**Day 1 : 03/01/2022**

**Phase 3**

**Create scalable and dynamic web site**

**Scripting language**

**Client side and server side scripting language**

**What is node js**

**Node JS modules**

**Types of module**

**Core module**

**User-defined module**

**External module**

**Fs module**

**http module**

**url module**

**express module**

**rest full web service using express module**

**mongo db database**

**basic and adv mongo db database query**

**connecting mongo db database using mongodb and mongoose module**

**express mvc**

**MEAN Stack**

**Front end angular**

**Backend express and mongo db database**

**Socket.io programming**

**Front end side**

**Html /html 5 web page**

**Css /css 3 formatting style or presentation logic**

**Bootstrap**

**JavaScript : Validation on client and dynamic web page**

**Or action on web page or event on web page.**

**jQuery**

**Backend technologies**

**Java (JEE) : Servlet/JSP or Spring framework or spring boot**

**Asp.net**

**Php**

**Python**

**Node JS**

**Before Node JS lot of library and framework using JavaScript**

**jQuery**

**Angular JS**

**Angular Framework**

**React JS**

**Vue JS**

**Backbone js**

**Ext js**

**Coffee js**

**Etc**

**Node JS : Node JS is not a library or framework. It is a run time environment for JavaScript library or framework.**

**Before NODE JS we were running JavaScript program using browser. Browser contains run time environment for Java Script (client side scripting language).**

**Node Js contains lot of pre-defined module that may be core module or external module which help to do operation using JavaScript**

1. **File handling program**
2. **Creating dynamic web application**
3. **Creating rest full web service**
4. **Connection database may be my sql or mongo db**

**Etc**

**REPL terminal: read eval print loop**

**In node js program we can’t use document and window object.**

**Means js doesn’t provide BOM and DOM**

**Browser object model**

**Document object model**

**BOM and DOM available in client side scripting language not server side scripting language.**

**Node js provided pre-defined object ie global object**

**console.**

**Node JS FS Module**

**Fs means file system**

**Node Js provide lot of modules**

**Modules : modules is a combination of one or more than one files. Which help to do re-usability.**

**We connection one module to another module using require or import and export keywords.**

**In node js modules are divided into 3 types**

1. **Core modules (by default available with node js software).**
2. **User-defined module**
3. **External module**

**FS module : It is a type of core module which help to do file handling program synchronously or asynchronously.**

**let/var referenceName = require(“moduleName”);**

**read and write operation using asynchronously as well as asynchronously.**

**We store and retrieve data in string format.**

**We want to store the JS objet**

**We have to convert into json format.**

**In JavaScript we can create the object using**

1. **Function style**
2. **Class style**
3. **Literal style**

**JSON.stringify() method code help to convert JS object to string format.**

**Day 2 : 04/01/2022**

**Taking the value through keyboards in Node JS**

**readline : readline is a type of core module which help to take the value through keyboards in node js. Readline method are asynchronous methods.**

**Node js provided pre-defined global object is process**

**readline-sync it is external module which help to take the value through keyboards synchronously.**

**Syntax to install external module**

**Npm install –g moduleName globally**

**Or**

**Npm install modulename locally**

**http : hyper text transfer protocol.**

**Node js provide one of the pre-defined core module ie http which help to create the server side program using JavaScript.**

**Java (Spring framework or spring boot)**

**.net (asp .net)**

**Php**

**Python with django framework.**

**To run above application we require server.**

**Server is a like a engine which contains container which is responsible to execute java or asp.net or php or python.**

**Tomcat**

**WebLogic**

**IIS server**

**Apache**

**Mamp**

**Etc**

**XAMPP**

**All above server is thread base server.**

**Program : set of instruction to perform specific task.**

**Processor :processor is responsible to execute the code.**

**Process : time taken to execute the code or program in execution.**

**Thread : it is small execution of a code with in process.**

**Thread also known as light weighted process.**

**Multi tasking**

**Process base**

**Thread base**

**Multi tasking using thread base is faster than process base.**

**JavaScript is a not a multi threaded base scripting language it is a single thread scripting language.**

**By default all server are thread base server.**

**class Booking {**

**avl =1;**

**}**

**10 client send the request at the same time to this application.**

**1st client**

**2nd client**

**3rd client**

**10th client**

**If sever side technologies is multi threading for each client rather than creating separate memory it will create one memory and each client consider as a one thread.**

