MEAN STACK

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INTRODUCTION

- **MongoDB** : Database used.
- **Express.js** : Back-end framework.
- **Angular.js** : Front-end framework.
- **Node.js** : Back-end platform.

TRADITIONAL WAY

FRONT-END

- HTML
- CSS
- JAVASCRIPT
- JQUERY
- CODEIGNITER
- XML
- VBSCRIPT

BACK-END

- PHP
- PYTHON
- RUBY
- PERL
- SQL
- .NET(C#, VB)

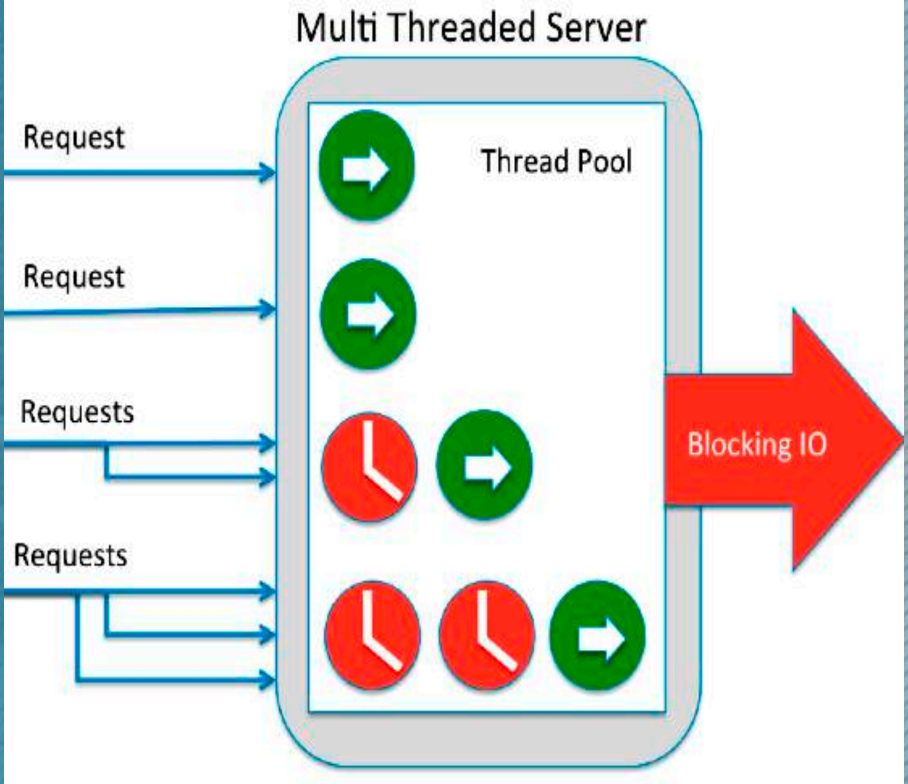
DIFFERENT LANGUAGE FOR EACH FRAMEWORK !

node JS

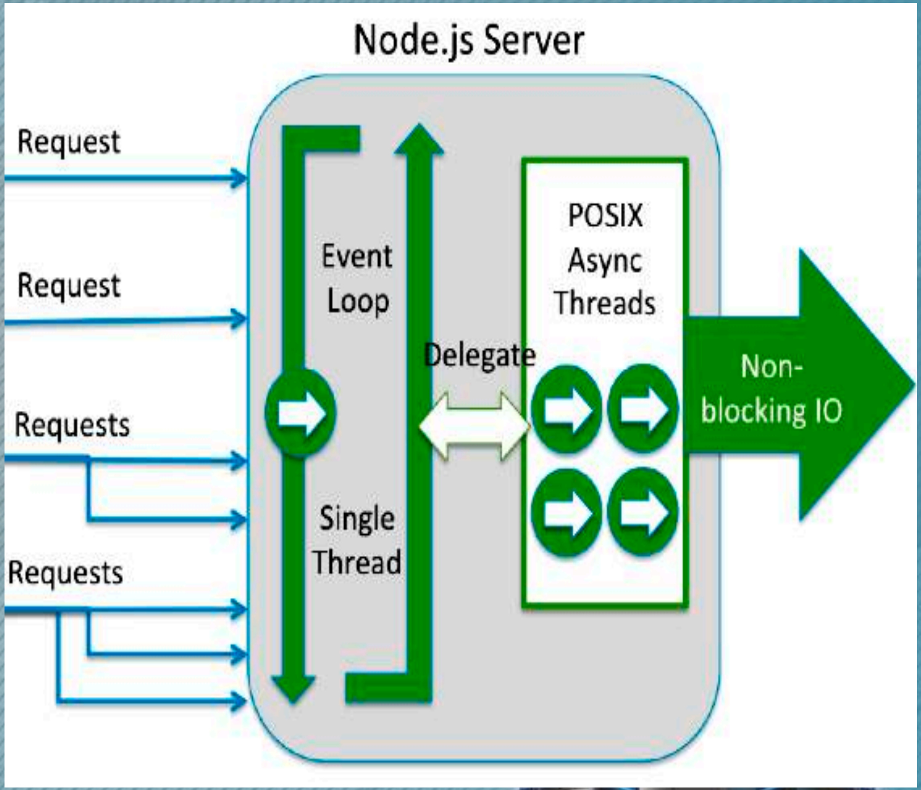
- Foundation of stack : Platform.
- JavaScript : single language throughout stack.
- Creates your own web server and build web application on top of it. (environment)
- Built-in HTTP server library – no need to run separate web server program eg : Apache, IIS.
- **SINGLE THREADED APPROACH !**
- Scalable, fast, efficient use of server resources.
- Less resources, low cost.

