



Programming Hero

What really is JavaScript?



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JavaScript is a highly abstracted
programming language

High Abstraction

User does not know what is happening inside the ATM

1. Hide details

He is simply getting the money by pushing buttons

2. Show functionality



High Abstraction

An abstraction is a way of

- ❑ hiding the implementation details
- ❑ showing only the functionality to the users

High Abstraction in JavaScript

- ❑ We don't have to handle **resource management** and **memory allocation**
- ❑ We don't have to handle **garbage collection**
- ❑ Reduces details so that developers can **focus on logic better**
- ❑ Improves **understandability** as well as **maintainability** of the code

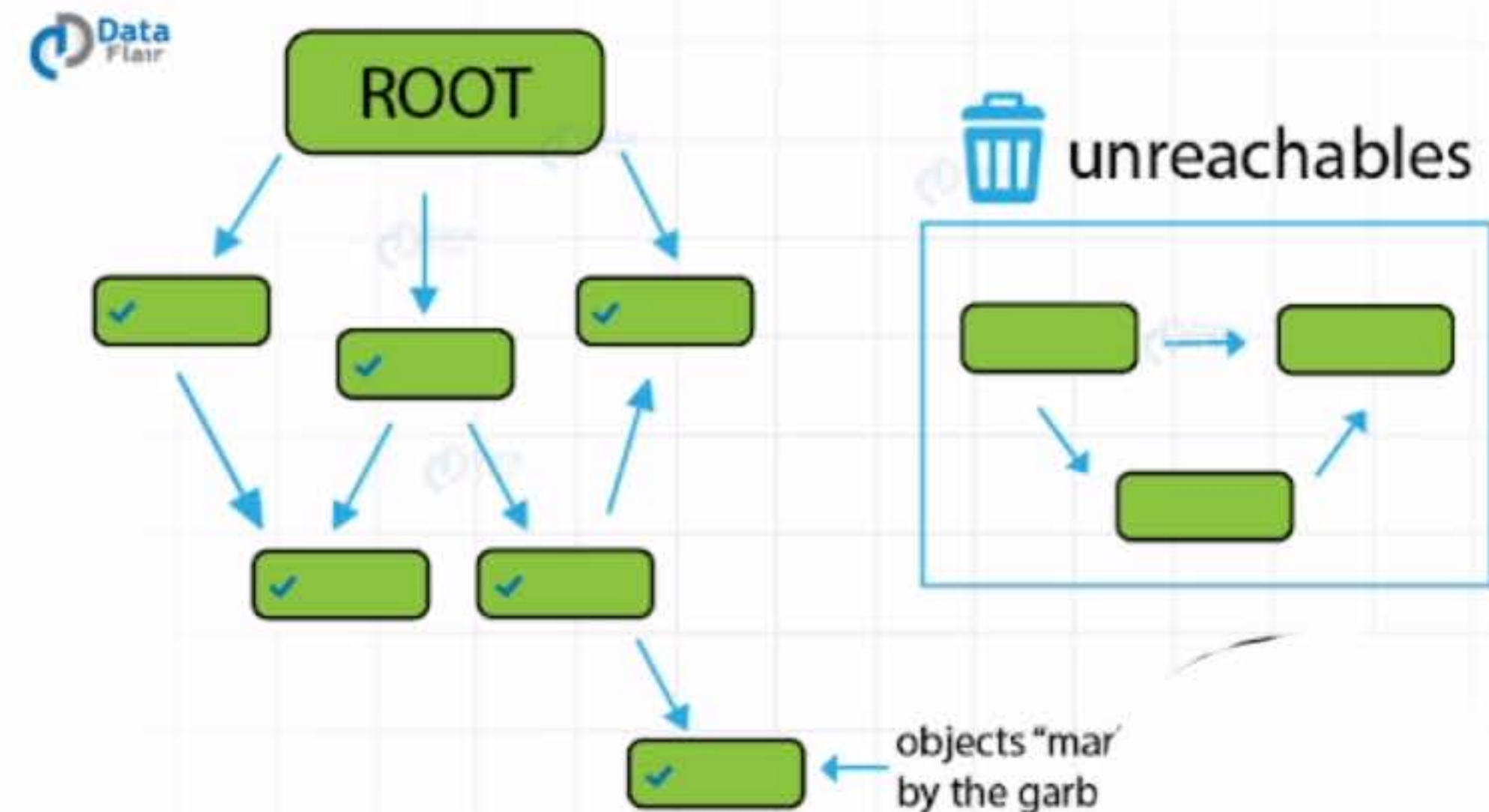


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JavaScript collects garbage
automatically

