How to setup API Gateway and Lambda with AWS CDK

Jack Do
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2,169 views Jun 6, 2022 AWS Cloud Development Kit (CDK) crash course
Hello guys,

In this video we will go through:
▸ 00:00 Setup a CDK project with Typescript
▸ 04:15 Write CDK code for API Gateway and Lambda
▸ 17:15 Deploy the code to AWS
▸ 22:22 Create a Postman collection to test the newly created API

CDK crash course

• • •

Tutorial 2: API Gateway and Lambda

Content

1. Setting up the project
2. Coding
3. Deploy using CDK command
4. Setting up Postman

```
jackdo@jack-macbook:~/source-code/youtube/todo-app

~/source-code/youtube    mkdir todo-app

~/source-code/youtube    cd todo-app

~/source-code/youtube/todo-app    cdk init app --language typescript
Applying project template app for typescript
# Welcome to your CDK TypeScript project

This is a blank project for TypeScript development with CDK.

The `cdk.json` file tells the CDK Toolkit how to execute your app.

## Useful commands

* `npm run build`    compile typescript to js
* `npm run watch`    watch for changes and compile
* `npm run test`     perform the jest unit tests
* `cdk deploy`       deploy this stack to your default AWS account/region
* `cdk diff`         compare deployed stack with current state
* `cdk synth`        emits the synthesized CloudFormation template

Initializing a new git repository...
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:    git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:    git branch -m <name>
Executing npm install...
npm WARN deprecated sane@4.1.0: some dependency vulnerabilities fixed, support for node < 10 dropped, and newer ECMAScript syntax/features added
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN notsup Unsupported engine for constructs@10.1.27: wanted: {"node":">= 14.17.0"} (current: {"node":"14.16.0","npm":"6.14.11"})
npm WARN notsup Not compatible with your version of node/npm: constructs@10.1.27
npm WARN todo-app@0.1.0 No repository field.
npm WARN todo-app@0.1.0 No license field.

✅ All done!

~/source-code/youtube/todo-app > master 71
```
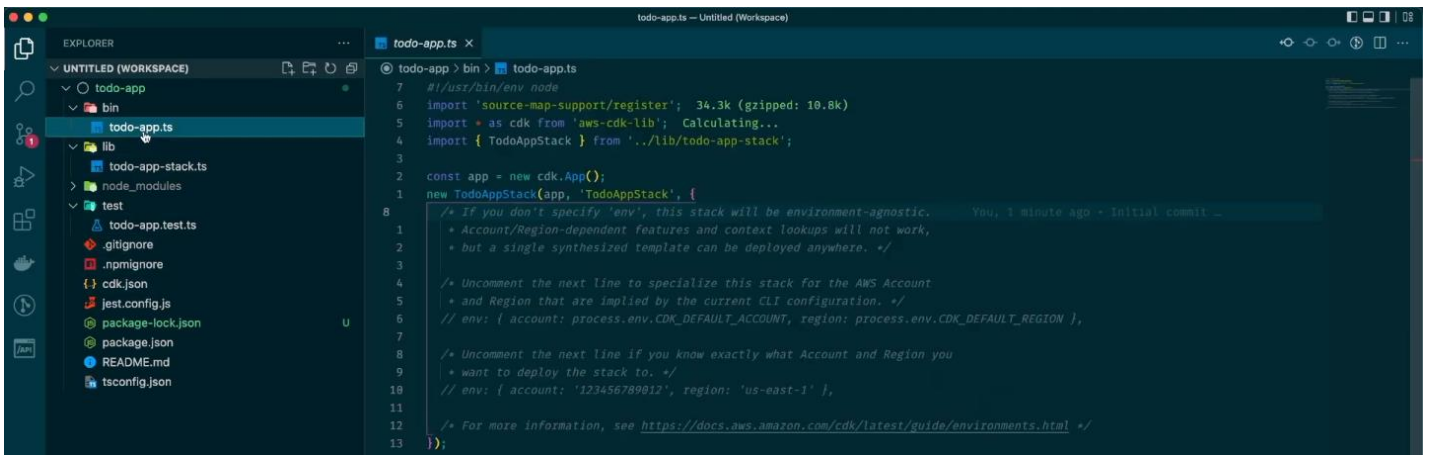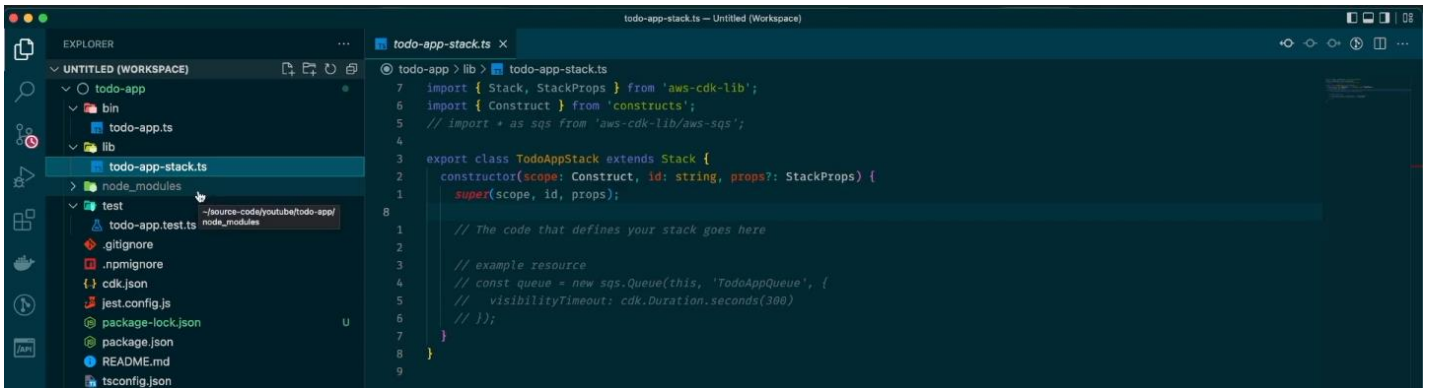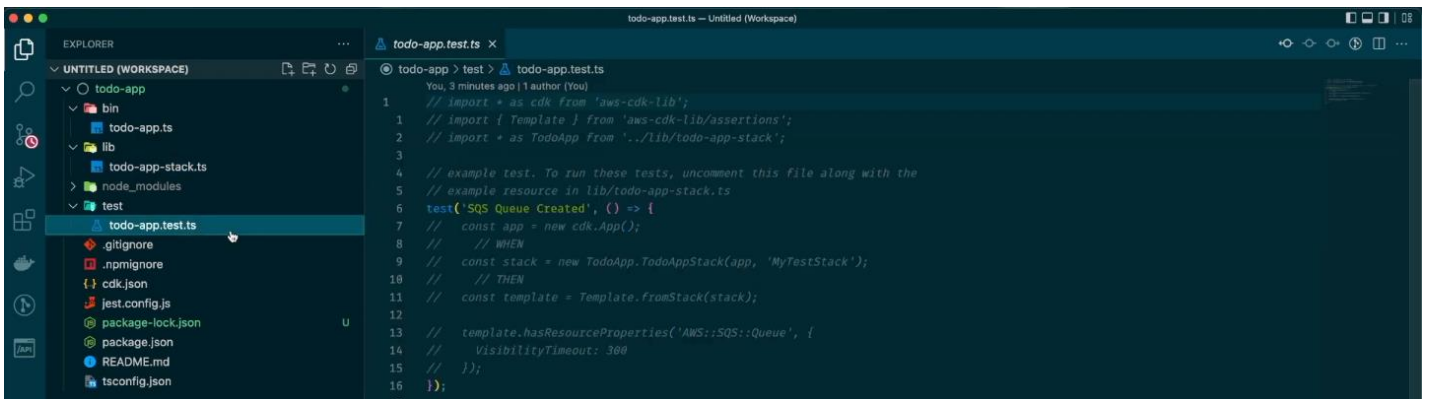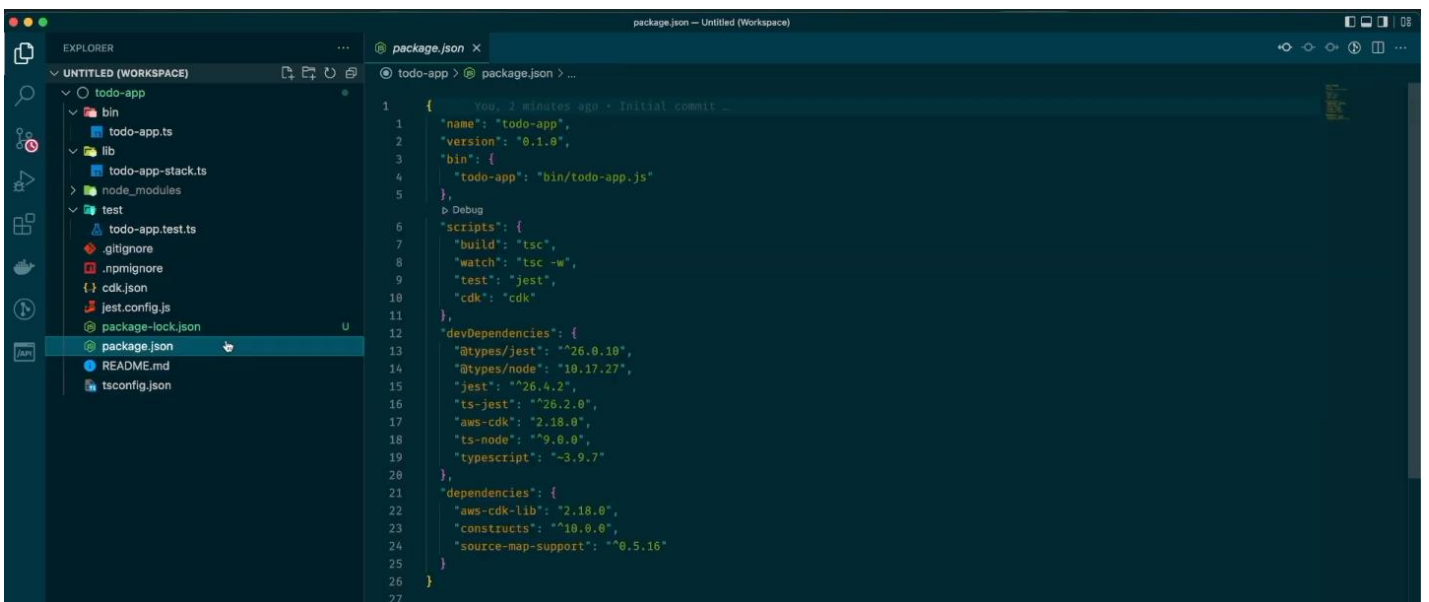
EXPLORER

