Question paper - April - 2023

Node.js

Q.1 Answer the Following

a) What is the Command to intialize Node Package Manager (NPM) ? Write it's Syntax.

→ Initialize Node Package Manager (NPM) in a director

Syntax: npm init

b) What is REPL ?

→ REPL Stands for Read Eval Print Loop and it represent a runtime Computing environment.

Read :- It is used to read User's Input, parses the input into javascript data Structure, and Stores in Memory

Eval :- It is used to takes and evaluates the data Structure.

Print :- It is used to print the result.

Loop :- Loops the above Command Until the User presses Ctrl - C twice.

c] List any four Core modules of Node.js

→

i] http :- ~~Create~~ Classes, methods and events to Create Node.js http Server.

ii] Buffer :- It is used to handle Binary Data.

iii] Path :- This Module includes methods to deal With file paths.

iv] Url :- Methos for URL resolution and parsing.

d] Which directive is used to import Node.js modules?

→

In Node.js you can use require directive to Import modules.

Syntax: Const module = require ('module-name');

e] List any 4 methods Included Under path module of Node.js.

→

i] Path.join() - Joins all given path.
ii] Path.resolve() - Resolves the Sequence of path.
iii] Path.basename() - Returns the last portion of a path.
iv] Path.dirname() - Returns the directory name of a path.

f) For which tasks a file System module is used for ?

→

i) Reading and Writing files.
ii) Creating and deleting files and directries.
iii) Modifying file permission.
iv) Manipulating file paths.

g) Write a Command to add dependency "express" Usign npm.

→ npm install express. ↵

h) Write a Command to Install MYSQL package by Usign npm.

→

npm install mysql

i) To Which Situation node.js is not recomended to Use?

→

i) Heavy CPU-bound tasks :- Node.js is single-threaded and best suited for I/O bound tasks.

ii) Highly Synchronous application - While Node.js Supports Sychronous operations, its asynchronous nature is One of its Key Strengths.

j) Write Steps to handle http request while Creating Web Server Usign node.js.

→

for 1

Step - i) Import http Module.

Step. 2) Create Server.

Step. 3) Handle Request.

Step. 4 Set port and Listen

Step. 5. Run your Server.

Q. 2. Answer the Following

a) What are the advantage of Node.js?

→

i) Real time Web apps - Node js is much more Convenient for that apps or gaming apps because of faster Synchronization. Also, event loop avoid HTTP Overload for Node js development.

ii) Hosting : Paas and HeroKU are the hosting platform for Node js application deployment which is easy to Oce without facing any issue.

iii) Easy to learn and Code : Node js is easy to learn and Code because it Uses Javascript.

iv) Scalability : - Developers prefer to Use Node js because it is easily Scales the application in both horizontal and Vertical direction.

b) Write a program to update table records Usign Node and mysql database.

