Node JS

Server-Side JavaScript Framework

V D S Krishna, Sr. Asst. Professor, CSE Dept., CVRCE

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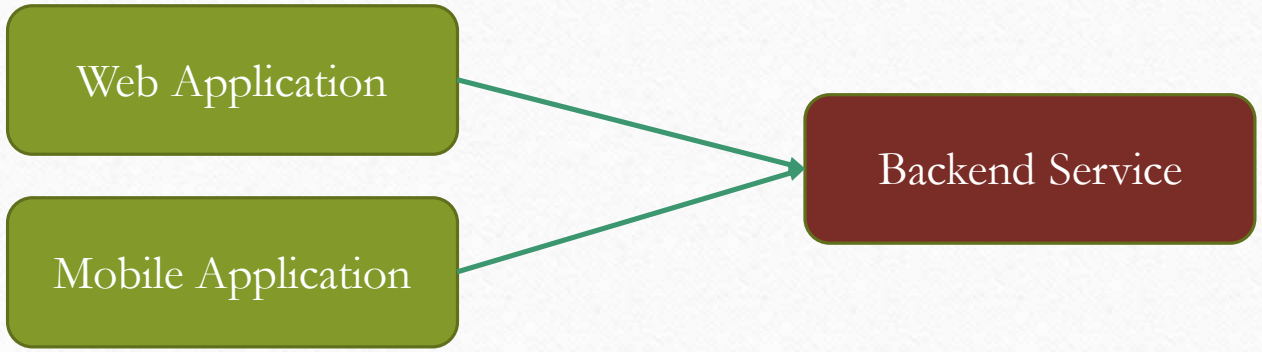
What is Node.js

- Is an open-source, cross-platform, **run-time environment** for executing Javascript code outside of a browser
- A Server – Side Java Script
- Based on Google V8 JavaScript Engine
- Event-Driven I/O Model

Uses of Node.js

- We Often use Node to build back–end services (API)
- These APIs will give more power to the client applications, either the web app or mobile app.
- Ideal for building Highly-Scalable, data-intensive, and real-time back-end applications



Uses of Node.js

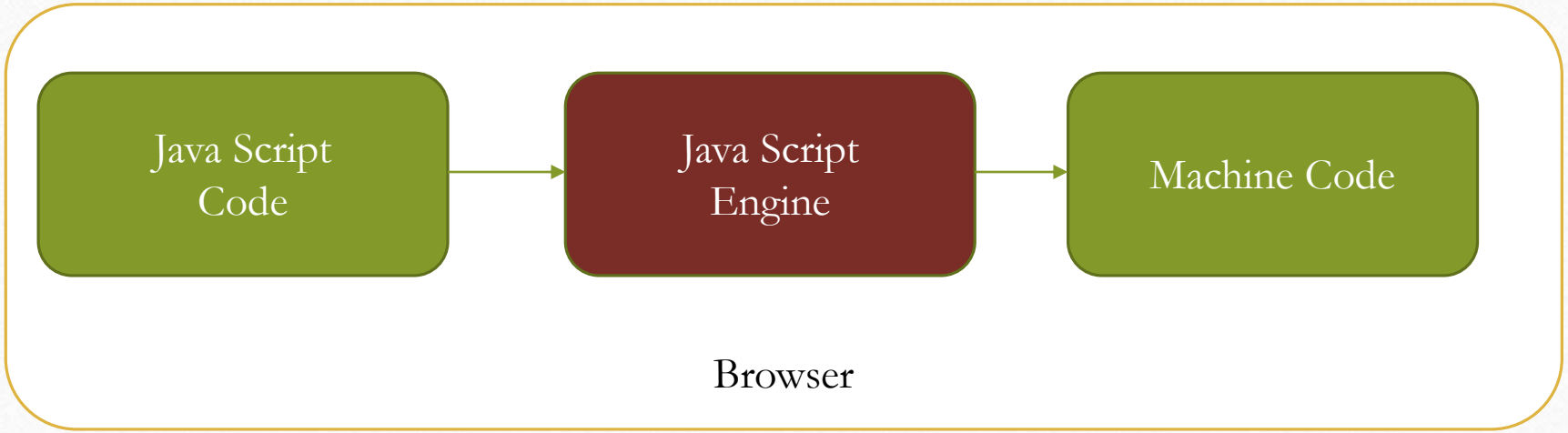
- Easy to start with
- Faster response time
- Used for Prototyping and Agile Development Model
- Superfast and highly scalable
- Source code will be cleaner and more consistent as both client and server uses Javascript
  - Same naming convention
  - Same tools
  - Similar best practices

