**Q.01**

**1. We will implement different file handler for different types of files such as text, image and xml files. Which design pattern will be preferred for this problem. Provide suitable code snippet for this.**

var Node = function (name)

{

**this**.children = [];

**this**.name = name;

}

Node.prototype =

{

add: function (child) {

**this**.children.push(child);

},

remove: function (child) {

var length = **this**.children.length;

**for** (var i = 0; i < length; i++)

{

**if** (**this**.children[i] === child)

{

**this**.children.splice(i, 1); **return**;

}

}

},

getChild: function (i)

{

**return this**.children[i];

},

hasChildren: function ()

{

**return this**.children.length > 0;

}

}

// recursively traverse a (sub)tree

function traverse(indent, node) { console.log(Array(indent++).join("--") + node.name);

**for** (var i = 0, len = node.children.length; i < len; i++) {

traverse(indent, node.getChild(i));

}

}

function run() {

var tree = **new** Node("root"); var left = **new** Node("left") var right = **new** Node("right");

var leftleft = **new** Node("leftleft"); var leftright = **new** Node("leftright"); var rightleft = **new** Node("rightleft"); var rightright = **new** Node("rightright");

tree.add(left); tree.add(right);

tree.remove(right); // note: remove tree.add(right);

left.add(leftleft); left.add(leftright);

right.add(rightleft); right.add(rightright);

traverse(1, tree);

}

**Q.02**

**One organization have one department as HR department and two child department as Humanity Department and Logistic Department under Hr department. We have to calculate tax as HRA is different for different departments but it should implement main Tax\_Calculator interface. Which design pattern will be preferred for this problem. Provide suitable code snippet for this.**

public interface Tax\_Calculator

{

public abstract void execute();

}

public class Humanity implements Tax\_Calculator

{

private int basic\_salary;

public Order(int basic\_salary)

{

this.basic\_salary = basic\_salary;

}

public void execute()

{

        HRA=(10/100)\*basic\_salary;

}

}

public class Logistic implements Tax\_Calculator

{

private int basic\_salary;

public Order(int basic\_salary)

{

this.basic\_salary = basic\_salary;

}

public void execute()

{

        HRA=(10/100)\*basic\_salary;

}

}

public class Department

{

public static void main(String[] args)

{

basic\_salary basic\_salary = new basic\_salary();

Humanity humanity = new Humanity(basic\_salary);

Logistic logistic = new Logistic(basic\_salary);

Humanity.execute();

humanity = new humanity(basic\_salary);

logistic = new Logistic(basic\_salary);

Logistic.execute();

}

}

**Q.03**

**Write a java script function to find average of all numbers and variance of those numbers? Write Async/await function for both of calculations.**

**const** arr = [2, 7, 10, 8, 9, 12, 5];

**const** findVariance = (arr = []) =>

{

**if**(!arr.length){ **return** 0;

};

**const** sum = arr.reduce((acc, val) => acc + val);

**const** { length: num } = arr; **const** median = sum /num; let variance = 0; arr.forEach(num =>

{

variance += ((num - median) \* (num - median));

});

variance /= num;

**return** variance;

};

console.log(findVariance(arr))

**Q.04**

**Create a class as Product in Javascript which will have productId, ProductName and Product price fields in that class. Create a few instance and store them in JSON format. Now access those data and print to console using Promise object.**

classproductId

{

constructor( productId, ProductName,Productprice)

{

**this**.productId=productId; **this**.ProductName=ProductName; **this**.Productprice=Productprice;

}

}

let

ob1=**new** productId(0025,F023,4520); let

ob2=**new**productId(0026,B021,2886);

**Q.05.**

**Create ReactJs/Angular web project on local system for below mentioned usability.**

**Design a login page with username and password as textfields. There will be a submit button and cancel button in that page. Now create a dummy data for valid username and password in the corresponding Javascript/Typescript file. Use onclick event in (ReactJs) to validate username and password and direct to another page(home.html)**

import { useState } from 'react';

export default function Form() {

// States for registration

const [name, setName] = useState('');

const [email, setEmail] = useState('');

const [password, setPassword] = useState('');

// States for checking the errors

const [submitted, setSubmitted] = useState(false);

const [error, setError] = useState(false);

// Handling the name change

const handleName = (e) => {

setName(e.target.value);

setSubmitted(false);

};

// Handling the email change

const handleEmail = (e) => {

setEmail(e.target.value);

setSubmitted(false);

};

// Handling the password change

const handlePassword = (e) => {

setPassword(e.target.value);

setSubmitted(false);

};

// Handling the form submission

const handleSubmit = (e) => {

e.preventDefault();

if (name === '' || email === '' || password === '') {

setError(true);

} else {

setSubmitted(true);

setError(false);

}

};

// Showing success message

const successMessage = () => {

return (

<div

className="success"

style={{

display: submitted ? '' : 'none',

}}>

<h1>User {name} successfully registered!!</h1>

</div>

);

};

// Showing error message if error is true

const errorMessage = () => {

return (

<div

className="error"

style={{

display: error ? '' : 'none',

}}>

<h1>Please enter all the fields</h1>

</div>

);

};

return (

<div className="form">

<div>

<h1>User Registration</h1>

</div>

{/\* Calling to the methods \*/}

<div className="messages">

{errorMessage()}

{successMessage()}

</div>

<form>

{/\* Labels and inputs for form data \*/}

<label className="label">UserName</label>

<input onChange={handleName} className="input"

value={name} type="text" />

<label className="label">Password</label>

<input onChange={handlePassword} className="input"

value={password} type="password" />

<button onClick={handleSubmit} className="btn" type="submit">

Submit

</button>

</form>

</div>

);

}