SINGLE THREAD APPROACH!

Multi threaded approach



Single threaded approach



npm

(Node.js Package Manager)

- Installed with node.js.
- Downloads packages to extend functionality.
- 46,000 packages.
- Easy to create, acquire, modify package.
- Example of packages :

  a) colors : text color, background color etc.

  b)mocha : testing JavaScript framework.

Microsoft, Google, PayPal, E-Bay, LinkedIn etc.

express

(Node.js framework)

There are a few common tasks that need doing every time while creating a web applications.

Express.js does this in well tested and easier way.

- Easing server setup :

  a) Setting up web server **to listen to requests** and **return relevant response**.

  b) Directory structure. Thus, no blocking or waiting for response

express

- Routing URLs to response :

  a)Directing incoming URLs to certain piece of code.

  b) Easier than node.js to maintain.
- Supports template engine :

  a) Templates makes it easier to build HTML pages.
- Remembers visitors with session support

  a) Comes with ability to use “sessions”.

  b) Sessions identify visitors bases on multiple requests and pages.

MySpace, LearnBoost, Storify, Klout etc !

mongoDB

MongoDB is a NoSQL document database where each row is a document and multiple documents together form a collection.

- Data now stored in unstructured way.
- Holds data in key-value pair i.e describing the data and defining data.
- Stores document as BSON - Binary JSON
- JSON : JavaScript object notation – JavaScript’s way of holding data.

The NewYork Times, GitHub, BuzzFeed etc !

mongoose

elegant mongodb object modeling for node.js

Mongoose is an object modeling package for node.js that allows us to **add structure** to the application and have access to the **CRUD commands**.

- Mongoose **translates data** in the database to JavaScript objects for use in your application. (BSON->JSON)
- **Data validation :** only valid data can be saved.
- Adds extra layer of features on top of MongoDB

ANGULARJS

by Google

Angular.js is the JavaScript front-end framework that gets most of the processing task and logic in the browser(instead of the server)

- MVC : (Model View Controller)

  M – responsible for maintaining data.

  V – responsible for displaying required data.

  C – controls interaction between model and view.

- No need to split application and then link them together. Angular.js does this for you by serving as the pipeline that connects them.

ANGULARJS
by Google

- JavaScript front-end framework :

  It is a distributed as a JavaScript file, and can be added to a web page with a <script> tag.

- Extends HTML : (ng-directives)

  a) **ng-app** : defines an AngularJS application.

  b) **ng-model** : directive binds the value of HTML controls to application data.

  c) **ng-bind** : directive binds application data to the HTML view.

TWO-WAY BINDING

ONE-WAY BINDING

- Node.js gets data from MongoDB
- Express.js uses template to compile it into HTML and sends it to browser.