UNTITLED (WORKSPACE)
- todo-app
  - bin
    - todo-app.ts
  - lib
    - todo-app-stack.ts
  - node_modules
  - test
    - todo-app.test.ts
  - .gitignore
  - .npmignore
  - cdk.json
  - jest.config.js
  - package-lock.json   U
  - package.json
  - README.md
  - tsconfig.json

todo-app > bin > todo-app.ts

```typescript
7  #!/usr/bin/env node
6  import 'source-map-support/register';   34.3k (gzipped: 10.8k)
5  import * as cdk from 'aws-cdk-lib';  Calculating...
4  import { TodoAppStack } from '../lib/todo-app-stack';
3
2  const app = new cdk.App();
1  new TodoAppStack(app, 'TodoAppStack', {
8    /* If you don't specify 'env', this stack will be environment-agnostic.     You, 1 minute ago • Initial commit ...
1     * Account/Region-dependent features and context lookups will not work,
2     * but a single synthesized template can be deployed anywhere. */
3
4    /* Uncomment the next line to specialize this stack for the AWS Account
5     * and Region that are implied by the current CLI configuration. */
6    // env: { account: process.env.CDK_DEFAULT_ACCOUNT, region: process.env.CDK_DEFAULT_REGION },
7
8    /* Uncomment the next line if you know exactly what Account and Region you
9     * want to deploy the stack to. */
10   // env: { account: '123456789012', region: 'us-east-1' },
11
12   /* For more information, see https://docs.aws.amazon.com/cdk/latest/guide/environments.html */
13  });
```

EXPLORER

UNTITLED (WORKSPACE)
- todo-app
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    - todo-app-stack.ts
  - node_modules
  - test
    - todo-app.test.ts   ~/source-code/youtube/todo-app/ node_modules
  - .gitignore
  - .npmignore
  - cdk.json
  - jest.config.js
  - package-lock.json   U
  - package.json
  - README.md
  - tsconfig.json

todo-app > lib > todo-app-stack.ts

```typescript
7  import { Stack, StackProps } from 'aws-cdk-lib';
6  import { Construct } from 'constructs';
5  // import * as sqs from 'aws-cdk-lib/aws-sqs';
4
3  export class TodoAppStack extends Stack {
2    constructor(scope: Construct, id: string, props?: StackProps) {
1      super(scope, id, props);
8
1      // The code that defines your stack goes here
2
3      // example resource
4      // const queue = new sqs.Queue(this, 'TodoAppQueue', {
5      //   visibilityTimeout: cdk.Duration.seconds(300)
6      // });
7    }
8  }
9
```

EXPLORER

UNTITLED (WORKSPACE)
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  - cdk.json
  - jest.config.js
  - package-lock.json   U
  - package.json
  - README.md
  - tsconfig.json

todo-app > test > todo-app.test.ts

```typescript
   You, 3 minutes ago | 1 author (You)
1  // import * as cdk from 'aws-cdk-lib';
1  // import { Template } from 'aws-cdk-lib/assertions';
2  // import * as TodoApp from '../lib/todo-app-stack';
3
4  // example test. To run these tests, uncomment this file along with the
5  // example resource in lib/todo-app-stack.ts
6  test('SQS Queue Created', () => {
7  //   const app = new cdk.App();
8  //     // WHEN
9  //   const stack = new TodoApp.TodoAppStack(app, 'MyTestStack');
10 //     // THEN
11 //   const template = Template.fromStack(stack);
12
13 //   template.hasResourceProperties('AWS::SQS::Queue', {
14 //     VisibilityTimeout: 300
15 //   });
16 });
```

EXPLORER

UNTITLED (WORKSPACE)
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    - todo-app-stack.ts
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  - cdk.json
  - jest.config.js
  - package-lock.json   U
  - package.json
  - README.md
  - tsconfig.json

todo-app > package.json > ...

```json
1  {                    You, 3 minutes ago • Initial commit ...
1    "name": "todo-app",
2    "version": "0.1.0",
3    "bin": {
4      "todo-app": "bin/todo-app.js"
5    },
   ▷ Debug
6    "scripts": {
7      "build": "tsc",
8      "watch": "tsc -w",
9      "test": "jest",
10     "cdk": "cdk"
11   },
12   "devDependencies": {
13     "@types/jest": "^26.0.10",
14     "@types/node": "10.17.27",
15     "jest": "^26.4.2",
16     "ts-jest": "^26.2.0",
17     "aws-cdk": "2.18.0",
18     "ts-node": "^9.0.0",
19     "typescript": "~3.9.7"
20   },
21   "dependencies": {
22     "aws-cdk-lib": "2.18.0",
23     "constructs": "^10.0.0",
24     "source-map-support": "^0.5.16"
25   }
26 }
27
```

Construct are the basic building blocks of a CDK App, it contains everything needed by the CDK to create the CF files. A Stack is a unit of deployment.

EXPLORER

UNTITLED (WORKSPACE)
- todo-app
  - bin
    - todo-app.ts   M
  - cdk.out
  - lib
    - todo-app-stack.ts

todo-app-stack.ts ×   index.d.ts

todo-app > lib > todo-app-stack.ts > TodoAppStack

You, yesterday | 1 author (You)

```ts
4  import { Stack, StackProps } from 'aws-cdk-lib';
3  import { Construct } from 'constru    (alias) class Stack
2  // import * as sqs from 'aws-cdk-l     import Stack
1
                                          A root construct which represents a single CloudFormation stack.
5  export class TodoAppStack extends Stack {        You, yesterday • Initial commit
```

