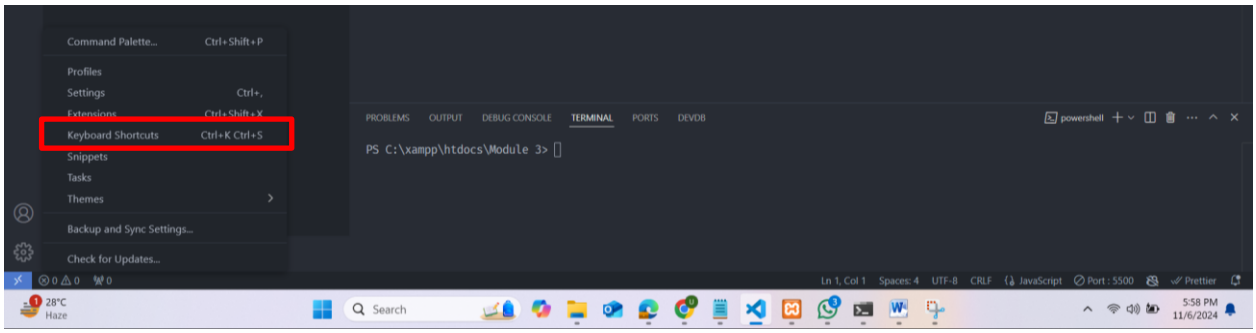
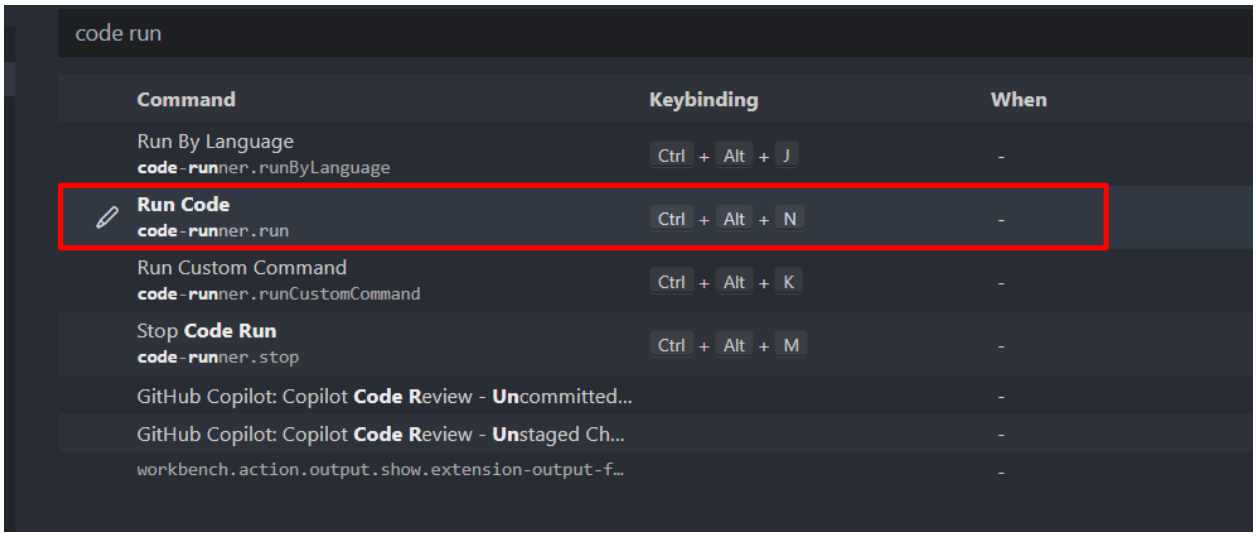
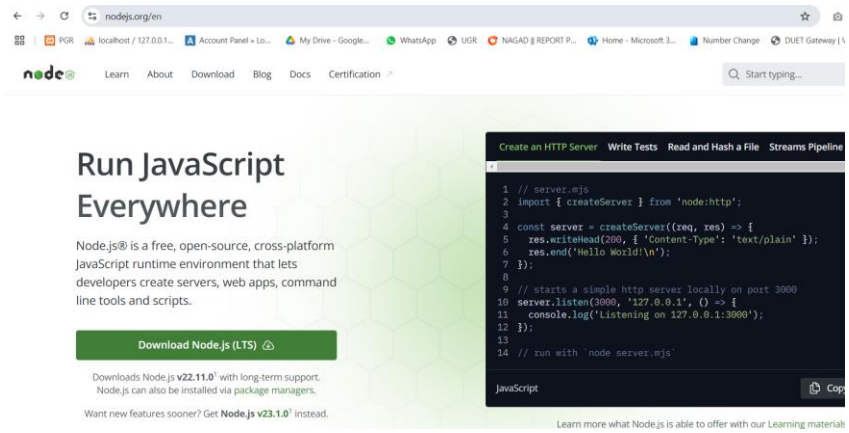
//Install Code Runner For Running Javascript





