

Introduction to EIP 01

Abraham Gebrekidan

EIP 01

July 15, 2024

Course Description

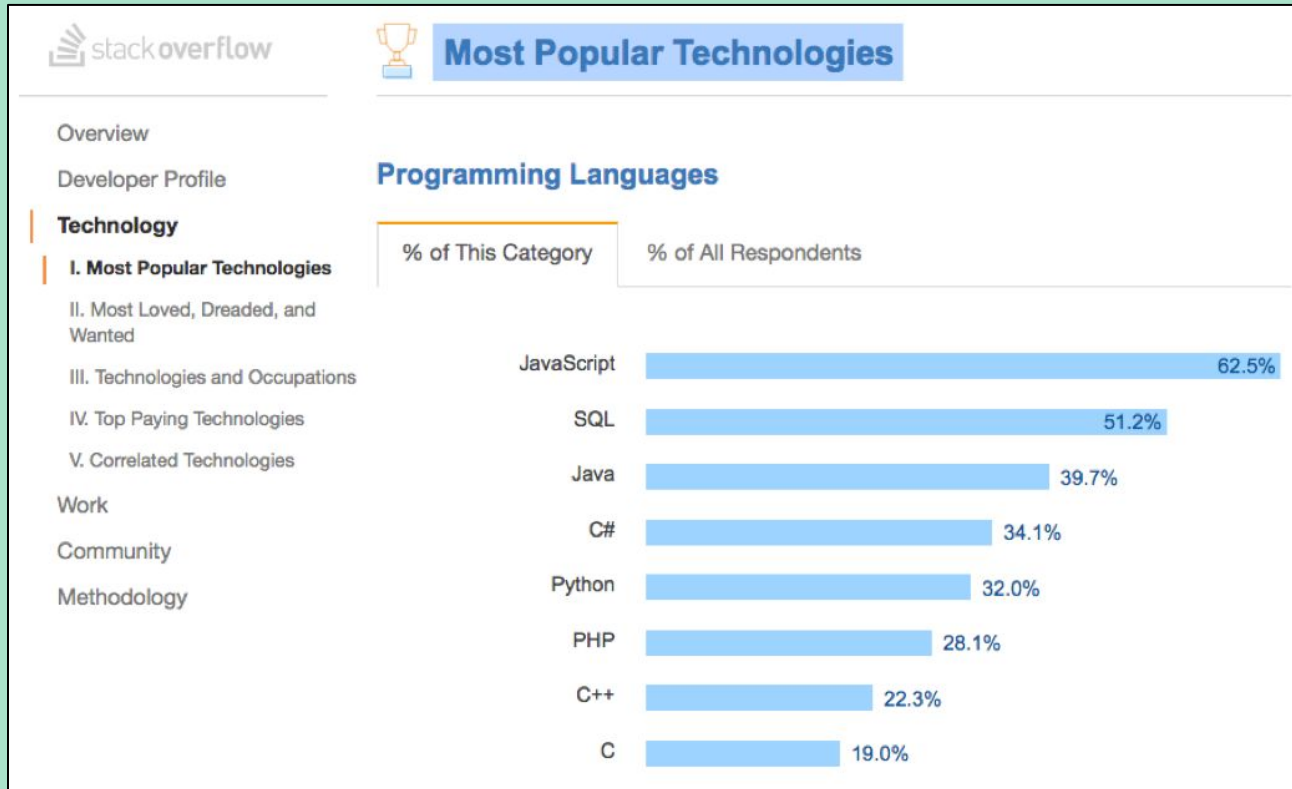
EIP 01: Programming Methodology in JavaScript

Introduction to the engineering of computer applications emphasizing modern software engineering principles: object-oriented design, decomposition, encapsulation, abstraction, and testing. Emphasis is on good programming style. No prior programming experience required.

Why JavaScript?

- Today, the “language of the web” is JavaScript, which has become the most widely used language in industry.
- Along with JavaScript expert Douglas Crockford, we believe that, as long as you avoid some of its most commonly abused features, JavaScript is “a beautiful, elegant, highly expressive language” that is ideal for a first course in programming.
 - It is considerably easier to learn than other languages.
 - There are far fewer confusing details to memorize.
 - It offers much cleaner implementations of modern features.
 - It is universally supported on the web.

JavaScript is the Most Popular Language



EIP 01 Course Staff



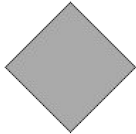
Abraham Gebrekidan

`abrahamg@esetfirst.com`

Office Hours:

Wednesdays 3:30 - 5:00 PM

Syllabus—Week 1

<p>July 22</p> <p>Course overview Meet Karel the Robot</p> 	<p>24</p> <p>Simple Karel programs Control structures in Karel</p>	<p>26</p> <p>Problem-solving in Karel Program decomposition The idea of an algorithm</p>
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Syllabus—Week 2

29	31	August 2
Programming by example Variables and values Arithmetic expressions Functions	Strings and concatenation Simple graphics	Control statements Boolean data

Syllabus—Week 3

5

Arguments and parameters
Libraries
Random numbers

Due: HW #1 (Karel)

7

The mechanics of functions
Decomposition

9

First-class functions
Event-driven programming
Responding to mouse events

Syllabus—Week 4

12

Simple animation
Timers

Due: HW #2 (Simple JS)

14

The **GArc** class
The **GPolygon** class
The **GCompound** class

16

Binary representation
Representing characters

Syllabus—Week 5

19	21	23
JavaScript's String class Common string patterns	Problem solving with strings String applications	Cryptography The GLabel class
		Due: HW #3 (Breakout)