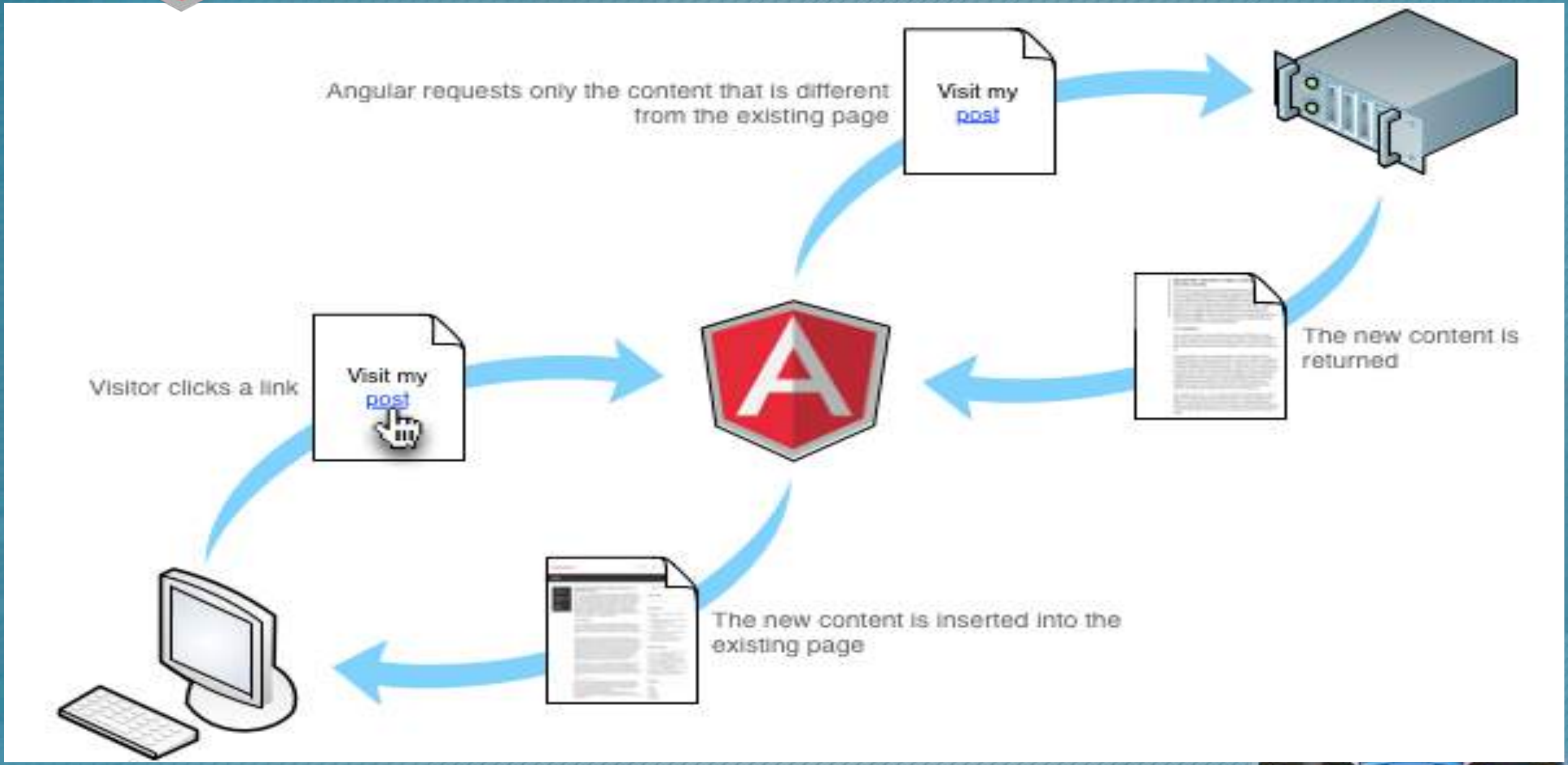
HARDWORK BY SERVER, BROWSER ONLY RUNS JAVASCRIPT!

TWO-WAY BINDING

- Template and data sent separately.
- View is live.

SERVER ONLY SENDS DATA!

