

TURBOREPO

A stylized circular logo composed of several segments in blue, purple, and pink, arranged in a ring around the final 'O' of the word 'TURBOREPO'.

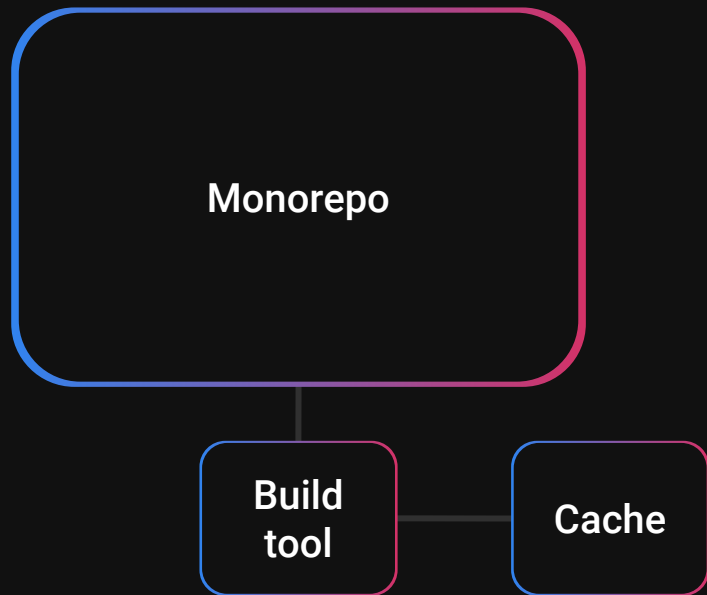
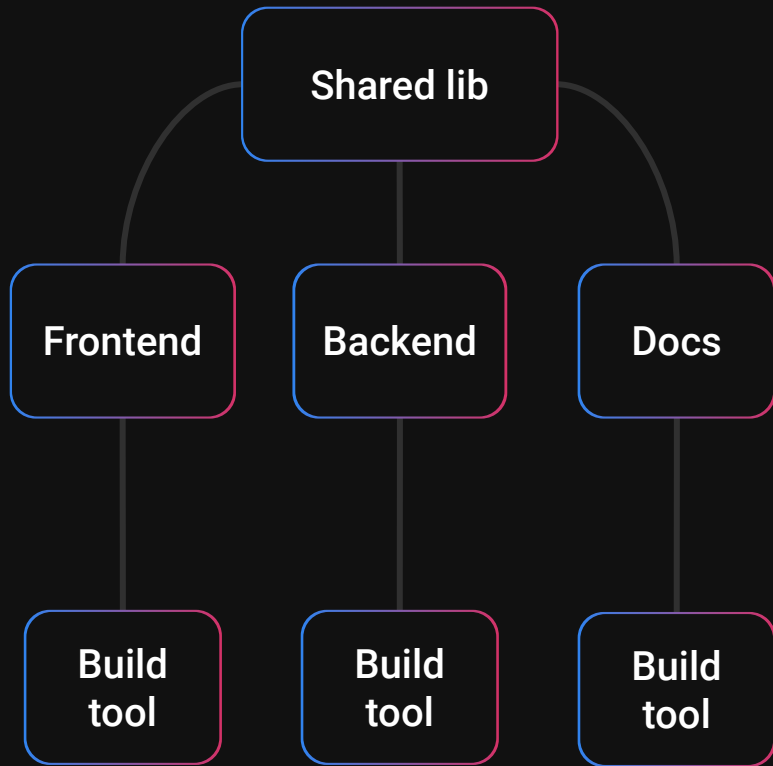
TURBOREPO

The logo for Turborepo, featuring the word "TURBOREPO" in a bold, white, sans-serif font. The final "O" is replaced by a circular graphic composed of several colored segments (blue, purple, pink, red) arranged in a ring, with a small gap at the top.

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Efficient continuous integration in JavaScript and TypeScript monorepos using Turborepo

Polyrepo vs Monorepo



Why Turborepo?



