Q. what is V8?.

A- V8 is Google's open source high Performance "Javascript" and "Web Assembly" engine, written in "C++".
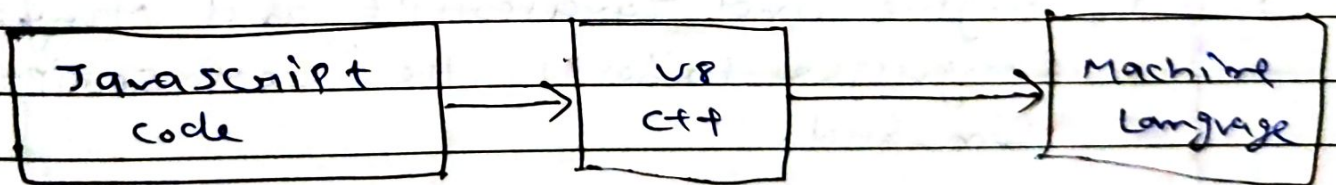
It is used in "Chrome" and in "Node.Js", amonge others.

It implements "ECMASCRIPT" and "Web Assembly" and runs on windows, Mac os- and linux system. that use X64, IA-32 on ARM Processors.

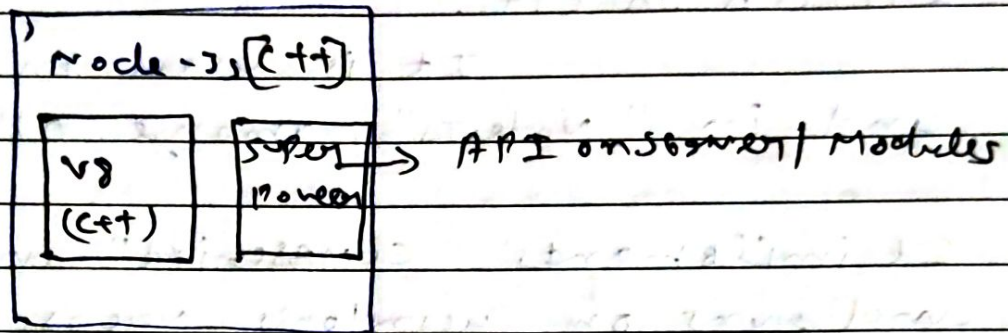> V8 can be embedded into any C++ application

behind the scenes :

| Javascript code | → | V8 C++ | → | Machine Language |

V8 converts Javascript code into machine level codes and then Machine understand the code and execute it.

> V8 :-> Execute Javascript code

* **Node.JS** -> It is a C++ application with V8 embedded into it.

```
┌──────────────────────┐
│ Node-JS (C++)        │
│ ┌────────┐ ┌───────┐ │
│ │  V8    │ │ super │ │ -> API on server/ Modules
│ │ (C++)  │ │ power │ │
│ └────────┘ └───────┘ │
│                      │
└──────────────────────┘
```

Node.Js written in C++, V8 embedded into it and some super power upon V8 engine like API on server or Modules

* V8 engine and Javascript and Many other languages follows the "ECMASCRIPT" standard.

