nodejs.dev

Surveys

- Stackshare.io
- https://mdn-web-dna.s3-us-west-2.amazonaws.com/MDN-Web-DNA-Report-2019.pdf

- https://nodejs.org/en/user-survey-report/
- github.com/the-benchmarker/web-frameworks
- hired.com/state-of-software-engineers
- Database paradigm https://youtu.be/W2Z7fbCLSTw

Frontend survey (ashleynolan)

- https://ashleynolan.co.uk/blog/frontend-tooling-survey-2019-results

Css processor
- Sass
- Postcss

Css framework
- No framework - 35%
- Bootstrap - 30
- Custom - 15
- Tailwind - 5%
- Bulma, foundation, materialize,semantic

Css tools
- Autoprefixer - 50% (users comfortable)
- Modernizr - 25%
- Stylelint - 24%

Css methodology
- Bem
- Css in js
- Atomic

Css feature
- Flex - 80% (users comfortable)
- Css grid - 30%
- Css custom property - 30%
- Houdini - 1%

Js task runners
- Npm scripts - 70%
- Gulp - 20%

Js module bundler

    - Webpack
    - Parcel

Js Transpiler (es6 -> es5)

    - 80% usage

Js extension

    - Typescript (30% users comfortable)
    - Flow (5%)
    - Elm
    - Clojurescript
    - Dart

Js linting

    - ESLint

Js testing

    - Jest - 44%
    - No tools used - 35%
    - Mocha - 26%

Js performance testing

    - Lighthouse - 52%
    - None - 30%
    - Webpage test - 24%
    - Service workers - 24%
    - Pingdom - 10%

Js Accessibility tools

    - None - 60%
    - Color (contrastchecker.com) - 20%
    - Screenreader (i.e. JAWS, Voiceover)
    - Wave/axe

HackerRank

- https://research.hackerrank.com/developer-skills/2020
- Bootcamps :
    - Codeworks
    - AppAcademy
    - Hack Reactor
    - Coderhouse
    - Byte Academy

Top language

- Js
- Python
- Java

Most wanted language

1. Go
2. Python
3. Kotlin
4. Typescript
5. R
6. Scala

High salary

1. Perl
2. Scala
3. Go

Most wanted framework

1. React
2. Angular
3. Django
4. Vuejs

JetBrains survey

- https://www.jetbrains.com/lp/devecosystem-2020/
- Plan to adopt - Go, Kotlin, Python

Mobile apps

1) React Native
2) Flutter
3) Cordova
4) Ionic

Ionic Survey

- https://ionicframework.com/survey/2020

Deploy targets

1) Playstore, ios
2) Browser (include pwa)

Mobile devtools

1) Ionic (80%)
2) Cordova/phonegap (50%)
3) React native, Flutter (15%)

Tools

- Backend
    1) Firebase/gcp
    2) Aws
    3) Azure
- Database
    1) MySQL
    2) Firebase
    3) Mongo
- Auth services
    1) Firebase
    2) Custom OAuth
    3) Auth0
- Push services
    1) Firebase
    2) OneSignal

PWAs

- Very popular
- Platform independent
- Directly to users

CI/CD

1) Gitlab
2) Jenkins
3) Github actions

React survey

- https://www.swyx.io/react-survey-2019/

tsh.io/state-of-frontend/

State management

1) React Context API & Hooks (prefered)
2) Redux (popularity is going down)
3) Vuex

4) Rxjs

Future

- Svelte, Stencil, Dojo (small apps)

Typescript

- 75% prefer Typescript over JavaScript

Hosting

- Local
- Aws (Amplify)
- Netlify & Vercel (easy features for frontend) (good future)

Continuous integration (CI)

- 75% devs use it
- Platforms
    1) Gitlab CI
    2) Github Action
    3) Jenkins
    4) Circle ci
    5) Bitbucket pipeline
    6) Travis

Containerization

- 60% usage by devs
- Platforms
    1) Docker
    2) Kubernetes

Jamstack

- JAM - JavaScript, APIs, Markup
- 30% usage
- Static site generator
    1) Gatsby
    2) Next.js
    3) Nuxt
    4) Jekyll
    5) Hugo
    6) Vuepress

Micro frontend

- 25% usage
- How to compose ?
    1) Web components (30%)
    2) Npm packages (30%)
    3) Server side rendering (20%)

SEO

- 50% don't care
- Dynamic rendering should work
- Approach
    1) SSR (whole page) (60%)
    2) SSR (meta tags) (25%)
    3) Detect web cfawlers on server

Accessibility

- Web content accessibility guide WCAG
- 50% usage
- How ??
    1) <img alt= "..."> (25%)
    2) Aria attribute (25%)
    3) Keyboard navigation (25%)
    4) Color contrasts (25%)

