BSc (Hons) in Information Technology

Specializing in Software Engineering

Year 3 - 2021

SE3040 – Application Frameworks

Lab 01

Lab session 2 – JavaScript

Objective: Teach a set of basic concepts in the JavaScript programming language.
Prerequisites: Students should have basic JavaScript knowledge.

1. Promises/Asynchronous and callbacks
    - Create a function that returns a value after 1 second (return inside a *setTimeout*).
    - Pass a callback (function) to the function created in the previous step and execute that function inside the timeout by passing the value.
    - Now return a promise instead of accepting the callback.
    - Let’s try to chain these promises.

2. Classes in JavaScript
    - Create a class named Vehicle using a function.
    - Add a property named type to the class (*this.type*). Assign a value to that variable using a constructor argument.
    - Add a function to its prototype named drive (*Vehicle.prototype.print...*). Print ‘Vehicle is driving’ in the function body.
    - Add VehicleCount (Vehicle.VehicleCount) as a static variable.
    - Increase the number of VehicleCount (*Vehicle.VehicleCount++*) by one inside the constructor.
    - Create an object from Vehicle class (*new Vehicle*) and check static variable value, type property value and function work.
    - Create a class named Car and extend the class Vehicle (Car.prototype = Object.create(Vehicle.prototype); Car.prototype.constructor = Car).
    - Add a new method called balanceWheels to Car and print ‘Wheels are balanced’ in the function body.

   - Call balanceWheels and drive methods using a car object and verify the functionality.
   - Check the static variable value and type variable value. Notice that they are not correct.
   - The reason for the above behavior is that we didn’t call the parent constructor from the child class. Do this by using the *call* method (in Car constructor function Vehicle.call(this, type);)
   - Re-validate the values.

3. Use arrow functions.
4. Try exercise 1 with *async/await*.
5. Try exercise 2 *class, extends, get, set,* and *super* keywords.
6. Try out the following.
    - Create an account in one of the Git repositories (GitHub, GitLab).
    - Create a directory and make it Git managed.
    - Add a text file to the directory with some text.
    - Stage the file and commit the changes.
    - Create a remote repository corresponding to the directory.
    - Push the changes to the remote repository.
    - Try opening the file from the Git remote repository and do some changes.
    - Commit the changes to the remote repository.
    - Pull the changes to the local directory.