EXPLORER

UNTITLED (WORKSPACE)
- todo-app
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    - todo-app-stack.ts
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  - cdk.json
  - jest.config.js
  - package-lock.json
  - package.json
  - README.md
  - tsconfig.json

todo-app-stack.ts   Lambda.ts U ×

todo-app > lib > Lambda.ts > Lambda > constructor > logRetention

```ts
12  import { Architecture, Runtime } from "aws-cdk-lib/aws-lambda";    3.3M (gzipped: 524.7k)
11  import { NodejsFunction } from "aws-cdk-lib/aws-lambda-nodejs";
10  import { RetentionDays } from "aws-cdk-lib/aws-logs";    3.3M (gzipped: 524.7k)
9   import { Construct } from "constructs";    6.8k (gzipped: 2.5k)
8   import * as path from "path"
7
6   export class Lambda extends NodejsFunction {
5       constructor(scope: Construct, fileName: string) {
4           super(scope, fileName, {
3               architecture: Architecture.ARM_64,
2               runtime: Runtime.NODEJS_14_X,
1               entry: path.join(__dirname,`../backend/lambda/${fileName}.ts`),
13              logRetention: RetentionDays.ONE_DAY
1           })
2       }
3   }
```

EXPLORER

UNTITLED (WORKSPACE)
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    - ApiGateway.ts   U
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  - jest.config.js
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  - package.json
  - README.md
  - tsconfig.json

Lambda.ts U   ApiGateway.ts U ×

todo-app > lib > ApiGateway.ts > ApiGateway > constructor

```ts
7   import { RemovalPolicy } from "aws-cdk-lib";
6   import { LambdaIntegration, LogGroupLogDestination, RestApi } from "aws-cdk-lib/aws-apigateway";
5   import { IFunction } from "aws-cdk-lib/aws-lambda";
4   import { LogGroup, RetentionDays } from "aws-cdk-lib/aws-logs";
3   import { Construct } from "constructs";
1
    export class ApiGateway extends RestApi {
8       constructor(scope: Construct) {
1           super(scope, "ApiGateway", {
2               restApiName: 'todo-app',
3               deployOptions: {
4                   accessLogDestination: new LogGroupLogDestination(new LogGroup(scope, "ApiLogGroup", {
5                       logGroupName: "api_gateway",
6                       retention: RetentionDays.ONE_DAY,
7                       removalPolicy: RemovalPolicy.DESTROY
8                   }))
9               }
10          })
11      }
12
13      addIntegration(method: string, path: string, lambda: IFunction) {
14          const resource = this.root.resourceForPath(path);
15          resource.addMethod(method, new LambdaIntegration(lambda))
16      }
17  }
```

EXPLORER

UNTITLED (WORKSPACE)
- todo-app
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  - jest.config.js
  - package-lock.json   U
  - package.json
  - README.md
  - tsconfig.json

Lambda.ts U   ApiGateway.ts U   todo-app-stack.ts M ×

todo-app > lib > todo-app-stack.ts > TodoAppStack > constructor

You, 1 second ago | 1 author (You)

```ts
13  import { Stack, StackProps } from 'aws-cdk-lib';
12  import { Construct } from 'constructs';
11  import { ApiGateway } from './ApiGateway';
10  // import * as sqs from 'aws-cdk-lib/aws-sqs';
9
    You, 1 second ago | 1 author (You)
8   export class TodoAppStack extends Stack {
7       constructor(scope: Construct, id: string, props?: StackProps) {
6           super(scope, id, props);
5
4           // Api Gateway setup
3           const api = new ApiGateway(this);
2
1           //Lambdas setup
14                You, 10 minutes ago • Initial commit …
1       }
2   }
3
```

Screenshot 1

Tabs: Lambda.ts U | health.ts 2, U ● | ApiGateway.ts U | todo-app-stack.ts M

todo-app > backend > lambda > health.ts > handler

```
1   export const handler = async (event: APIGatewayEvent) 💡
```

PROBLEMS 2 | OUTPUT | TERMINAL | GITLENS | DEBUG CONSOLE

```
~/source-code/youtube/todo-app  master !1 ?4  npm install @types/aws-lambda
npm WARN todo-app@0.1.0 No repository field.
npm WARN todo-app@0.1.0 No license field.

+ @types/aws-lambda@8.10.98
added 1 package from 42 contributors and audited 526 packages in 4.256s

27 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

~/source-code/youtube/todo-app  master !2 ?4
```

Screenshot 2

Tabs: Lambda.ts U | health.ts U × | ApiGateway.ts U | todo-app-stack.ts M

todo-app > backend > lambda > health.ts > [∅] handler > statusCode

```
7   import { APIGatewayEvent, APIGatewayProxyResult } from "aws-lambda";
6
5   export const handler = async (event: APIGatewayEvent): Promise<APIGatewayProxyResult> => {
4       console.log("health lambda executed", event);
3
2       return {
1           body: "OK",
8           statusCode: 200
1       }
2   }
```

Screenshot 3

Tabs: Lambda.ts U | health.ts U | api-gateway-proxy.d.ts × | ApiGateway.ts U | todo-app-stack.ts M

todo-app > node_modules > @types > aws-lambda > trigger > api-gateway-proxy.d.ts > APIGatewayProxyEventBase

```
8   export interface APIGatewayProxyEventMultiValueQueryStringParameters {
7       [name: string]: string[] | undefined;
6   }
5
4   export interface APIGatewayProxyEventStageVariables {
3       [name: string]: string | undefined;
2   }
189 export interface APIGatewayProxyEventBase<TAuthorizerContext> {
1       body: string | null;
2       headers: APIGatewayProxyEventHeaders;
3       multiValueHeaders: APIGatewayProxyEventMultiValueHeaders;
4       httpMethod: string;
5       isBase64Encoded: boolean;
6       path: string;
7       pathParameters: APIGatewayProxyEventPathParameters | null;
8       queryStringParameters: APIGatewayProxyEventQueryStringParameters | null;
9       multiValueQueryStringParameters: APIGatewayProxyEventMultiValueQueryStringParameters | null;
10      stageVariables: APIGatewayProxyEventStageVariables | null;
11      requestContext: APIGatewayEventRequestContextWithAuthorizer<TAuthorizerContext>;
12      resource: string;
13  }
14
15  /**
16   * Works with Lambda Proxy Integration for Rest API or HTTP API integration Payload Format version 1.0
17   * @see - https://docs.aws.amazon.com/apigateway/latest/developerguide/http-api-develop-integrations-lambda.html
18   */
19  export interface APIGatewayProxyResult {
20      statusCode: number;
21      headers?: {
22          [header: string]: boolean | number | string;
23      } | undefined;
24      multiValueHeaders?: {
25          [header: string]: Array<boolean | number | string>;
26      } | undefined;
27      body: string;
28      isBase64Encoded?: boolean | undefined;
29  }
30
```