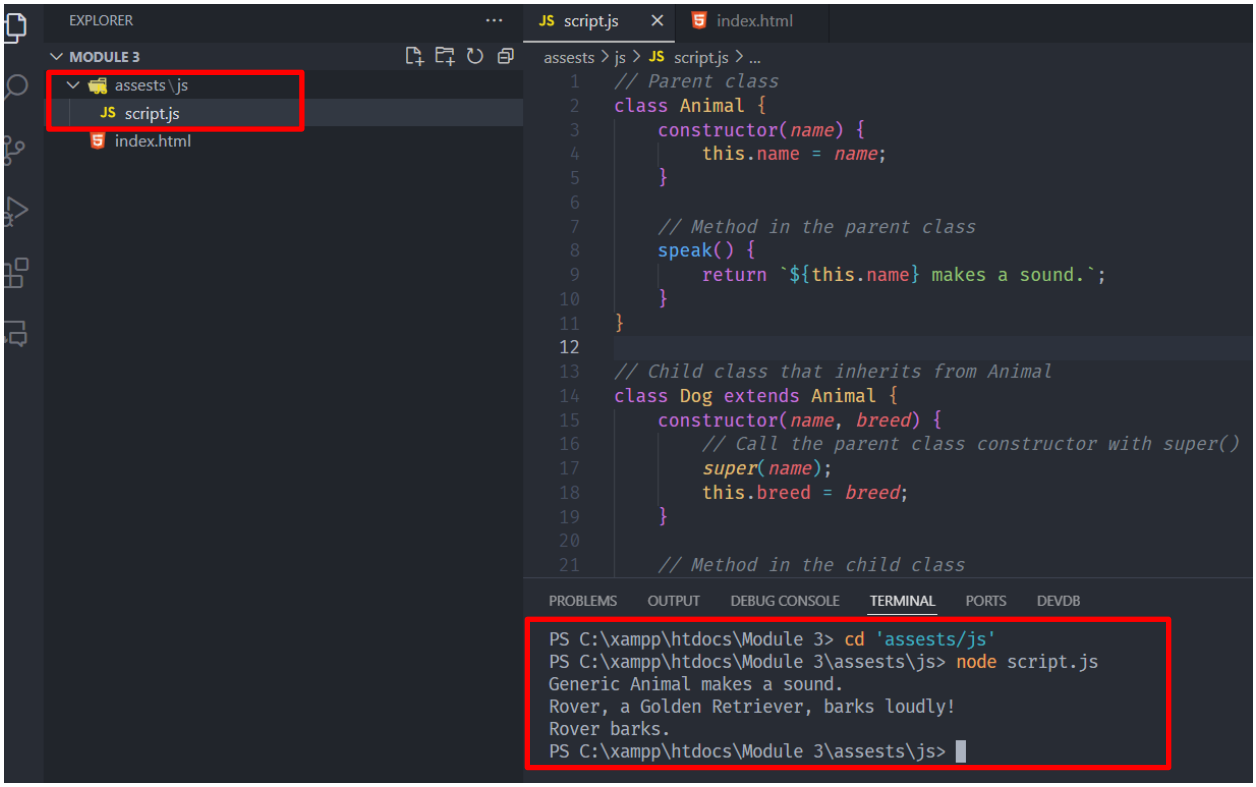
Code Run Using Node JS

১.আমরা node js install করব।

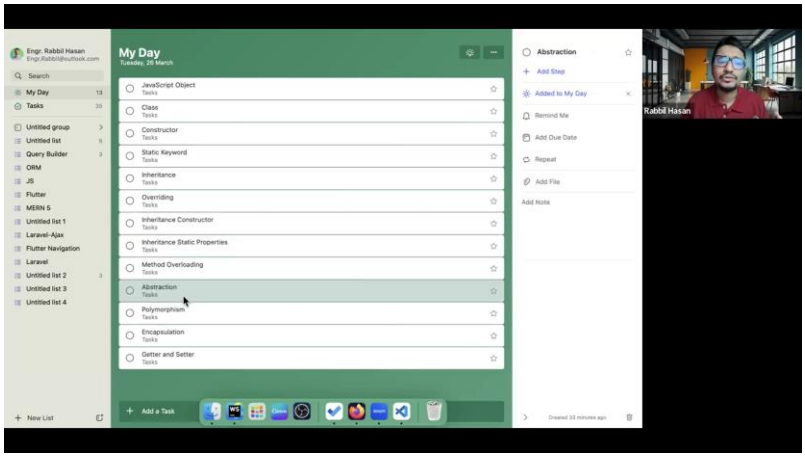


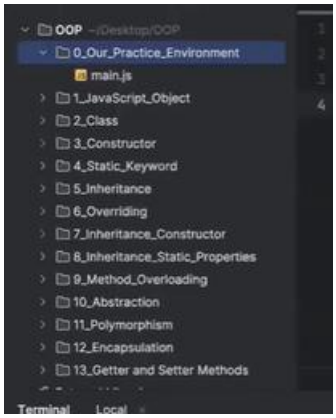
২.এরপর আমরা নির্দিষ্ট ফোল্ডারে যাব

৩.node filename.js দিলে রান হবে।



Topics





1.Object(সরাসরি Building তৈরি করব।)

(এখানে Object আর Class একই না।)

In JavaScript, an object is a collection of key-value pairs.(const রাখব সবসময়।)

এখানে একটা অবজেক্ট , এখানে ক্লাস create করে আলাদা আলাদা object create করা যাবে না।একটা অবজেক্ট থাকবে তার মধ্যে বিভিন্ন property থাকবে।

Dot(.) দিয়ে অবজেক্টের ভ্যালু access করা যাবে।

```
const Person = {
    firstName: 'Utsab',
    lastName: 'Roy',
    email: 'utsab@duet.ac.bd',
    fullName: function () {
        return this.firstName + ' ' + this.lastName;
        //return `${this.firstName} ${lastName}`;
    },
    greet() {
        return `Welcome ${this.firstName}`;
    }
}
console.log(Person.firstName);
console.log(Person.lastName);
console.log(Person.fullName());
console.log(Person.greet());
```

```
[Running] node "c:\xampp\htdocs\Module 3\assests\js\script.js"
Utsab
Roy
Utsab Roy
Welcome Utsab
```

আমরা চাইলে যে কোন pre-defined Object/আমাদের Object তৈরি হওয়ার পরেও নতুন মেথড তৈরি করতে পারি:

```
const Person = {
    firstName: 'Utsab',
    lastName: 'Roy',
    email: 'utsab@duet.ac.bd',
    fullName: function () {
        return this.firstName + ' ' + this.lastName;
        //return `${this.firstName} ${lastName}`;
    }
}
Person.allDataJoin = function () {
    return `${this.firstName} ${this.lastName} ${this.email}`;
}

console.log(Person.allDataJoin());
```

By Creating Instance Of Object(আগে Object তৈরি হবে না বরং .(ডট) দিয়ে Object এর property add করব।)

```
let Person = new Object();
Person.firstName = "utsab";
Person.lastName = "Roy";
Person.email = "utsab@duet.ac.bd";
Person.fullName = function () {
    return this.firstName + " " + this.lastName;
}

console.log(Person);
console.log(Person.fullName());
```