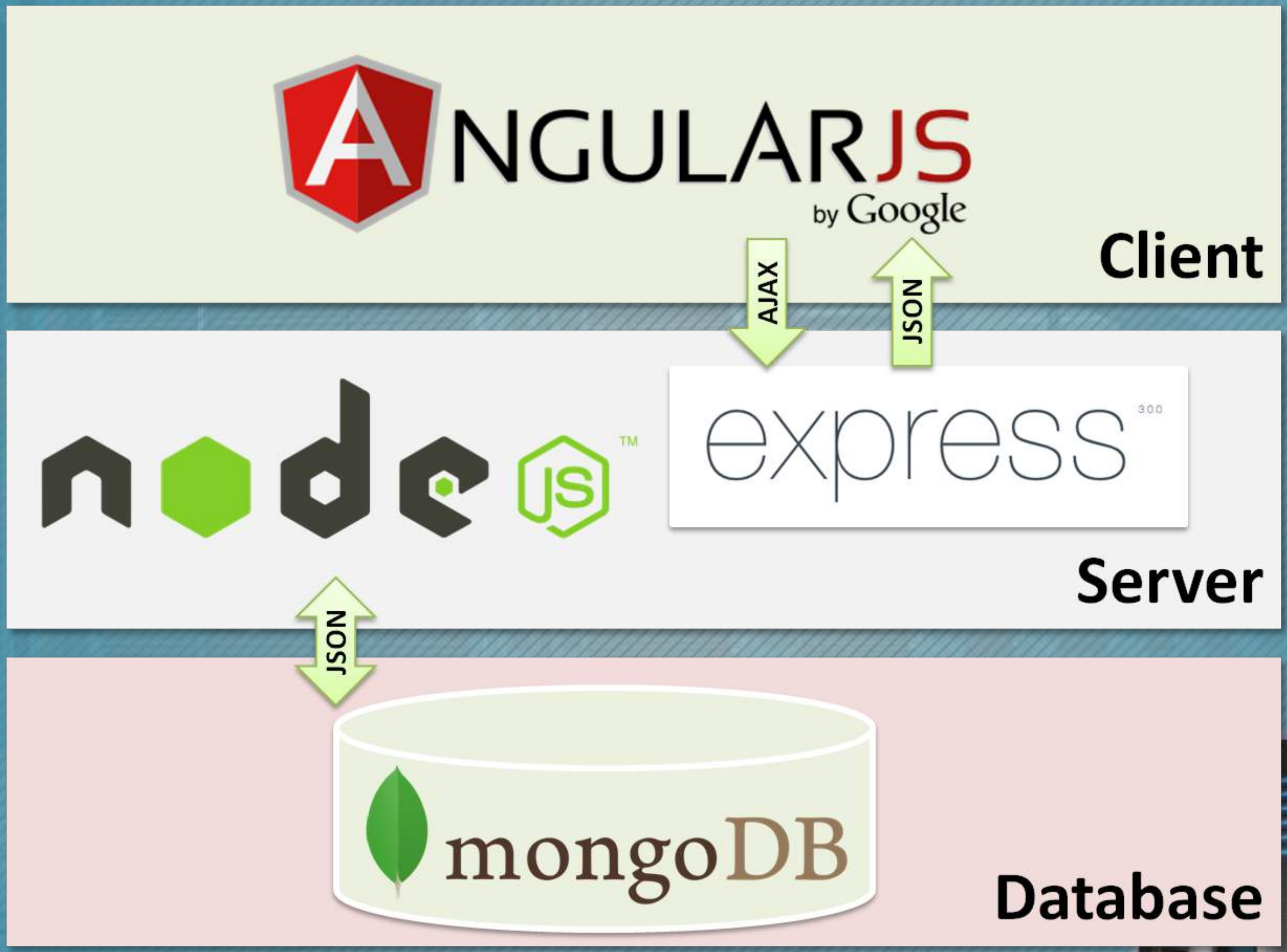
SINGLE PAGE APP !


Angular requests only the content that is different from the existing page
Visit my post
The new content is returned
Visitor clicks a link
Visit my post
The new content is inserted into the existing page

NO FULL PAGE RELOAD !

Eg. Google, NetFlix, YouTube etc.

ARCHITECTURE



WHY NOT TRADITIONAL STACK?

LAMP STACK :

- **Linux** : Can be used only with one OS.
- **Apache** : Back-end server without plug-in feature.
- **MySQL** : Relational DB with less efficiency to create, read, update, delete data.
- **PHP or Python** : Scripting language
- Various data formats.

.NET STACK :

- **OS :** Microsoft Windows.
- ASP.NET Web API, is still **heavier** than NodeJS
- No **plug-ins**
- The transitions it must go through from every MVC model to JSON, and back again i.e **server side MVC**
- Higher cost

MEAN STACK :

- **OS (V8)** : Any OS compatible with node.js.
- **Node.js** : Back-end server with active plug-in feature.
- **MongoDB** : Non-relational DB with efficiency to create, read, update, delete data.
- **Express and Angular.js** : Web page presentation.
- JSON format

SUMMARY : WHY MEAN?

- Single page application !
- Blurs the line between front-end and back-end.
- No need to learn additional languages as it has JavaScript throughout !
- Lots of plug-ins , better features.
- Easy to code, run and update.
- Low cost.

REFERENCES :