

Final Exam Concept Inventory

Computer Science 110: Introduction to Programming

- Types
 - Primitives (`number`, `string`, `boolean`)
 - Lists (`cons`, `first`, `rest`)
 - Arrays
 - Classes
 - Functions (Functional Interfaces)
 - Inference
- Expressions
 - `boolean` operators: `&&`, `||`, `!`
 - `number` operators
 - arithmetic: `+`, `-`, `*`, `/`, `%`
 - relational: `===`, `!==`, `>`, `>=`, `<`, `<=`
 - `string` concatenation: `+`
 - Function Calls
 - Method Calls
- Variables
 - Assignment: `=`
 - Reassignment: `++`, `--`, `+=`, `-=`, `*=`, `/=`
 - Values (primitive types)
 - References (objects and arrays)
 - Scope: block vs. global
- Functions
 - Defining
 - Parameters vs. Arguments
 - `return` statements
 - `void` functions
 - Higher-order Functions
 - Generic Functions
 - Function Literals
- Recursion
 - Base Case
 - List Parameter Recursion
 - Number Parameter Recursion
 - Recursive List Generation
- Conditional Statements
 - `if` statements
 - `else` statements
 - Nested Conditional Logic
 - `else-if` syntax
 - Unreachable Code
- Loop Statements
 - `while` loops
 - `for` loops
 - Infinite loops and their prevention
 - `return` statements inside loops
- Arrays
 - 0-based indexing
 - Accessing and assigning to indices
 - `length` property
 - Looping through an array
 - `filter`, `map`, & `reduce` methods
 - 2 dimensional arrays
- Algorithmic Concepts
 - Swapping two variables
 - Linear Search
 - Binary Search
 - Sorting with a `Comparator`
 - `filter`
 - `map`
 - `reduce`
- Object-oriented Fundamentals
 - Class Definitions
 - Properties
 - Constructors and the `new` Keyword
 - Method Definitions and Calling
 - `this` keyword