Garbage Collection

- ❑ JavaScript automatically collects unused data
- ❑ free the memory with the help of an algorithm called **'Mark-and-sweep'**
- ❑ The garbage collector goes through the roots, marking (remembering) them on its way.
- ❑ It then moves on to the references and marks them as well.
- ❑ The cycle continues until the garbage collector visits all the roots and references.
- ❑ The garbage collector **removes all the objects, except the marked ones.**



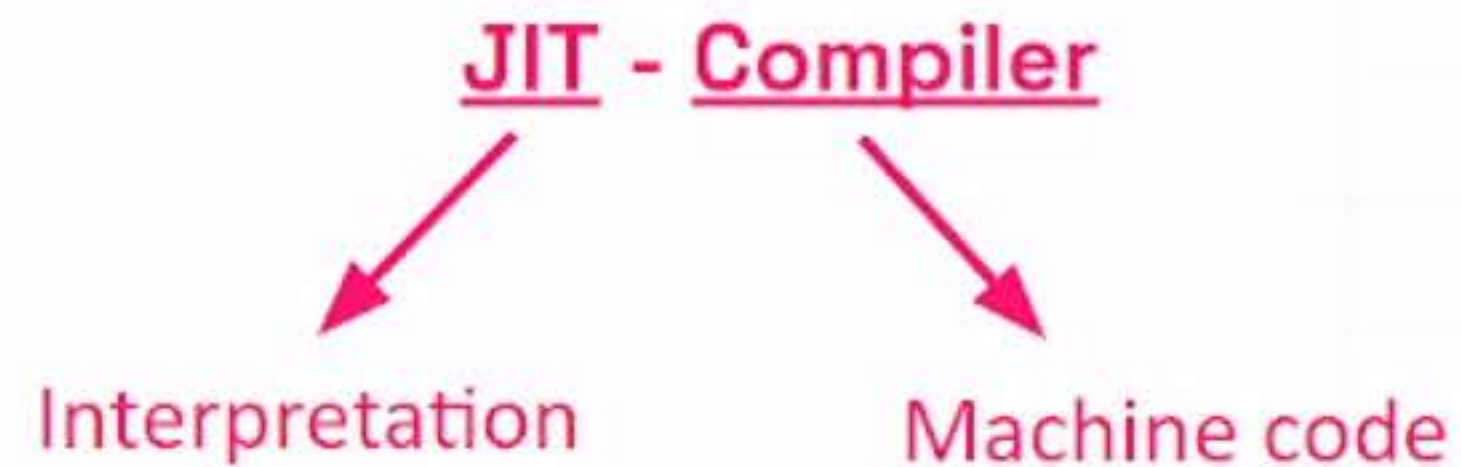


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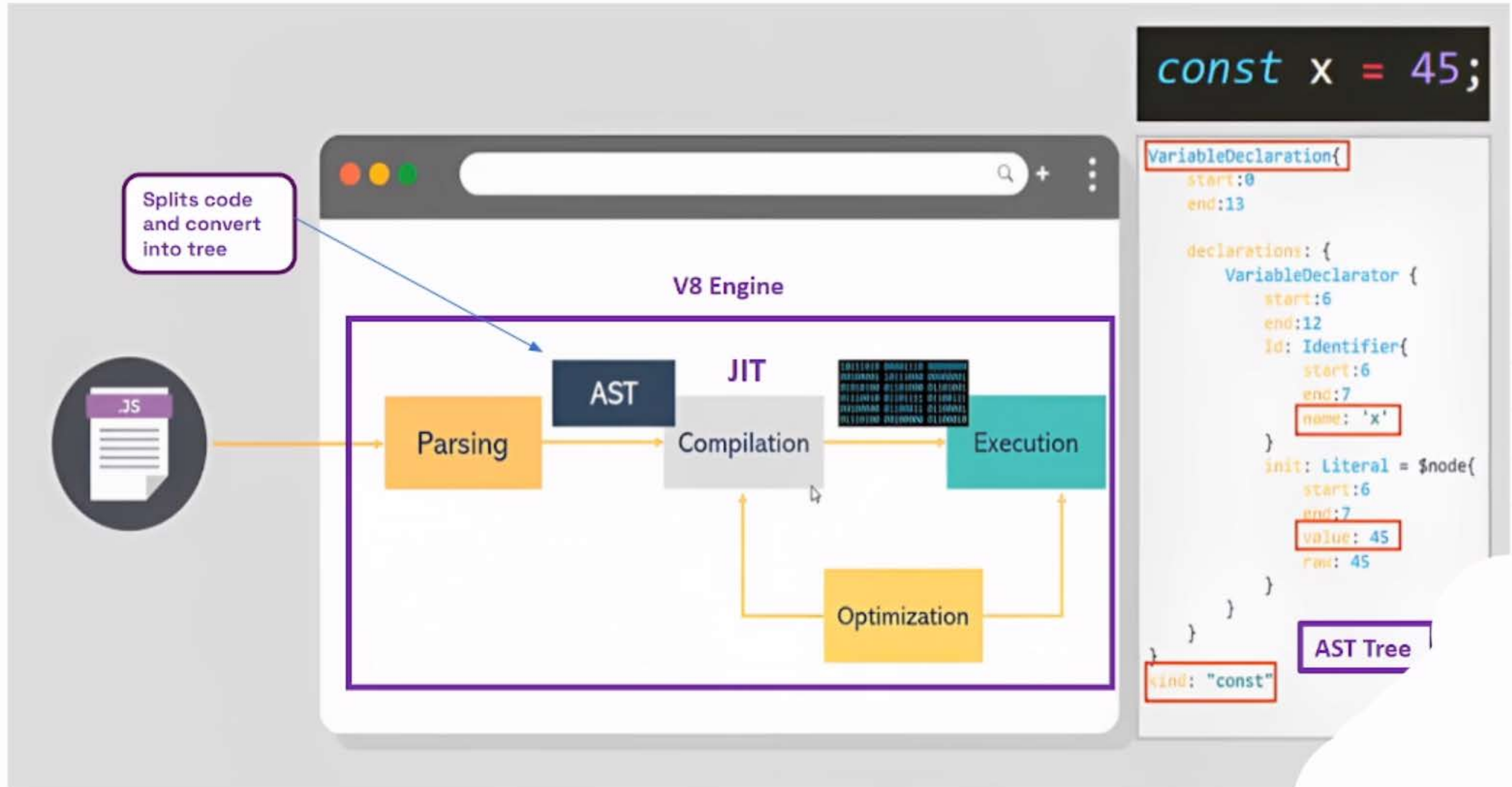
JavaScript is a JIT compiled language

Just-In-Time (JIT)

- ❑ JavaScript is not a **purely interpreted language**.
- ❑ Modern JavaScript is **JIT compiled**.
- ❑ **JUST-IN-TIME** compiler converts the entire code into machine code and execute them immediately



Just-In-Time (JIT)





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JavaScript is a multi-paradigm
programming language

Multi-Paradigm

Paradigm: code structure that will determine the style or a way of programming

1. Procedural Programming

- involves writing down instructions
- tells the computer what it should do step-by-step.

2. Object-Oriented Programming

- modeling a system as a collection of objects.
- Objects contain both functions (or methods) and data.

3. Functional Programming

- an approach to software development that uses pure functions
- to create maintainable software.



