Introduction

Node.js Accelerator – Jan’23

Agenda

1. Node.js Accelerator - Overview
2. Key Components in Node.js Accelerator
3. Udemy Path walkthrough
4. Incremental Project
5. Office Hour Schedule
6. Meet the Team
7. Say Hello to Node.js & TypeScript

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Node.js Accelerator

Jan 2023

Node.js Basics	Backend development	Node.JS best practices
- What is Node.js - Event loop - Node.js modules (http, fs, events, stream, ...) - Node.js with Typescript	- Focus on creating REST APIs with Node.JS - Working with GraphQL - Working with microservices - Working with frameworks such as ExpressJS and NestJS for API development	- Securing an API - Tests (unit and e2e) - Test automation - And more

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Journey

Pre-assessment	Udemy Learning + Office Hours + Incremental Project	Final Assessment	Final Review	Job Support Learning Path
1 Jan to 15 Jan	**16 Jan to 10 March**	**13 to 24 March**	**13 to 24 March**	**From 27 March**
1 Coding question + MCQs Pre-Test assesses Talent on JavaScript.	Successfully passing the pre-assessment enrolls Talent into the Node.js Accelerator. Talent learn through Udemy, alongside Toptal SMEs during Office Hours and implement an incremental project on a weekly basis.	1 Coding question + 20 MCQs The final assessment validates skills in Node.js, Express, Typescript and NestJS.	Review Talent's project to verify whether it meets the technical requirements using a defined rubric & provide feedback.	Upon successful completion of the program, you'll be given access to the Job Support learning path which will help you update your profile and prepare for job interviews.

Node.js Accelerator - Key Components

Learning Pathway on Udemy

Thoughtfully designed Udemy based learning pathway with handpicked & top-rated courses trusted by businesses worldwide with a complete guide to building applications with Node.js. Click Here!

Office Hours

Instructor-led guided sessions every week, well-structured with tons of examples and demos, assignments and exercises and tons of important knowledge by industry experts who have real time experience in Node.js. [Click here] for the office hours schedule.

Incremental Project

Build a project alongside office hours to lend your hand and apply what you learn, in every week you will progressively build a web application using Node.js. Detailed task lists for the incremental project will be shared during the program. Read more about Project Task 1 & Task 2

Post Assessment

A HackerRank based post assessment with 20 MCQs and 1 coding test customized according to most job descriptions.

You will be invited to the final assessment between **13 March to 24 March**

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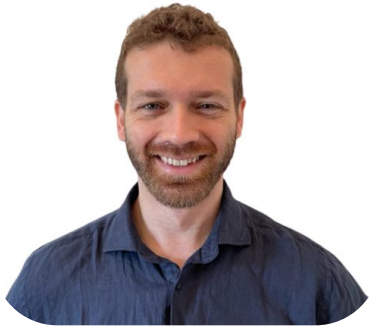
Meet the Node.js Accelerator Team!

Office Hours

Vishal Shah
Technical Training Program Manager at Toptal

Reach out to Vishal if you have questions regarding **Hackerrank assessments**, access to **GitLab projects**, Node.js **incremental project**.



Marcos Henrique da Silva
Node.js SME, Office Hours Instructor

Reach out to Marcos if you have **Node.js-related questions** or for anything that helps you learn Node.js

Natalie Fadeeva
Talent Learning Coordinator at Toptal

Reach out to Natalie if you have questions regarding **Udemy access**, Office Hours **invites**, or any **general program questions**.

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Welcome to Node.js!