Object inside Object

```
const university = {
    name: "DUET",
    location: "Gazipur",

    // Nested department object
    department: {
        name: "Computer Science and Engineering",
        head: "Dr. A. Rahman",

        // Further nested object for courses
        courses: {
            course1: { title: "Data Structures", code: "CSE201" },
            course2: { title: "Algorithms", code: "CSE202" },
            getCourseList() {
```

```
                return `${this.course1.title} (${this.course1.code}),
                        ${this.course2.title} (${this.course2.code})`;
            }
        }
    },

    getDepartmentInfo() {
        return `${this.department.name} - Head: ${this.department.head}`;
    }
};

console.log(university.name);                          // Outputs: "DUET"
console.log(university.department.name);               // Outputs: "Computer Science and
Engineering"
console.log(university.department.courses.course1);  // Outputs: { title: "Data
Structures", code: "CSE201" }
console.log(university.department.courses.getCourseList());  // Outputs: "Data Structures
(CSE201), Algorithms (CSE202)"
console.log(university.getDepartmentInfo());          // Outputs: "Computer Science and
Engineering - Head: Dr. A. Rahman"
```

2.CLASS (আগে নকশা তৈরি করব এরপর Building তৈরি করব।)

You can define a class using the `class` keyword. Inside the class, you typically have (constructor এর মধ্যে this দিয়ে যা declare করা হবে তাই class variable)

- A **constructor**: A special method used to initialize properties when creating an instance.
- Other **methods**: Functions that define behaviors of the objects created from the class.

```
class Person {
    constructor(name,email) {
        this.name = name;
        this.email = email;
    }
    fullAddress() {
        return `${this.name} ${this.email}`;
     }
}

let obj1 = new Person('utsab','utsab@duet.ac.bd');
console.log(obj1.fullAddress());
```

```
let obj2 = new Person('babu','babu@duet.ac.bd');
console.log(obj2.fullAddress());
```

```
[Running] node "c:\xampp\htdocs\Module 3\assests\js\script.js"
utsab utsab@duet.ac.bd
babu babu@duet.ac.bd
```

Inheritance

```
// Parent class
class Animal {
    constructor(name) {
        this.name = name;
    }

    // Method in the parent class
    speak() {
        return `${this.name} makes a sound.`;
    }
}

// Child class that inherits from Animal
class Dog extends Animal {
    constructor(name, breed) {
        // Call the parent class constructor with super()
        super(name);
        this.breed = breed;
    }

    // Method in the child class
    bark() {
        return `${this.name} barks.`;
    }

    // Overriding the parent class's speak method
    speak() {
        return `${this.name}, a ${this.breed}, barks loudly!`;
    }
}

// Creating instances
const genericAnimal = new Animal("Generic Animal");
console.log(genericAnimal.speak());         // Outputs: "Generic Animal makes a sound."

const dog = new Dog("Rover", "Golden Retriever");
console.log(dog.speak());                   // Outputs: "Rover, a Golden Retriever, barks loudly!"
console.log(dog.bark());                    // Outputs: "Rover barks."
```

Another Example:

```
class Person {
    constructor(name,age) {
        this.name = name;
        this.age = age;
    }
    //no need to mention funtion keywork
    getName() {
        return this.name;
    }
    getAge() {
        return this.age;
    }
}
class Teacher extends Person {
    constructor(name,age,work) {
        super(name, age);
        this.work = work;
    }
    getWork() {
        return this.work;
    }
}

let objPerson = new Person("utsab", 10);
console.log(objPerson.getName());
console.log(objPerson.getAge());

let objTeacher = new Teacher("babu", 20, "DUET");
console.log(objTeacher.getName());
console.log(objTeacher.getAge());
console.log(objTeacher.getWork());
```

```
PS C:\xampp\htdocs\Module 3\assests\js> node script.js
utsab
10
babu
20
DUET
PS C:\xampp\htdocs\Module 3\assests\js>
```