Uses of Node.js

- Lots and lots of free open–source libraries available.
- Large ecosystem of open source libraries is available
- No need to develop an application from scratch.

Architecture

- Runtime Environment



Architecture (Contd..)

Architecture (Contd..)

- Because of the variety of engines, JS Code will behave differently in different browsers.
- Browser provides run–time environment for the JavaScript Code.
    - Eg: document.getElementById(“xxxx”)

Architecture (Contd..)

JS in Browser | JS can be executed outside the browser

2009

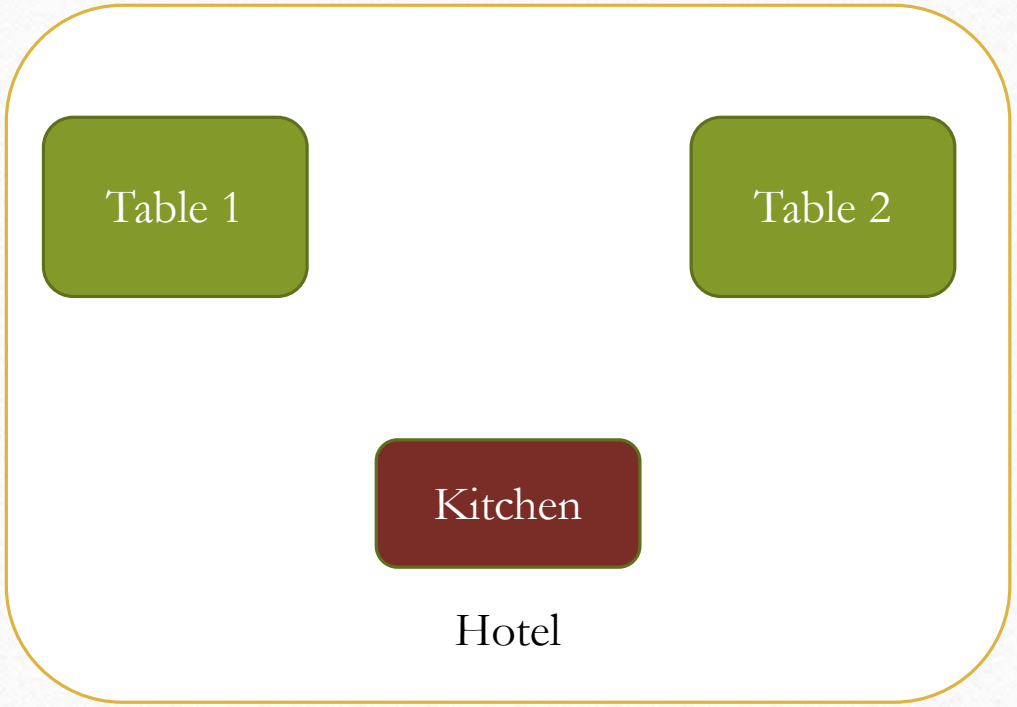
- In 2009 – Ryan Dahl invented Node.
- Google's V8 Engine embedded inside C++ program called **Node.exe**

Node Features

- Similar to browser, Node is a run – time environment for Java Script code
- It contains a JavaScript engine that can execute our JavaScript code.
- It also has certain objects that provide an environment for JavaScript code.
- These objects are different from the browser environment objects.
    - Eg: fs, http, os, path, etc..
- We can work with the file system or the network and so on.