Designer

1) Ui/ux.designer (User focused)
2) Product designer (Business)

- Tools
    1) Zeplin
    2) Invision
    3) Figma

Testing

- 80% usage
- Who is responsible in team ?
    1) Software devs
    2) QA specialist
- Test types ?
    1) Unit
    2) Integration
    3) End to end UI

Future

- Trends to go dead in 3 years

1) Redux
2) Css in js
3) Web components
4) Micro frontend
5) Atomic design
6) Css modules
7) Jamstack

JavaScript

Fundamentals

- Basic syntax
- Variables
- Arrays, objects
- Events
- Functions
- Loops, conditions

Modules

- ES6 module, Typescript
- Parcel, Webpack & Babel
- Export & Export default

Classes

- Structure of class
- Constructors
- Methods/property
- Instantiation
- Extend classes

Arrow functions, lexical 'this'

Promises/Async request

- Create/receive promise
- then() , catch()
- Async/Await
- Fetch api

Destructuring

Components concept

- Nested components
- State managers redux,veux

Spread operator (…)

High order array functions

- forEach()
- map()
- filter()

Functional programming

Prototype

Modern JavaScript (webpack)

- https://medium.com/the-node-js-collection/modern-javascript-explained-for-dinosaurs-f695e9747b70

Motion UI

Extra tools

- Bundle phobia
- Font flipper
- Figma (design)
- Cloud craft
- Visbug chrome extension
- Insomnia (Api tool)
- Flare (vector animations)

HTTP

- http - 80 TCP port
- https - 443 TCP port
- Stateless protocol
- Chunked transfers : If content to be sent by server is dynamic "content-length" cannot be identified. So send chunks of content. Last chunk is always empty with "content-length=0". This helps to close the connection between server & client.
- http/1.1
  - Only 1 connection at 1 time
- Google Spdy 2009
  - Aim - to reduce Latency
  - Merged with Http/2 in 2015

HTTP/2 -. *http2.github.io*

1) *Binary protocol*

- Binary data (v1.1 uses readable text)
- Building blocks - Frames & Streams
- Stream = collection of frames
- HTTP message - 1 ….n frames
  - HEADERS - metadata
  - DATA - payload
  - RST_STREAM
  - SETTINGS, PRIORITY, etc

2) *Multiplexing*

- Only 1 tcp connection is open
- N streams can be sent asynchronously
- Both client & server streams are asynchronous

3) *HPACK header compression*

- Same as http/1.1 + pseudo headers (method, scheme, host, path)

- Request/response - uses gzip
- Headers - uses Hoffman's shared table
- Both client/server has same Header's table
- Hoffman code is index for header's tables

4) Server push

- Server predicts client's future request

5) Request prioritization

- Add prioritization details to stream in
    - HEADERS frame (opening time)
    - PRIORITY frame (open stream)
- Without this details server will process streams in async way
- More priority = more server resources

6) Security

- Encryption = TLS over http/2 = https
- TLS is option al

HTTP/3 - In draft version. Coming soon.

- Previously known as HTTP-over-QUIC
- QUIC - Quick UDP internet connections

DNS

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1) Local cache
    - Browser cache
    - DNS cache
    - Host file
2) Recursive DNS servers
3) Root DNS servers
4) Top level domain TLD
5) Authoritative DNS servers (A record)

Nodejs

- Js runtime environment
- Chrome's js (V8) + modules
- Modules
    1) Inbuilt Api - (files, http, readLine)
    2) 3rd party Npm - (lodash, axios)

    3) My own project modules
- For utility like Webpack,gulp,etc
- nvm - node version manager

- Asynchronous
- Single thread (multiple Worker threads)
- Uses callbacks
- Good for
    1) Non blocking
    2) Event driven
    3) Data intensive
    4) I/O intensive
- Bad for
    1) Data calculations
    2) Processor intensive
    3) Blocking operations
- gf

- "node" cmd for REPL
- no window, document object
- global object (global.foo)
- "node (enter) process" - process object
- "node foo.js" - running js file (.js is option)

- var f = require("./foo.js")
- module.exports = ……
- module.exports.foo = ……
- exports.foo = ……
- exports = …… (is error)
- where …... = function, object, array, etc

- package.json
- "node_modules" folder (global & local)

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H1b

The H1B work visa is initiated by an employer in the United States.

Seasons
1) Fall - August to Dec/Jan
2) Spring - Jan to May
3) Summer - June to july

H1B Visa Cap
- The applications open every year in spring.
- USCIS approves 65,000 petitions per year starting from October 1st to September 30th of the following year. 6,800 petitions are reserved for H1B1 visas for Chile and Singapore nationals, while the rest for H1B visas. The applications of the first 20 thousand applicants with a master's degree are exempt from this visa cap.