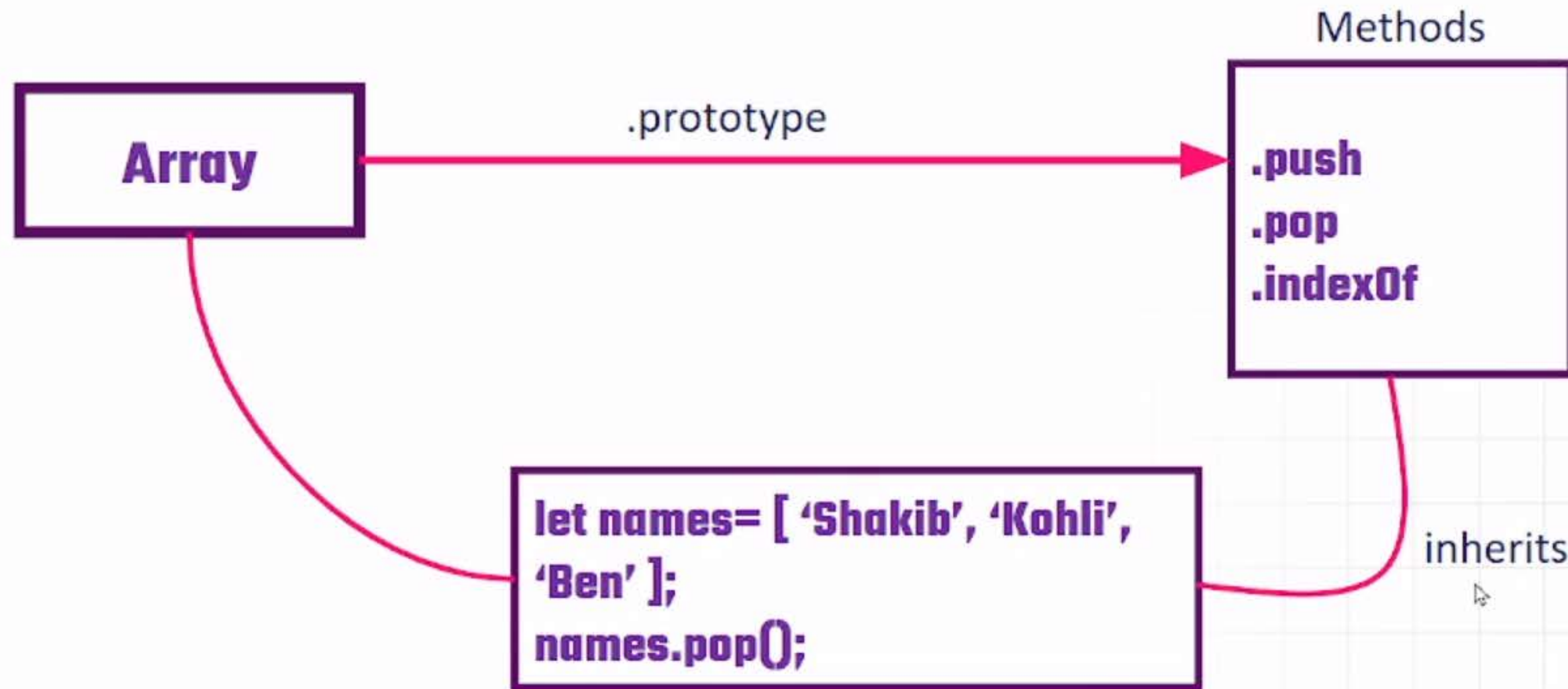
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JavaScript is a proto-typed
based
programming language

Proto-typed based

- ❑ In JavaScript, everything (function, array, objects) is object **except the primitive data**
- ❑ a prototypical object is an **object used as a template from which to get the initial properties for a new object**
- ❑ Proto-type is a **blue print**

Proto-type





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JavaScript is dynamically typed

Dynamically-typed

- ❑ When you declare a variable, you do not need to specify what type this variable is.
- ❑ JavaScript engine infers **what type this variable is** based on the value assigned to **at run time**.

```
let temp = 'name';  
temp = true;
```

- ❑ As JavaScript determines the type **at runtime** we can **re-declare the type**

Summary