"Node is not a Programming Language"

How Node works ?



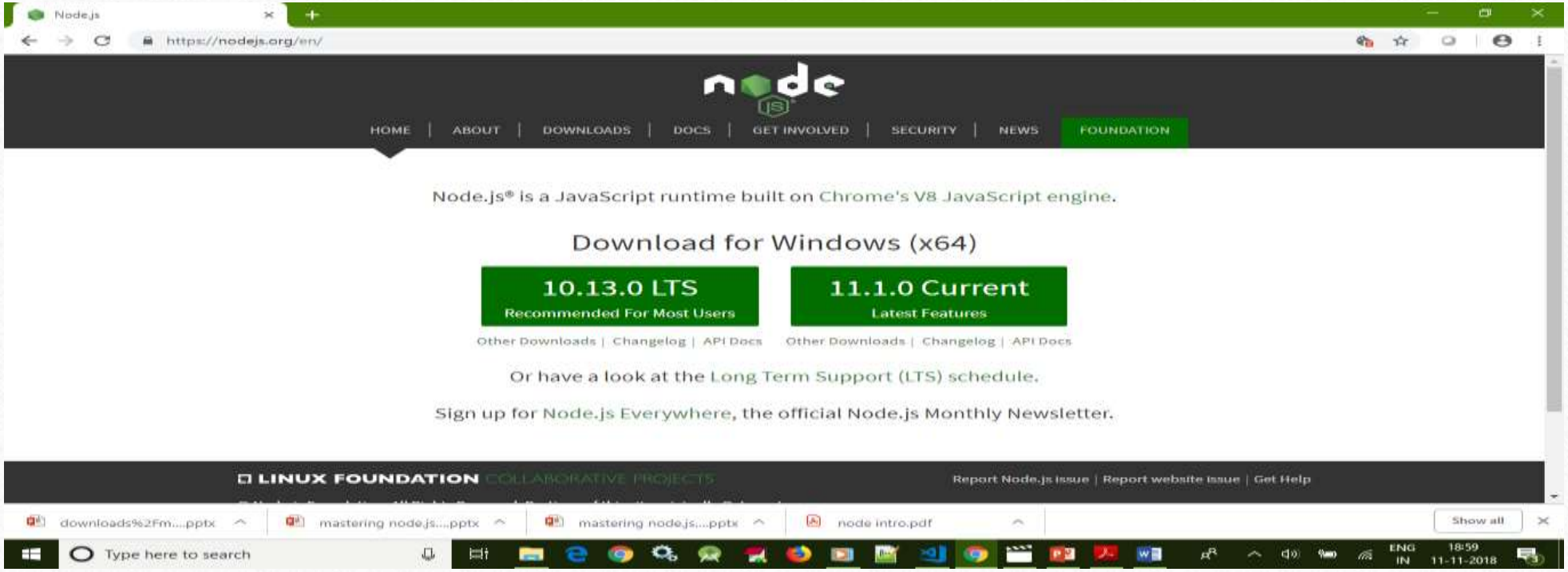
- Non–blocking
- Asynchronous nature
- Waiter – Single Thread allocated to handle the request.

VS

- Blocking / Synchronous

- Node applications are Asynchronous by default.
- Event Queue – Node will be monitoring the queue for the response.
- Node is ideal for I/O-intensive and real-time application
- Do not use Node for CPU – intensive applications (like video encoding or an image manipulation service, etc..)

Installation of Node



Node REPL

- REPL stands for:
  - R: READ
  - E: EVAL
  - P: PRINT
  - L: LOOP

What is Node REPL

- NODE REPL is an interactive shell that processes Node.JS expressions.
  - The shell READS JavaScript code entered.
  - EVALUATES the result of interpreting the line of code.
  - PRINTS the result to the user.
  - LOOPS until the user signals to quit.

Jump Start . . . .

- Visual Studio Code editor – Microsoft
- Has terminal embedded in it