Monorepo tool

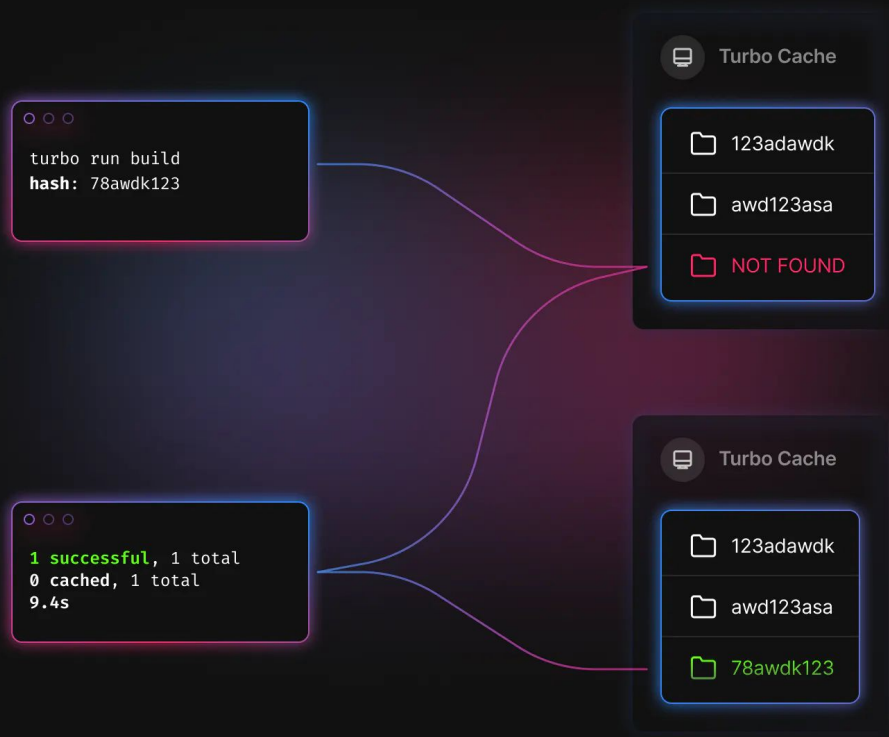


Speeds up
builds



Supports
JS and TS

Turbo Cache



npm run build



Lint

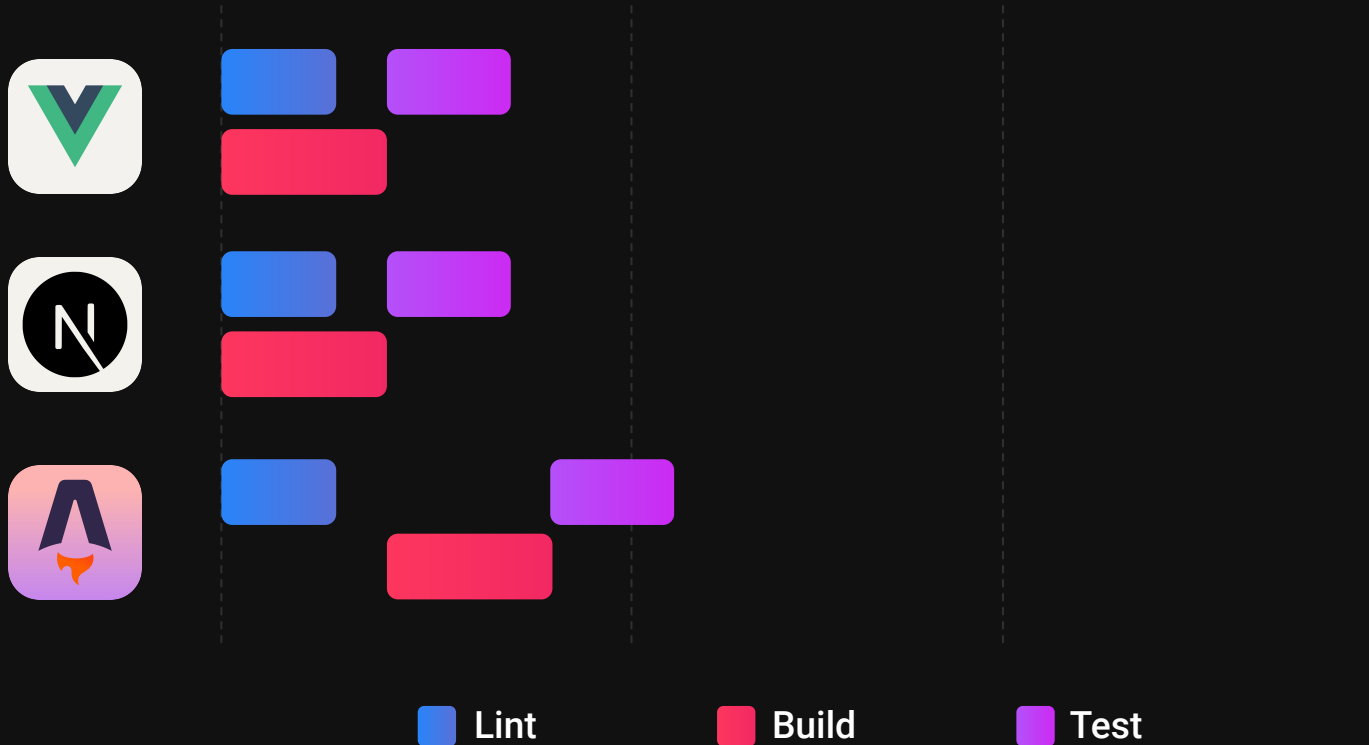


Build



Test

turbo run build



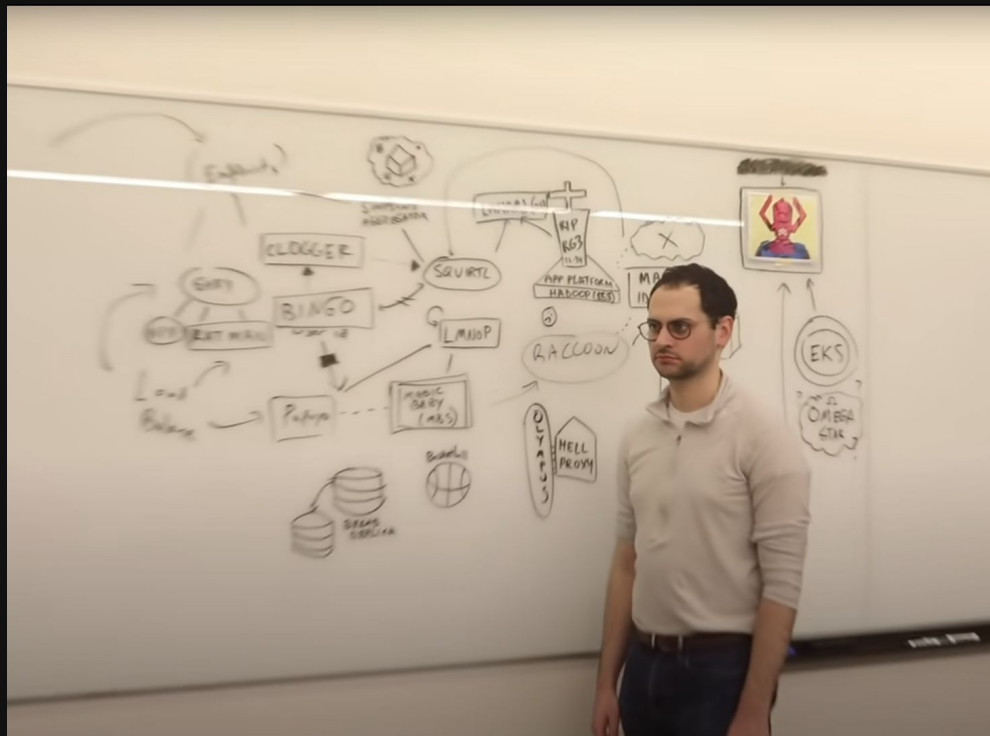
Test project

Monorepo

- 12 backend services with shared dependencies
- Tested using Jest
- 95% coverage

├── basketball
├── bingo
├── clogger
├── eks
├── galactus
├── gary
├── lmnop
├── olympus
├── omega star
├── papaya
├── raccoon
└── rat man

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	95.06	60	91.3	96.2	
src	100	100	100	100	
app.js	100	100	100	100	
src/bank-service	96.82	100	90	98.36	
controller.js	100	100	100	100	
repository.js	90	100	83.33	94.44	4
routes.js	100	100	100	100	
schema.js	100	100	100	100	
service.js	100	100	100	100	
src/lib/middleware	81.81	50	100	81.81	
error-handler.js	71.42	50	100	71.42	4,17
to-camel-case.js	100	100	100	100	