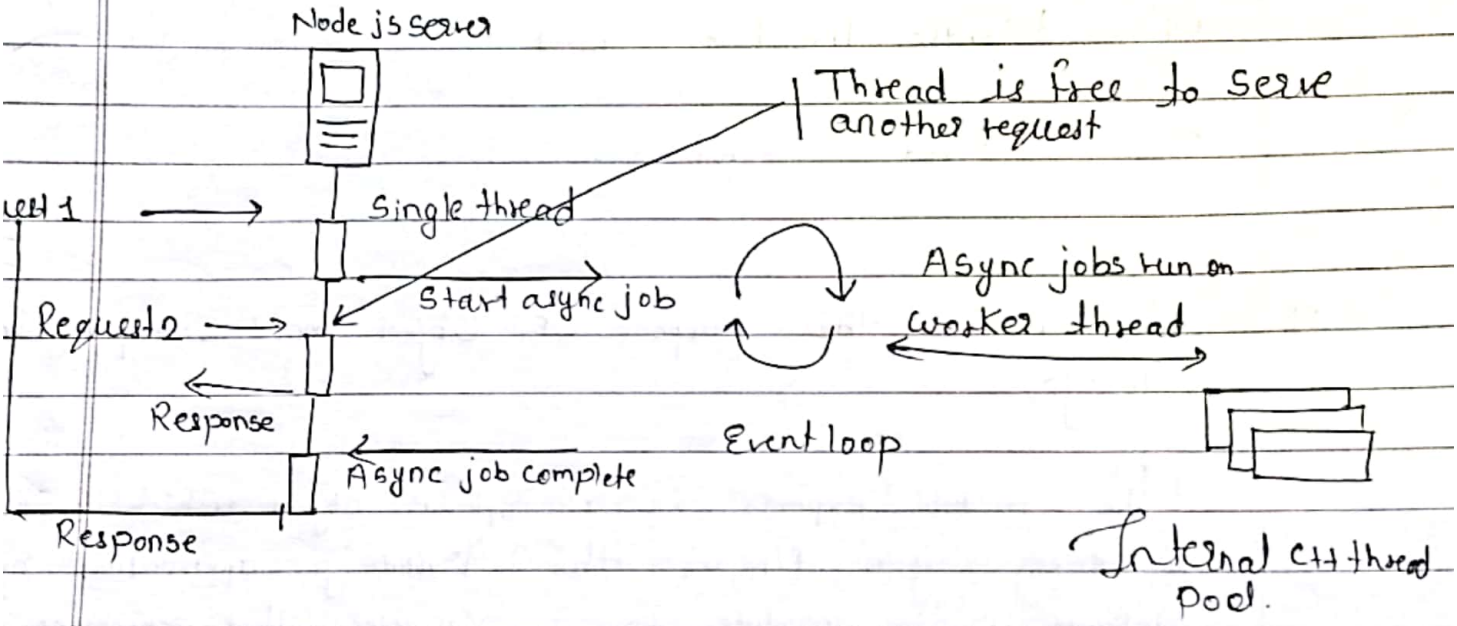
→

```
Const prompt = require ('Promt-Sync') ();
Var mysql = require ('mysql');
Var Con = mysql . CreateConnection ({
    host : "Local host",
    User : "root",
    Password : "iccs#123",
    database : "College",
    port : '3308'
});
Con . Connect (function (err) {
    if (err) throw err;
    Const Old_city = prompt ("Enter Current City name to
    Changed :: ");
    Const new_city = prompt ("Enter New City Name :: ");
    Var Sql = "Update Student SET Stud_City = '" +
    new_city + "' Where Stud_City '" + old_city
    + "' ";
    Con . query (Sql, function (err, result) {
        if (err) throw err;
        Console . log (result . affected Rows + " record (s)
        Updated ");
    });
});
```

Q) Explain node js process model with the help of diagram

→

14 Node.js processes User request differently as compared to a traditional Web Server. Model. Node js runs in a Single process and the application Code runs in a Single thread and thereby needs less resource than other platforms.



Process Model Using Node.js

Q) How does node js handles a file request ?

⇒

Node.js handles file request by using its built-in fs module which provides functions for Interacting with the file System. ~~When a file~~

i) Receive the request :- The Node.js application receives a request from a Client, either through an HTTP request.

Or any other means depending on the application's tecture.

iii) Routes the request :-

iiii) Read the file

iv) Handle the file Content

v) Send response :.

e) What is the purpose of Object module.exports in Node.js

→

The module.exports is a special object which is include in every .js file in the Node.js application by default. The module is a variable that represent the current module and exports is an object that will be exposed as a module.

Q.3. Answer the following.

c

a) Explain fs.readfile() method for all possible value of options.

→

Node.js uses the fs.readfile() method to asynchronously read the entire contents of a file. The method accept

a) An optional options parameter, which allows for Customizatio of the file reading process. These option Include encodi to Specify Character encoding, flag to Control file Ope ing behavior, mode for file mode When Creating a new file, fsync to force write Synchronization, encoding Validation to Validate encoding, recursive to read files recursively in directives, and ~~Sig~~ Signal to Cancel the Operation With an Abort Signal. These options provide flexibility and Control over file reading Operations in Node.js applications.

b) Write a program which uses addlistener() method of Event Emitter Class.