**thread can be lock or block.**

**Server can response concurrently 1000 or 10000 0r 100000 or 1000000 client at the same time.**

**Server has 100 client ( 100 thread created)**

**101**

**Node JS providing one of the great features ie**

**Event loop architecture**

**Create the server side program using http module with node js**

**url module : node js provided one of the pre-define core module ie url module which help to provide URL details.**

**When we use urlRef.parse(url) The query property consider as a string.**

**urlRef.parse(url,true); The query property consider as a reference.**

**http module with route concept**

**Day 3 :**

**05/01/2022**

**Node JS provided lot of pre-defined external modules**

**Which help to create the web page.**

**Express module : Express is a type of third party module which internally use http module and wrap this module and provide extra functionality to develop web application using node js.**

**While creating node js application we have to depends upon lot of external module.**

**Those external module we can install locally or globally.**

**If we install the module locally in the current folder node\_module will download and it contains all necessary files which help to develop the application.**

**package.json it is type of json file which hold configuration details about the node js projects.**

**Command to create the package.json file**

**npm init**

**when we run npm install command. Node js search package.json file in current directory and it download all dependencies in current machine available in packge.json file.**

**Node js provided pre-defined property ie**

**\_\_dirname : this is use to give the current directory path.**

**To enable the request body data in express js we have to use middleware. Middleware means intermediate between client and server.**

**Middleware module name is body-parser.**

**Old version of express js we have to download the body-parser module separately but new version of expression js this module available in express js module.**

**npm install body-parser**

**Day 4 :**

**06/01/2022**

**View is normal html page.**

**If we want to make dynamic view.**

**Express JS introduce View engine.**

**Those view engine are dynamic. So we can do any programming on that view.**

**If we use pug or jade or other view engine those view tightly coupled with express js application.**

**Java technologies**

**Amazon shopping application**

**Payment gateway**

**Credit card python**

**Debit card asp.net**

**Net banking php**

**Google pay java**

**Phone pay python**

**Paytm node express js**

**XML :eXtensible markup language**

**XML is heavy**

**JSON JavaScript Object Notation.**

**JSON is light weighted.**

**Web Service : Giving the service for web application when both the application running using different technologies and in same OS or different os.**

1. **SOAP base web service : Simple Object Access Protocol. In SOAP web service we can share the data only in the form of XML.**
2. **RESTfull Web Service : Representational state transfer protocol. Using Restfull web service we can share the data in any format ie xml or json or plain text or html or any other format.**

**Using Rest Full web service exposing our resources as a web service. So if we expose express js as a rest full web service. Any application can all our application**

**Like Java, Python, Asp.net, Angular , React js or any rest client application.**

**If we make express js as a rest full web service**

**Those service we can all using Angular.**

**So View – Frontend – Angular**

**Backend – express js work independently.**

**REST API (Application Programming interface).**

**According to REST API we have to work on http methods**

**Resource : it can be any entity like**

**Employee, Product, Order, Manager, Customer, Bank, Account etc.**

**Get method : get the resources**

**Get Employee details, get product details.**

**Get Employee details using specific property like id, age , salary desg etc.**

**Select query**

**Select \* from employee**

**Select \* from employee where age > 21;**

**Select \* from employee where name like ‘Ravi’;**

**Post method : create the resource**

**Storing employee details**

**Storing customer information**

**Insert query**

**Put method : update the resource**

**We update all property of resource using another property.**

**Employee id,name,age**

**We update name and age using id property**

**Update query**

**patch method : update the resource**

**we update partial property of resource using another property**

**Employee id,name,age**

**We update age using id property but not name**

**Update query**

**Delete method : delete resource**

**Delete employee details using id**

**Delete query**

**Create the folder Express JS REST API**

**Create the package.json file using npm init command**

**npm install express**

**get REST API method we can test through browser.**

**get method**

1. **Get data in string format**
2. **Get data in json format**
3. **Get employee details in json format**
4. **Get all employee details in json format**

**While calling rest api by any technologies like java or python or angular if they want to pass the value to rest api so we can use two technique.**