Screenshot 1 — api-gateway-proxy.d.ts

```
todo-app > node_modules > @types > aws-lambda > trigger > api-gateway-proxy.d.ts > APIGatewayEvent

18  /**
17   * Interface for structured response with `statusCode` and `headers`
16   * Works with HTTP API integration Payload Format version 2.0
15   * @see - https://docs.aws.amazon.com/apigateway/latest/developerguide/http-api-develop-integrations-lambda.html
14   */
13  export interface APIGatewayProxyStructuredResultV2 {
12      statusCode?: number | undefined;
11      headers?: {
10          [header: string]: boolean | number | string;
 9      } | undefined;
 8      body?: string | undefined;
 7      isBase64Encoded?: boolean | undefined;
 6      cookies?: string[] | undefined;
 5  }
 4
 3  // Legacy names
 2  export type ProxyHandler = APIGatewayProxyHandler;
 1  export type ProxyCallback = APIGatewayProxyCallback;
244 export type APIGatewayEvent = APIGatewayProxyEvent;
    export type ProxyResult = APIGatewayProxyResult;
 2
```
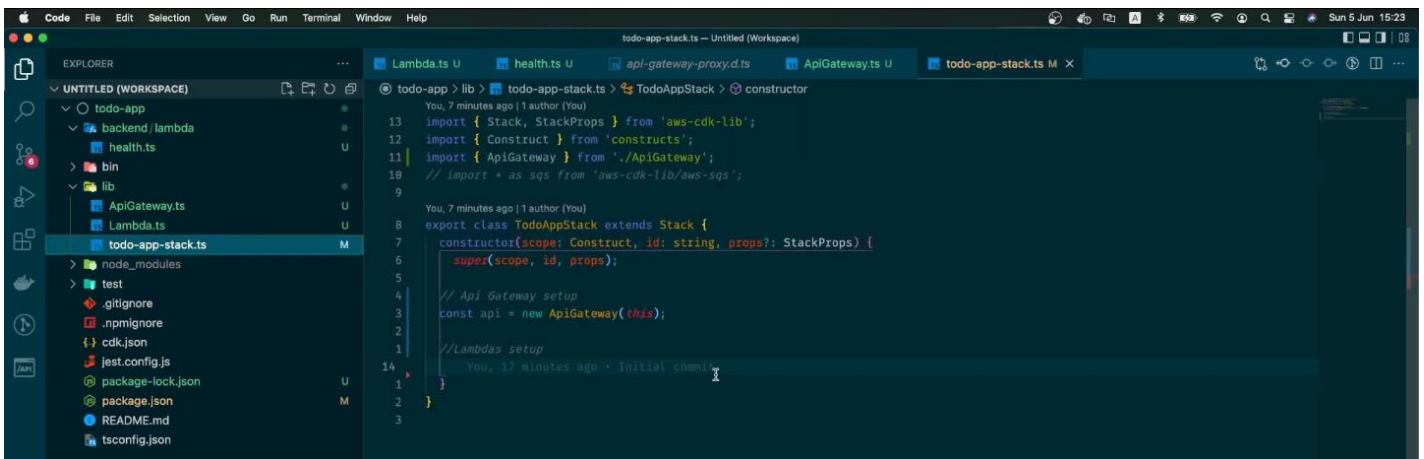
Screenshot 2 — api-gateway-proxy.d.ts

```
todo-app > node_modules > @types > aws-lambda > trigger > api-gateway-proxy.d.ts > APIGatewayProxyResult

17      headers: APIGatewayProxyEventHeaders;
16      multiValueHeaders: APIGatewayProxyEventMultiValueHeaders;
15      httpMethod: string;
14      isBase64Encoded: boolean;
13      path: string;
12      pathParameters: APIGatewayProxyEventPathParameters | null;
11      queryStringParameters: APIGatewayProxyEventQueryStringParameters | null;
10      multiValueQueryStringParameters: APIGatewayProxyEventMultiValueQueryStringParameters | null;
 9      stageVariables: APIGatewayProxyEventStageVariables | null;
 8      requestContext: APIGatewayEventRequestContextWithAuthorizer<TAuthorizerContext>;
 7      resource: string;
 6  }
 5
 4  /**
 3   * Works with Lambda Proxy Integration for Rest API or HTTP API integration Payload Format version 1.0
 2   * @see - https://docs.aws.amazon.com/apigateway/latest/developerguide/http-api-develop-integrations-lambda.html
 1   */
128 export interface APIGatewayProxyResult {
 1      statusCode: number;
 2      headers?: {
 3          [header: string]: boolean | number | string;
 4      } | undefined;
 5      multiValueHeaders?: {
 6          [header: string]: Array<boolean | number | string>;
 7      } | undefined;
 8      body: string;
 9      isBase64Encoded?: boolean | undefined;
10  }
11
12  /**
13   * Works with HTTP API integration Payload Format version 2.0
14   * @see - https://docs.aws.amazon.com/apigateway/latest/developerguide/http-api-develop-integrations-lambda.html
15   */
16  export interface APIGatewayEventRequestContextV2 {
17      accountId: string;
18      apiId: string;
19      authentication?: {
20          clientCert: APIGatewayEventClientCertificate;
21      };
```
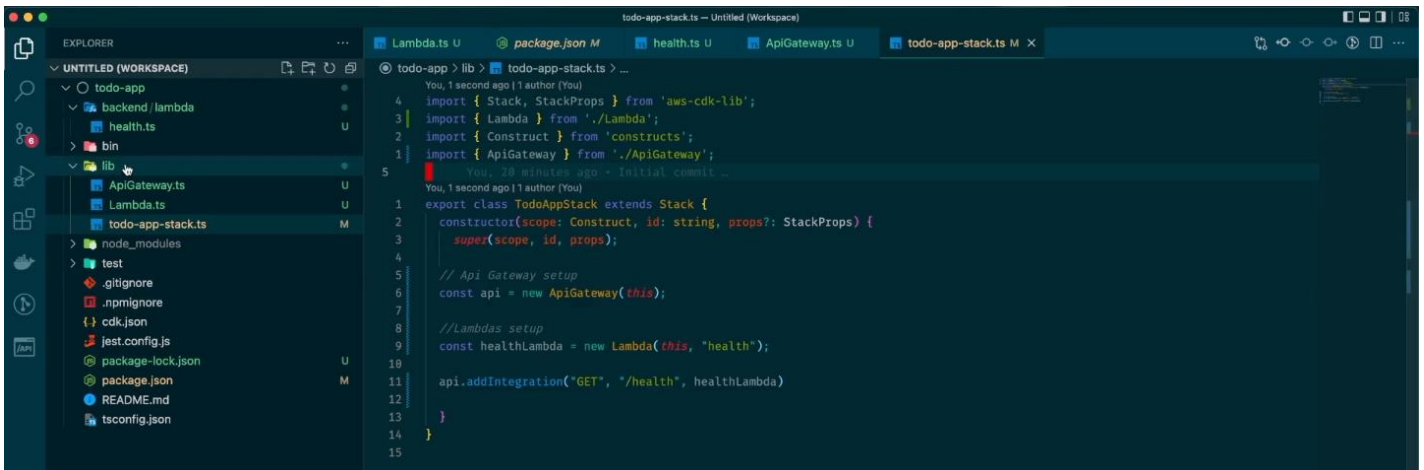
Screenshot 3 — health.ts

```
todo-app > backend > lambda > health.ts > handler

2  import { APIGatewayEvent, APIGatewayProxyResult } from "aws-lambda";
1
3  export const handler = async (event: APIGatewayEvent): Promise<APIGatewayProxyResult> => {
1      console.log("health lambda executed", event);
2
3      return {
4          body: "OK",
5          statusCode: 200
6      }
7  }
```
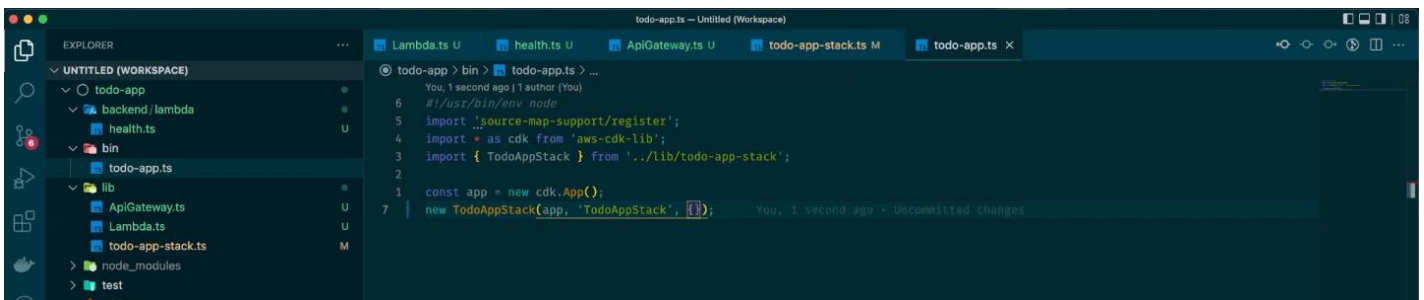
We can now integrate the Lambda into our API Gateway above

```