Setting it up

Installing

```
> sudo npm install turbo --global
```

Create monorepo

```
> npx create-turbo@latest
```

Add project files

```
> mv project/* monorepo/apps/*
```

Build and test

```
> turbo test
```

npm vs turbo

```
Test Suites: 3 passed, 3 total
Tests:       12 passed, 12 total
Snapshots:   0 total
Time:        0.996 s, estimated 1 s
Ran all test suites matching /\.spec\.js$/i.

> backend-interview-task-nodejs-rat-man@1.0.0 test
> NODE_ENV=test jest '\.spec\.js$'

PASS src/app.spec.js
  Bank account app
    When calling the bank account API
      When the bank account should be created
        ✓ Create bank account (37 ms)
        ✓ Get bank account (5 ms)
    When the request is invalid
      When the firstName is missing
        ✓ Should return an error (5 ms)
      When the secondName is missing
        ✓ Should return an error (3 ms)
      When the personalNumber is missing
        ✓ Should return an error (3 ms)

PASS src/bank-service/repository.spec.js
  Bank account repository
    Find By Account Number
      ✓ Should return undefined if the account number does not exist (2 ms)
      ✓ Should return the bank account when the account number exists (1 ms)
    Find By Personal Number
      ✓ Should return empty list if the personal number does not exist
      ✓ Should return the bank account when the personal number exists (1 ms)
    Get latest number
      ✓ Should return correct latest number

PASS src/bank-service/service.spec.js
  Bank account service
    ✓ Should create a new bank account (3 ms)
    ✓ Should return a bank account

Test Suites: 3 passed, 3 total
Tests:       12 passed, 12 total
Snapshots:   0 total
Time:        0.986 s, estimated 1 s
Ran all test suites matching /\.spec\.js$/i.
( for dir in *; do; ( cd "$dir" && npm test; ); done; ) 22,71s user 2,04s system 108% cpu 22,853 total
+ apps git:(main) ✖
```

```
backend-interview-task-nodejs-olympus:test Time: 6.903 s
backend-interview-task-nodejs-olympus:test Ran all test suites matching /\.spec\.js$/i.
backend-interview-task-nodejs-papaya:test Bank account service
backend-interview-task-nodejs-papaya:test ✓ Should create a new bank account (5 ms)
backend-interview-task-nodejs-papaya:test ✓ Should return a bank account (1 ms)
backend-interview-task-nodejs-papaya:test PASS src/app.spec.js
backend-interview-task-nodejs-papaya:test Bank account app
backend-interview-task-nodejs-papaya:test When calling the bank account API
backend-interview-task-nodejs-papaya:test When the bank account should be created
backend-interview-task-nodejs-papaya:test ✓ Create bank account (67 ms)
backend-interview-task-nodejs-papaya:test ✓ Get bank account (8 ms)
backend-interview-task-nodejs-bingo:test Snapshots: 0 total
backend-interview-task-nodejs-bingo:test Time: 7.411 s
backend-interview-task-nodejs-bingo:test Ran all test suites matching /\.spec\.js$/i.
backend-interview-task-nodejs-gary:test ✓ Should return an error (10 ms)
backend-interview-task-nodejs-gary:test When the secondName is missing
backend-interview-task-nodejs-gary:test ✓ Should return an error (7 ms)
backend-interview-task-nodejs-gary:test When the personalNumber is missing
backend-interview-task-nodejs-gary:test ✓ Should return an error (6 ms)
backend-interview-task-nodejs-gary:test Test Suites: 3 passed, 3 total
backend-interview-task-nodejs-gary:test Tests: 12 passed, 12 total
backend-interview-task-nodejs-gary:test Snapshots: 0 total
backend-interview-task-nodejs-gary:test Time: 7.144 s
backend-interview-task-nodejs-gary:test Ran all test suites matching /\.spec\.js$/i.
backend-interview-task-nodejs-papaya:test When the request is invalid
backend-interview-task-nodejs-papaya:test When the firstName is missing
backend-interview-task-nodejs-papaya:test ✓ Should return an error (9 ms)
backend-interview-task-nodejs-papaya:test When the secondName is missing
backend-interview-task-nodejs-papaya:test ✓ Should return an error (5 ms)
backend-interview-task-nodejs-papaya:test When the personalNumber is missing
backend-interview-task-nodejs-papaya:test ✓ Should return an error (4 ms)
backend-interview-task-nodejs-papaya:test Test Suites: 3 passed, 3 total
backend-interview-task-nodejs-papaya:test Tests: 12 passed, 12 total
backend-interview-task-nodejs-papaya:test Snapshots: 0 total
backend-interview-task-nodejs-papaya:test Time: 7.648 s
backend-interview-task-nodejs-papaya:test Ran all test suites matching /\.spec\.js$/i.

Tasks: 12 successful, 12 total
Cached: 12 cached, 12 total
Time: 171ms >>> FULL TURBO
```

```
turbo test 0,29s user 0,12s system 229% cpu 0,178 total
+ apps git:(main) ✖
```

Turborepo in the CI pipeline

First party recipes available for

- Github Actions
- Gitlab CI
- Circle CI
- Travis CI

```
name: turborepo-ci

on:
  push:
    branches: ["main"]
  pull_request:
    types: [opened, synchronize]

jobs:
  build:
    name: Build and Test
    timeout-minutes: 15
    runs-on: ubuntu-latest

    steps:
      - name: Check out code
        uses: actions/checkout@v3
        with:
          fetch-depth: 2

      - name: Setup Node.js environment
        uses: actions/setup-node@v3
        with:
          node-version: 16
          cache: 'npm'

      - name: Install dependencies
        run: npm install

      - name: Build
        run: npm run build

      - name: Test
        run: npm run test
```

Other alternatives

Buck 



Bazel



Takeaways

Monorepos can **improve** the **performance** of CI

Turborepo may not be optimal for other languages than TS/JS

Caching lint, build and test leads to better performance

Monorepo may introduce **dependency management** problems

Key takeaway

If you haven't tried monorepos, now's the time!