- Javascript / ES6, TypeScript - (Learning path for JavaScript)
- NodeJS Basics - (Learning path for NodeJS)

- A server-side **JavaScript platform** using an event-driven, non blocking I/O model
- **Single threaded:** based on event driven, non blocking I/O model
- **Great for**: API development, data streaming, real-time and server-sive applications
- **Fullstack with Javascript**: with Node.JS for back-end development a developer is able to build an entire frontend with backend application using the same language, avoiding the overhead of switching programming languages

- **Node.js** is event driven, so when a request is made, an event is dispatched to a handler to pick it up. In node.js, this handle is called “event loop”. A simplified event loop is the set of:
  - Timers: execute callbacks for setTimeout and setInterval functions
  - Pending callbacks: execute pending I/O callbacks deferred to the next loop
  - Pool: get new I/O like incoming connections, data and others
  - Check: setImmediate function callback is called here
  - Close callbacks: when a callback is set to close such an event like “socket.on(‘close’)

- **Node.js** can handle dependencies with a package manager.
- **NPM** (Node Package Manager) and **YARN** (Yet Another Resource Negotiator) are two of the most popular Node.js package managers. Node.js also have the **PNPM** as an option for package manager.

Features	NPM	YARN
Generating Lock Files	Automatically generated as package.json	Automatically generated as yarn.lock
Using Workspaces	Supported	Supported
Remote Scripts	Supported, using the npx command	Supported using the yarn dlx command
Plug'n'Play	Not Supported	Uses a single .pnp.cjs file instead of node_modules folder
Zero Installs	Not Supported	Uses .pnp.cjs files to quickly reinstall packages from the offline cache
License check	Not Supported	Checks each package license while downloading

To learn more about yarn click here!

- Node.js receive constantly updates and it is quite common to work in different projects that have outdated versions from the current version of Node.JS
- Having a node version manager (nvm) makes the developer able to switch between different node versions based on the project he is working on.

```
$ nvm install 18 && nvm use 18

Now using node v18.13.0 (npm v8.19.3)

$ node -v

v18.13.0
```

A really simple application in Node.js

```
const http = require('http');

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
   res.statusCode = 200;
   res.setHeader('Content-Type', 'text/plain');
   res.end('Hello World');
});

server.listen(port, hostname, () => {
   console.log(`Server running at
http://${hostname}:${port}/`);
});
```

- Knowing how to work with Typescript nowadays is very important and the majority of node.js frameworks that are being used by enterprise companies uses Typescript by default, such as NestJS, TypeORM, Prisma and others
- To enable it in a simple project you just need to install the typescript package with **npm install –save-dev typescript**
- To run the Typescript we need to compile a ts into Javascript with **npx tsc name_of_the_file.ts** and run the desirable file or use ts-node module and run **ts-node name_of_the_file.ts**

A comparison between the example as Javascript and Typescript

```
const http = require('http');

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res)
=> {
   res.statusCode = 200;
   res.setHeader('Content-Type',
'text/plain');
   res.end('Hello World');
});

server.listen(port, hostname, () => {
   console.log(`Server running at
http://${hostname}:${port}/`);
});
```

```
import {createServer, IncomingMessage,
ServerResponse} from 'http';

const hostname = '127.0.0.1';
const port = 3000;

const server = createServer((req: IncomingMessage,
res: ServerResponse) => {
   res.statusCode = 200;
   res.setHeader('Content-Type', 'text/plain');
   res.end('Hello World');
});

server.listen(port, hostname, () => {
   console.log(`Server running at
http://${hostname}:${port}/`);
});
```

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ACTION ITEMS

Week 1

1. We strongly recommend you to explore below module through Udemy this week and learn about Node.js essentials

Type	Topic	Description	Udemy Link	Duration
Self-paced learning on Udemy	Introduction to Node.js and NPM	You will learn what Node.js is and what makes Node.js so popular. You will also learn how to use Node Package Manager (NPM) and Nodemon, installing node and creating your first app	Click Here	40 min
Self-paced learning on Udemy	Optional: Javascript refresher	A quick refresher on JavaScript, understand arrow functions, objects, properties, methods, a few ES6 features, async code & promises	Click Here	51 min
Self-paced learning on Udemy	Node.js Basics	Understand essential concepts in node.js, the node lifecycle & event loop, node.js processes, event-driven code execution, blocking & non-blocking code, node.js core modules, debugging	Click Here	2hr 35min


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