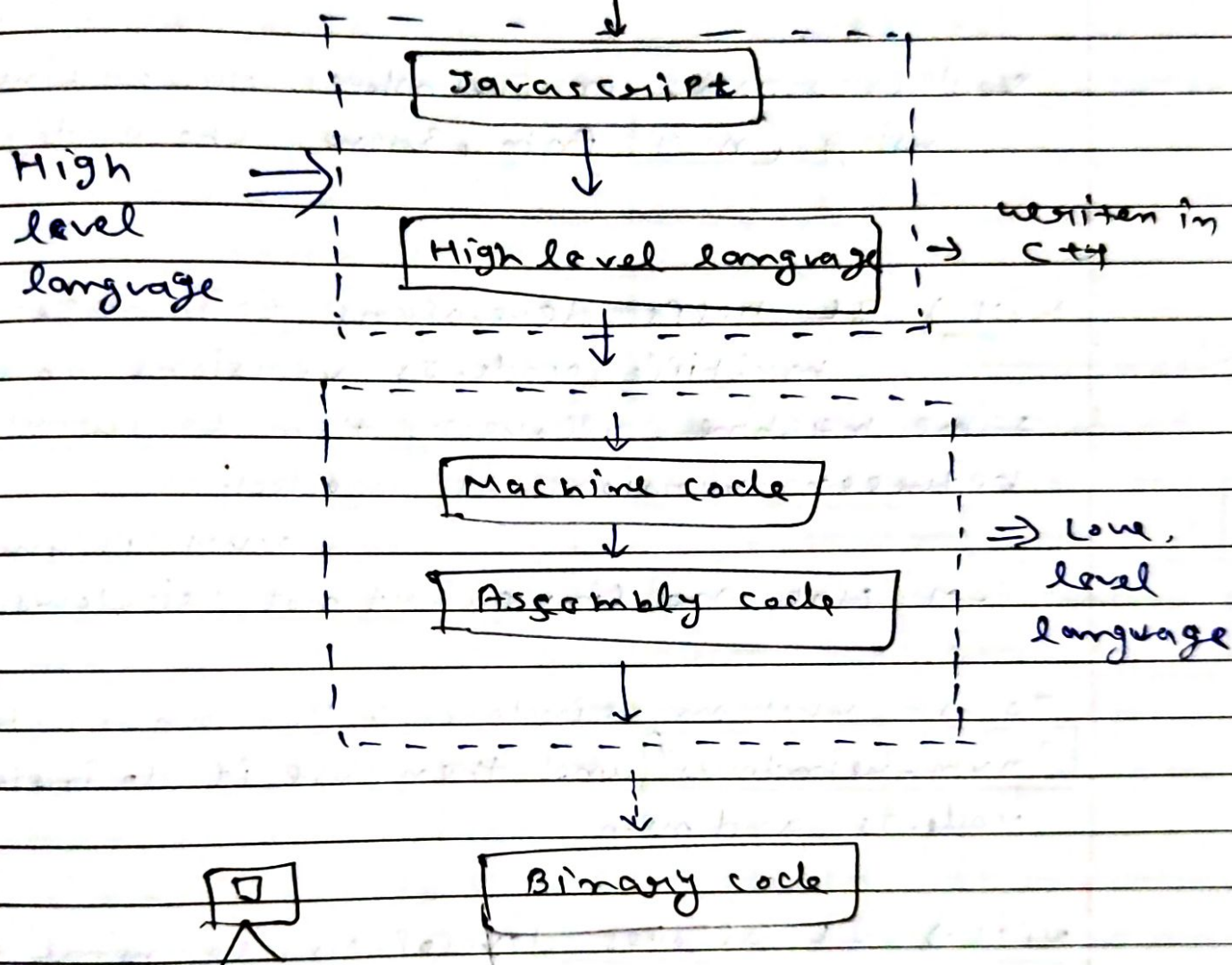**ECMASCRIPT** -> It is a standard for scripting languages.
All the Js engines follows these standards.

boxed: Some Js Engines →

(i) V8 → Google
(ii) spider Monkey → Firefox
(iii) chakra → Microsoft.
(iv) JavascriptCore → safari

* **Why v8 is a c++ code ?**

(user) write code in

```
        ┌─────────────────┐
        │   Javascript    │
        └─────────────────┘
                 ↓
```

High   ⟹   ┌──────────────────────┐   written in
level   │ High level language │ →   c++
language   └──────────────────────┘

                      ┌──────────────────────┐
                      │   Machine code   │
                      └──────────────────────┘
                               ↓
                      ┌──────────────────────┐   ⟹ Low,
                      │   Assembly code   │   level
                      └──────────────────────┘   language
                               ↓

                      ┌──────────────────────┐
                      │   Binary code   │
                      └──────────────────────┘

As a user, we write the code in Javascript because It is easy and to understand.

then v8 or any ^other Javascript engine which is a another high level language and written in c++, It execute the Javascript code into machine code, then Assembly code which both are low level language, then It converts into Binary code.

which Browser/system understands