→

```
Const EventEmitter = require ('events');
Class myEmitter extends EventEmitter {}
Const myEmitter = new myEmitter ();
myEmitter.addlister ('greet', () => {
        Console.log ('PATIL');
});
myEmitter.addlistener ('greet', () => {
        Console.log ('Greeting from Event Emitter!')
});
myEmitter.emit ('greet');
```

c) Write a Short Note on NPM:

→

NPM Stand for Node Package Manager. It is Written

entirely in javascript and was developed by Isaac Z. eter in 2010. NPM is World's largest Software registry It is a package manager for Node.js packages and Modu present in an application So it is basically responsible f Managing all your Node.js packages. All npm packages are defined in files called package.json. The Conten OF package.json must written in JSON.

Distinct Components.

i) Website.
ii) Command line Interface.
iii) Registry

Advantage of NPM

i) It is Simpler than SOAP
ii) It is a default package Manager for Node.js.
iii) NPM is free to Use.
iv) Completely open Sources and Written in J.S.

d) Create a node.js file that Select all records from the Customers table.

→

```
Var mysql = revire ('mysql');
Var Con = mysql.createConnection ({
    host : "localhost",
    User : "root",
    password :- "Tiger"
```

```
    database : Customer
    port : '3308'
});
Con.connect (function (err) {
    if (err) throw err;
    Con.query ("Select * From Customer", function
    (err, result, fields) {
        if (err) throw err
        Console.log (result);
    });
});
```

Q.4. Answer the following

a) 1-What are different Feasures Node.js?

→

i) Node.js Asynchronous or Non-blocking Nature.
ii) Node.js is easy to launch and Can be Used for prototyping and agile development.
iii) Node.js provides fast and highly Scalable Services.
iv) Source Code Cleaner, Consitent and Steady.
v) Large environment for Open Source library.

b) Write a program to Use SQL Select Query to Show data From table Usign node.js and MySQL data base.

→

```
Const mysql = require ('mysql');
```

```
Const Con = mysql.CreateConnection ({
    host : "localhost"
    User : "root"
    Password : "tiger"
    database : College.
});
    Con.Connect ((err) => {
      if (err) throw err;
      Console.log ('Connected to the database.');
    });
      Con.query ('Select * From College', (err,
      results) => {
        if (err) throw err;
        ~~Console.query(log~~
        Console.log ("Data from the table);
    });
      Con.end()
```

d) Explain Step to Install Node.js on Window.

→

Step - 1: Go to the Site https://nodejs.org/en/download/ and download the necessary binary files.

Step - 2: Double Click on downloaded .msi file to Start the Installation. Click the run button in the first Screen to begin the installation.

Step 3: In the next Screen, Click the "Next" button to Continue with the Installation.

Step 4: In the next screen, accept the license agreement and Click on the Next button.

Step 5: In the next Screen, choose the Location Where Node js needs to be Installed and then Click on the Next button.

i) Choose file location.
ii) Click on Next button to proceed ahead with the Installation.

Step 6: Accept the default Components and Click on the Next button.

Step 7: In the next screen, Click the Install button to Start the installation.

Step 8: Click the finish button to complete the Installation

eg → Write a program to Write to a file in node.js.

```
Const fs = require ('fs');
Const textToWrite = "Hello, this text Will be Written to a file";
Const filepath = 'output.txt';
fs.Writefile ('filePath, textToWrite, (err) => {
    if (err) {
        Console.log error ("Error Writing to file:", err);
    } else {
        Console.log ("Text has been Written to the file
            Succefully.");
});
```

Q.5 Answer the following

a) Write down the Connection String of Node js and MySQL

→

Step 1: Create a project folder with valid and meaningful Nam Under any available drives.

Step 2: Install MySQL Driver: To access a mysql database with Node js, we need a MySQL driver.

The mysql module, downloaded from NPM (Node package Manager).

Command prompt and execute the Command.

C:\Users\UserName > npm install mysql

Step 3: Creating a Connection Now, we Should write a Code to Connect with the mysql database Server.

db_connect.js

c) Explain Anonymous function With an example.

→

Anonymous function Allows us to Create an anonymous function Which doesn't have any function name. This is main differen Ce between Anonymous function and function Declaration.

A function expression has to be Stored in a Variable and Can be accessed Usign Variable Name.

Example -

```
Const CalcRectArea = function (width, height)
{ return width * height }
```

```
Var result = CalcRectArea (7, 3)
Console.log ("Value of Result :" + result);
```