Syllabus—Week 6

<p>26</p> <p>Debugging strategies</p> <p>Due: Graphics contest</p>	<p>28</p> <p>Simple arrays and files</p>	<p>30</p> <p>Using arrays for tabulation</p>
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Syllabus—Week 7

2

Multidimensional arrays
Pixel arrays
The **GImage** class

Due: HW #4 (HangKarel)

4

Objects as aggregates

6

JavaScript and OOP
Libraries and interfaces
Defining classes and methods

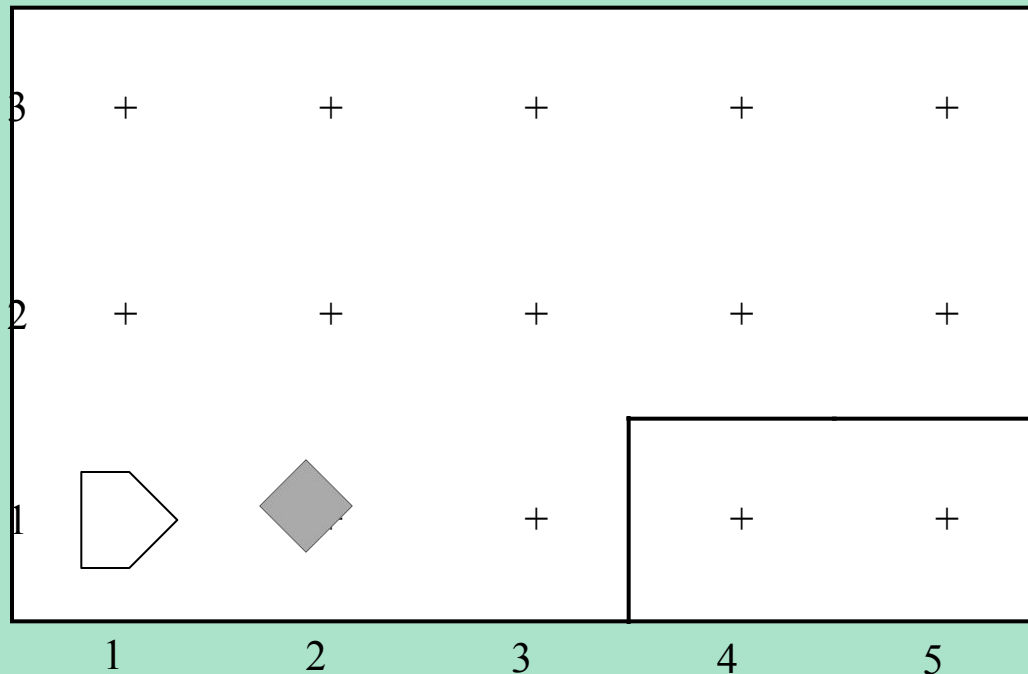
Syllabus—Week 8

16	18	20
Objects as maps	Large-scale data structures Data-driven programs	JavaScript and the web Using web interactors
		Due: HW #5 (NameSurpher)

Meet Karel the Robot

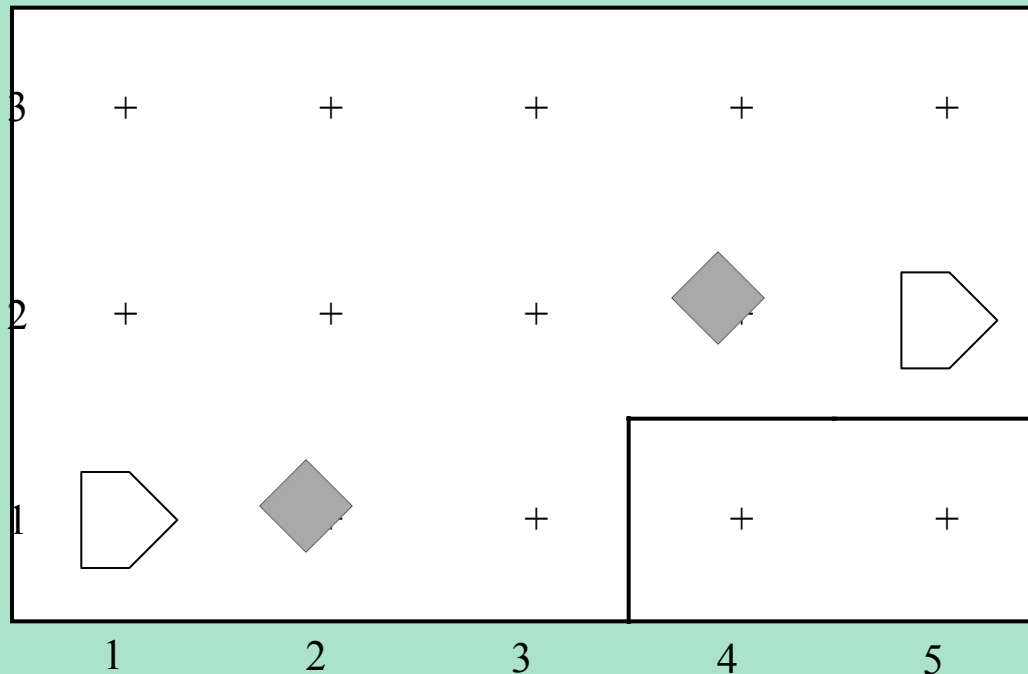
- Initially, Karel understands only four primitive commands:

move()	Move forward one square
turnLeft()	Turn 90 degrees to the left
pickBeeper()	Pick up a beeper from the current square
putBeeper()	Put down a beeper on the current square



Your First Challenge

- How would you program Karel to pick up the beeper and transport it to the top of the ledge? Karel should drop the beeper at the corner of 2nd Street and 4th Avenue and then continue one more corner to the east, ending up on 5th Avenue.



The End