MAHARISHI UNIVERSITY OF MANAGEMENT

Higher Consciousness
and Professional Excellence

Intro to programing with JavaScript.

CS301

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CS301 – Intro to Programing with JavaScript.

Course Overview

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1	Algorithms & Computer Programs	Data types and Operators	Decision making (Selection)	Iteration (loops)	Functions	Review/ Lab
Week 2	Midterm	Function Expressions	Code quality	Arrays	Array Methods	Review/ Lab
Week 3	Objects and Strings	Recursion	HTML Basics and DOM	CSS Basics	Events & Unobtrusive event handling	Review/ Lab
Week 4	Final	Project	Project	Project		

COURSE GOAL

This course provides a systematic introduction to computer programming using JavaScript for the individuals with no prior programming experience.

Course Objectives

1. Understanding the concept of algorithms and its parallel to computer programming.
2. Gain knowledge and skills for computer programming using JavaScript.
    a. Data types and operations
    b. Decision making (selection statements)
    c. Repetition (loops)
    d. Functions
    e. Arrays, Strings & Objects
3. Writing quality code
    a. ESLint for writing clean code.
    b. Unit testing
4. Learn basics of HTML and CSS.
5. Learn basics of DOM and DOM manipulation.

Course Text

The Modern JavaScript Tutorial, Ilya Kantor, 2021.
https://javascript.info

“The Modern JavaScript Tutorial was created in 2007 by Ilya Kantor, and regularly updated since then. New chapters were added, outdated ones - removed, to stay fresh. The PDF version is about 1300 pages, starting from the beginning, and then to advanced topics.

“It's a book, not a video, as for many people reading is faster. Also, books are easier to update, keep modern :). “ https://javascript.info/about

Evaluation Criteria

Midterm	30%
Final	60%
Labs and Assignments	10%

Attendance & Professional Etiquette - **Required**

Grade Ranges

97%	A+
92%	A
88%	A-
84%	B+
79%	B
75%	B-
71%	C+
66%	C
62%	C-
0.00%	NC

Lesson Plan

Lesson 1 (Algorithms and computer programs)

- Introduction to algorithms and programs, variable declaration, and assignments in JavaScript.

Lesson 2 (Data Types & Operations)

- Data types and operations (arithmetic, relational, logical), type conversion, and use of Math object.

Lesson 3 (Selection)

- Selection using if, else, else..if, switch, nested if, block scope

Lesson 4 (Repetition)

- Repetition using while, do..while, for, nested loops

Lesson 5 (Functions)

- Function declaration/statement, function expression, function call & call stack, anonymous function, arrow function, scope, and scope chain.

Lesson 6 (Code quality)

- Writing quality code using ESLint for linting
- Unit testing code

Lesson 7 (Arrays)

- Array, array methods

Lesson 8 (Strings & Objects)

- String literals, template strings, string methods, escape sequences.
- Intro to JavaScript objects

Lesson 9 (Recursion)

- Recursive approach to problem solving.

Lesson 10 (Basics of HTML & DOM)

- Basic HTML tags for displaying web pages and DOM.

Lesson 11 (CSS Basics)

- Basic CSS to change document style.
- Change styles dynamically.

Lesson 12 (Events and Unobtrusive JS)

- Responding to user events

Main Points

Lesson1 (Algorithms and Computer Programs):

- An algorithm is a step by step sequence of operations to accomplish some task. A computer program is an algorithm written using a language that the machine understands. *Science of Consciousness,* The source of thought is pure silence, and thought is the source of all languages. *We experience the field of pure silence during our practice of the Transcendental Meditation Program*.

- A computer program, no matter how complex, has three key control structures i.e. sequence, selection & repetition. *Science of Consciousness*, All complex structures are built upon more fundamental structures. *Pure consciousness, the unified field, is the most fundamental structure of all existence.*

- Understanding a problem is key to producing working algorithms/computer programs. *Science of Consciousness*, *How well a human can understand a situation depends on his/her level of perception. We perceive better when our thinking is clear, and our thinking is clear when we are free of stress.*

Lesson 2 (Data Types & Operations):

- Data type determines the operations that can be carried out on data. Same operator can do different operation depending on the data type. *Science of consciousness, Experiencing the pure field of consciousness is one operation that every human nervous system is capable of. TM operates in same way for every human nervous system, when practiced correctly.*

Lesson 3 (Selection)

- In programming, we encounter situations where we must make decisions based on some conditions, that determines the flow of code execution. We make use of slection statements like if..else..swich along with relational and/or logical operators to make such decisions. Our program can produce expected result only when our decision logic is correct. *Science of consciousness, As in programing, taking right decision at right point of time is also crucial to success in life. Our, actions and decisions are spontaneously in right direction, when we act being established at the field of pure intelligence.*