cdk synth                                                                                    ⌥⌘1

~/source-code/youtube/todo-app  master ?1   l                                          ✓  19s
total 432
drwxr-xr-x  16 jackdo  staff   512B Jun  5 15:21 .
drwxr-xr-x   4 jackdo  staff   128B Jun  5 15:05 ..
drwxr-xr-x  12 jackdo  staff   384B Jun  5 15:21 .git
-rw-r--r--   1 jackdo  staff    93B Jun  5 15:06 .gitignore
-rw-r--r--   1 jackdo  staff    65B Jun  5 15:06 .npmignore
-rw-r--r--   1 jackdo  staff   536B Jun  5 15:06 README.md
drwxr-xr-x   3 jackdo  staff    96B Jun  5 15:19 backend
drwxr-xr-x   3 jackdo  staff    96B Jun  5 15:06 bin
-rw-r--r--   1 jackdo  staff   880B Jun  5 15:06 cdk.json
-rw-r--r--   1 jackdo  staff   157B Jun  5 15:06 jest.config.js
drwxr-xr-x   5 jackdo  staff   160B Jun  5 15:12 lib
drwxr-xr-x 361 jackdo  staff    11K Jun  5 15:21 node_modules
-rw-r--r--   1 jackdo  staff   184K Jun  5 15:21 package-lock.json
-rw-r--r--   1 jackdo  staff   569B Jun  5 15:21 package.json
drwxr-xr-x   3 jackdo  staff    96B Jun  5 15:06 test
-rw-r--r--   1 jackdo  staff   650B Jun  5 15:06 tsconfig.json

~/source-code/youtube/todo-app  master !3 ?4   cdk synth                                     ✓
[+] Building 13.2s (3/12)
 => [internal] load build definition from Dockerfile                                       0.1s
 => => transferring dockerfile: 1.13kB                                                     0.0s
 => [internal] load .dockerignore                                                          0.0s
 => => transferring context: 2B                                                            0.0s
 => [internal] load metadata for public.ecr.aws/sam/build-nodejs14.x:latest                5.0s
 => [1/9] FROM public.ecr.aws/sam/build-nodejs14.x@sha256:6b866941aa6dee08cb1d94247e94b39fe398e76fa65c13dfe337156e19019123  8.0s
 => => resolve public.ecr.aws/sam/build-nodejs14.x@sha256:6b866941aa6dee08cb1d94247e94b39fe398e76fa65c13dfe337156e19019123  0.0s
 => => sha256:6b866941aa6dee08cb1d94247e94b39fe398e76fa65c13dfe337156e19019123 772B / 772B  0.0s
 => => sha256:b0220817e44b8b891ef571577f15198a274cd6854978cf634f4a290bce1b4138 94.62kB / 94.62kB  1.2s
 => => sha256:16a992cb7e27a8e175d9d5bf3562a9ac570d92ffd903bf26e035a62ff9ef6f34 2.42kB / 2.42kB  0.0s
 => => sha256:771a5361115fd3ee48788c9aacb090a6fdd22deecbe6b89dcfb0457fc4658e01 6.07kB / 6.07kB  0.0s
 => => sha256:5734cf48a3c395d7bfc5e5e3bba47f777c2e7e93c7bc063a94df40ab616c1808 53.48MB / 72.27MB  8.0s
 => => sha256:39ca3c0fc0a2a75f3f73ceaf0794eb78361e464d142f6de7c41b3105637f7c6a 11.53MB / 37.57MB  8.0s
 => => sha256:77614fdca613596a3fcfd7ed05621954a05b491d1411364faca2441318369212 9.27MB / 9.27MB  3.1s
 => => sha256:512c374b35eb3ea3271c463e4cc91a5cb332cff0c84157901d04e1224b4fd920 34.60MB / 454.33MB  8.0s
```

```
jackdo@jack-macbook:~/source-code/youtube/todo-app                                           ⌥⌘1

            - Fn::Equals:
              - Ref: AWS::Region
              - eu-south-1
          - Fn::Equals:
              - Ref: AWS::Region
              - eu-west-1
          - Fn::Equals:
              - Ref: AWS::Region
              - eu-west-2
          - Fn::Equals:
              - Ref: AWS::Region
              - eu-west-3
          - Fn::Equals:
              - Ref: AWS::Region
              - me-south-1
          - Fn::Equals:
              - Ref: AWS::Region
              - sa-east-1
          - Fn::Equals:
              - Ref: AWS::Region
              - us-east-1
          - Fn::Equals:
              - Ref: AWS::Region
              - us-east-2
        - Fn::Or:
            - Fn::Equals:
                - Ref: AWS::Region
                - us-west-1
            - Fn::Equals:
                - Ref: AWS::Region
                - us-west-2
Parameters:
  BootstrapVersion:
    Type: AWS::SSM::Parameter::Value<String>
    Default: /cdk-bootstrap/hnb659fds/version
    Description: Version of the CDK Bootstrap resources in this environment, automatically retrieved from SSM Parameter Store. [cdk:skip]
Rules:
  CheckBootstrapVersion:
    Assertions:
      - Assert:
          Fn::Not:
            - Fn::Contains:
                - - "1"
                  - "2"
                  - "3"
                  - "4"
                  - "5"
                - Ref: BootstrapVersion
        AssertDescription: CDK bootstrap stack version 6 required. Please run 'cdk bootstrap' with a recent version of the CDK CLI.

~/source-code/youtube/todo-app  master !3 ?4                                           ✓  1m 47s
```

```
~/source-code/youtube/todo-app  master !3 ?4   cdk deploy                                    ✓  7s
[+] Building 1.0s (13/13) FINISHED
 => [internal] load build definition from Dockerfile                                       0.0s
 => => transferring dockerfile: 37B                                                        0.0s
 => [internal] load .dockerignore                                                          0.0s
 => => transferring context: 2B                                                            0.0s
 => [internal] load metadata for public.ecr.aws/sam/build-nodejs14.x:latest                0.9s
 => [1/9] FROM public.ecr.aws/sam/build-nodejs14.x@sha256:6b866941aa6dee08cb1d94247e94b39fe398e76fa65c13dfe337156e19019123  0.0s
 => CACHED [2/9] RUN npm install --global yarn@1.22.5                                       0.0s
 => CACHED [3/9] RUN npm install --global pnpm                                             0.0s
 => CACHED [4/9] RUN npm install --global typescript                                        0.0s
 => CACHED [5/9] RUN npm install --global --unsafe-perm=true esbuild@0                      0.0s
 => CACHED [6/9] RUN mkdir /tmp/npm-cache &&     chmod -R 777 /tmp/npm-cache &&     npm config --global set cache /tmp/npm-cache  0.0s
 => CACHED [7/9] RUN mkdir /tmp/yarn-cache &&     chmod -R 777 /tmp/yarn-cache &&     yarn config set cache-folder /tmp/yarn-cache  0.0s
 => CACHED [8/9] RUN npm config --global set update-notifier false                          0.0s
 => CACHED [9/9] RUN /sbin/useradd -u 1000 user && chmod 711 /                              0.0s
 => exporting to image                                                                     0.0s
 => => exporting layers                                                                    0.0s
 => => writing image sha256:80dbbb1c5b3eaa1b2ebd5683c29642af58f3922ef0d38adef7d1c30432747d7d  0.0s
 => => naming to docker.io/library/cdk-a37a8b37df38cd42b35fe9004566cf6661871d9e4c65068e8817e72ea987ec63  0.0s
Bundling asset TodoAppStack/health/Code/Stage...
esbuild cannot run locally. Switching to Docker bundling.

  asset-output/index.js  1.2kb

⚡ Done in 23ms

✨  Synthesis time: 5.39s
```

