootsrap Grid system
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The grid system in Bootstrap is a responsive, mobile-first layout grid that
 - allows developers to structure the layout of a web page or application.
   It's based on a 12-column grid layout system, which provides
   flexibility and control over how content is displayed across
   different screen sizes and devices.
- The grid system is divided into 12 columns, which can be used to create
  various layouts. Developers can specify how many columns each element
  should occupy on different screen sizes
  (such as extra small, small, medium, large, and extra large).