1. **Query param**
2. **Sending single value**

**URL?key=value**

1. **Sending multiple value**

**URL?key=value&key=value&key=value**

**Path param**

1. **Sending single value**

**URL/v1**

**url/Ravi**

1. **Sending multiple value**

**URL/v1/v2/v3**

**url/100/Ramesh/21**

**if client application is normal html page**

**then can use query param. Because html form with get method internally use query param concept**

**If client is angular or react or other technologies then we can use path params.**

**Post method :**

**Post method is use to store the data or resources.**

**We can’t test post, put, patch and delete methods through URL.**

**To receive the data as json format from request body we have to use middleware.**

**Crud operation on entity product or employee or customer**

**Product id, name, price, images**

**Create the folder Product CRUD Operation folder**

**Create two sub folder**

**Backend**

**Create package.json file using command as npm init**

**And install**

**npm install express**

**5 Rest API Created**

1. **Get all product details**
2. **Get product info using pid**
3. **Store product information**
4. **Update product price using pid**
5. **Delete product info using pid**

**Frontend**

**Angular : using angular framework we will call these REST API.**

**In front end folder create angular project using command as**

**ng new angular-product-crud**

**routing 🡪 yes**

**styling 🡪 css**

**Once project created please run this command to run the angular project.**

**ng serve –o**

**we are going to call backend service ie product service which contains 5 REST API.**

**In Angular first we have to create the product component, product service and product model class.**

**ng g c product this command is use to create component**

**ng g s product this command is use to create service**

**ng g class product this command is use to create the model**

**formGroup and formControlName are pre-defined attribute part of ReactiveFormsModule**

**We have to import this module in app.module.ts file**

**DOM Event**

**<input type=”button” value=”click”**

**onClick=”fun1()”/>**

**fun1 function is a part of javascript file**

**Angular Event**

**<input type=”button” value=”click”**

**(click)=”fun2()”/>**

**Fun2 function is a part of component ie typescript file**

**Event binding is a type of one way data binding ie template ----🡪 Component**

**()**

**Property binding is a type of one way data binding ie Component ---🡪 Template**

**[]**

**HttpClient api is a part of HttpClientModule so we have to import HttpClientModule in app.module.ts file.**

**We are running two server application**

**One is backend server using express js with port number 9090.**

**Another one is front server using angular framework with port number 4200**

**CORS : Cross Origin Resource Sharing**

**In Backend technologies we have to enable cors policy.**

**Node js provided external module ie cors.**

**We have to install this module and use as middleware to enable the cors policy.**

**11-01-2021**

**To store the information permanently we are using file system.**

**Node JS fs module to store and retrieve the data.**

**Limitation of file base system**

1. **File system is not consistence. Format of the file**

**Id/name/salary**

**Id Name Salary**

**Id\_Name\_Salary**

1. **Data redundancy means duplicate records we can store.**
2. **Security. File security read or write mode.**

**Data : data is known as raw fact.**

**Information : processed data or meaningful data.**

**Database We are storing the data in table format. Schema. It is a software which help to store the data in table format.**

**DBMS Database management system**

**RDBMS Relational database management system.**

**Codd’s rules 12 rules.**

**Database : My SQL or oracle or POSTGres or db2 or any other database.**

**Excel sheet or open excel or excel software.**

**DBMS**

**Srno Name Age**

**100 Ravi 21**

**101 Ramesh 22**

**100 Ajay 23**

**StudentTrainerDetails**

**TId TName Tech Sid SName Age**

**1 Raj Java 100 Reeta 21**

**1 Raj Java 101 Meeta 22**

**1 Raj Java 102 Leeta 23**

**1 Raj Java 103 Meeta 24**

**Trainer**

**PK**

**TI TName Tech**

**1 Raj Java**

**Student**

**PK FK**

**Sid SName Age TSId**

**100 Reeta 21 1**

**101 Meeta 22 1**

**102 Leeta 23 1**

**No SQL Database**

**Not only SQL**

**Mongo DB database : Mongo DB is a type of No SQL open source document base schema less database.**

**Customer in RDBMS**

**Cid Name Age city PhNumber**

**100 Ravi 21 null null**

**101 Ramesh 22 null null**

**102 Ajay 23 Bangalore null**

**103 Mahesh 24 null 1234**