Lesson 4 (Repetation)

- Looping/ repetition is one of the key control structure that adds a lot of power to computer programming. In most cases a loop should be finite. Programmer should be careful to avoid infinite loops. *Science of consciousness, When a programmer is thinking clearly, these kinds of mistakes will be avoided automatically. With a regular practice of TM, our body and mind becomes stress free and we will be able to think more clearly.*

Lesson 5 (Functions)

- Functions are subprograms and a computer program usually is composed of number of smaller functions. Functions makes programming modular, reusable and easier to understand. When a program starts to get complex, we must break it into smaller functions in order to handle it better. To be a better programmer we should not only be able to solve a problem at hand, but also need to be able to break it into smaller, meaningful, reusable functions. *Science of consciousness, With the regular experience of pure consciousness through practice of TM, one develop ability to fine focus on smaller details without missing the big picture*.

- When we refer a variable in a program, JS engine will look for that variable in the current scope. If it doesn't find it, it will consult its outer scopes until it reach the global scope. *Science of consciousness, During the process of transcending we naturally proceed from local awareness to more subtle levels of awareness to the unbounded awareness*.

Lesson 6 (Code quality)

- One should carefully develop code to avoid bugs, but in the real world some mistakes are inevitable even for the best developers. Proper use of debugging tools greatly reduces the time required to remove errors. *Science of Consciousness: Ideally one can avoid stress and strain in daily life, but in the real world some daily stress is inevitable. The TM Technique is an effective and efficient manner to remove stress*.

- Coding conventions are standardized best practices that ensure that code is easy to read and maintain. Science of Consciousness: *The TM Technique is taught in a standard manner to ensure that the knowledge is understood and maintained over time and across individuals*.

- In Behavior Driven Development we write tests that define what a function is supposed to do before we implement the function. *Science of Consciousness: This provides a goal to guide development and a means to test success. This is like the SCI principle of Capture the Fort or Seek the Highest First. Once you have defined the required outcome the rest of the implementation flows from that*.

Lesson 7 (Arrays):

- Using an array we can hold number of elements under a single identifier, that eliminates the need of unique identifier for each values. *Science of consciousness, during transcendence we forget our individual identity and be one with the cosmic identity*.

- Array in JavaScript provide helper methods that makes array programming a whole lot easier. Make use of these helper methods to accomplish more by doing less. *Science of consciousness, when we are in harmony with the natural laws, our actions require less effort and hence we can achieve more by doing less*.

Lesson 8 (Strings & Objects)

- Object have data mebers for maintaining state and methods of an object represents it's behavior. Eventhough we usually used Strings in JavaScript with literal syntax, but Strings are object in JavaScript with it's contents represeting it's state and a string object provides a number of useful methods like trim(), replace() etc. which represents its behavior.

Lesson 9 (HTML & DOM)

- HTML is a very simple language, once you know the content and organization of your document, you simply use the right set of tags to demarcate content you want to display in browsers. *Science of Consciousness*, *Transcendental Meditation is a very simple meditation technique, you simply take the correct angle and let go*.

- It's important to make sure html documents are well formed. *Science of Consciousness, Checking the syntactic structure of a document catches unintended errors. Regular TM checking gives the experience of effortless thought and prevents unintended effort during TM*.

- JavaScript programs runs on events, that makes JavaScript an event driven programing language. We also perform our actions based on events that is either external or internal. *When we establish our self at the field of pure consciousness, we perform conscious actions rather than the compulsive ones.*

Lesson 10 CSS

- We discussed the CSS Properties for color, font, text, background, borders which are the basic properties used on almost every page. *There are a lot of details here, but few concepts. As long as you know the general concepts the details will follow with practice. Highest first—capture the fort to control the entire territory.*

- The Cascading in CSS indicates that there are multiple levels of style sheets. More specific styles overwrite more general styles. We can be more specific by using Class selectors (can apply to multiple elements) and even more so with id selectors (individual elements) and context selectors.
  Life is found in layers.

Lesson 11 Event handling

- Unobtrusive JavaScript promotes separation of web page content into 3 different concerns: content (HTML), presentation (CSS), and behavior(JS) (ala MVC, knower, known, process of knowing)

- JavaScript code runs when the page loads it. Event handlers cannot be assigned until the target elements are loaded. In intelligent systems certain events must happen in an order. Creative intelligence proceeds in an orderly sequential manner.