cdk deploy

+ ${ApiGateway/CloudWatchRole.Arn}   Allow   sts:AssumeRole   Service:apigateway.amazonaws.com

+ ${LogRetentionaae0aa3c5b4d4f87b02d85b201efdd8   Allow   sts:AssumeRole   Service:lambda.amazonaws.com
  a/ServiceRole.Arn}

+ ${health.Arn}   Allow   lambda:InvokeFunction   Service:apigateway.amazonaws.com   "ArnLike": {
                                                                                                                              "AWS:SourceArn": "arn:${AWS::Partition}:execu
                                                                                                                           te-api:${AWS::Region}:${AWS::AccountId}:${ApiGa
                                                                                                                           teway11E7F47B}/${ApiGateway/DeploymentStage.pro
                                                                                                                           d}/GET/health"
                                                                                                                           }

+ ${health.Arn}   Allow   lambda:InvokeFunction   Service:apigateway.amazonaws.com   "ArnLike": {
                                                                                                                              "AWS:SourceArn": "arn:${AWS::Partition}:execu
                                                                                                                           te-api:${AWS::Region}:${AWS::AccountId}:${ApiGa
                                                                                                                           teway11E7F47B}/test-invoke-stage/GET/health"
                                                                                                                           }

+ ${health/ServiceRole.Arn}   Allow   sts:AssumeRole   Service:lambda.amazonaws.com

+ *   Allow   logs:DeleteRetentionPolicy AWS:${LogRetentionaae0aa3c5b4d4f87b02d85b201
                                                            logs:PutRetentionPolicy   fdd8a/ServiceRole}

IAM Policy Changes

    Resource   Managed Policy ARN

+ ${ApiGateway/CloudWatchRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AmazonAPIGatewayPushToCloudWatchLogs

+ ${LogRetentionaae0aa3c5b4d4f87b02d85b201efdd8a/ServiceRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AWSLambdaBasicExecutionRole

+ ${health/ServiceRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AWSLambdaBasicExecutionRole

(NOTE: There may be security-related changes not in this list. See https://github.com/aws/aws-cdk/issues/1299)

Do you wish to deploy these changes (y/n)? y
TodoAppStack: deploying...
[0%] start: Publishing 440eccd9dfdac1feba363ef2ee73f83708f21361a7561d6d7f52042bef136515:current_account-current_region
[0%] start: Publishing 558dc75fbdc793c8e2f64f85d2d7ed2cb820c727ec7e9b08666ad1af0103992e:current_account-current_region
[0%] start: Publishing 60655c99f61c5d9055be84a792828722629af4d7ade01fe604dce42ab1a4a7a0:current_account-current_region
[33%] success: Published 440eccd9dfdac1feba363ef2ee73f83708f21361a7561d6d7f52042bef136515:current_account-current_region
[66%] success: Published 60655c99f61c5d9055be84a792828722629af4d7ade01fe604dce42ab1a4a7a0:current_account-current_region
[100%] success: Published 558dc75fbdc793c8e2f64f85d2d7ed2cb820c727ec7e9b08666ad1af0103992e:current_account-current_region
TodoAppStack: creating CloudFormation changeset...
[████████████   ] (8/18)

3:36:07 PM | CREATE_IN_PROGRESS | AWS::CloudFormation::Stack | TodoAppStack
3:36:41 PM | CREATE_IN_PROGRESS | AWS::Lambda::Function | health
3:36:42 PM | CREATE_IN_PROGRESS | AWS::IAM::Policy | LogRetentionaae0aa...Role/DefaultPolicy

jackdo@jack-macbook:~/source-code/youtube/todo-app

                                                                                                                           te-api:${AWS::Region}:${AWS::AccountId}:${ApiGa
                                                                                                                           teway11E7F47B}/test-invoke-stage/GET/health"
                                                                                                                           }

+ ${health/ServiceRole.Arn}   Allow   sts:AssumeRole   Service:lambda.amazonaws.com

+ *   Allow   logs:DeleteRetentionPolicy AWS:${LogRetentionaae0aa3c5b4d4f87b02d85b201e
                                                            logs:PutRetentionPolicy   fdd8a/ServiceRole}

IAM Policy Changes

    Resource   Managed Policy ARN

+ ${ApiGateway/CloudWatchRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AmazonAPIGatewayPushToCloudWatchLogs

+ ${LogRetentionaae0aa3c5b4d4f87b02d85b201efdd8a/ServiceRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AWSLambdaBasicExecutionRole

+ ${health/ServiceRole}   arn:${AWS::Partition}:iam::aws:policy/service-role/AWSLambdaBasicExecutionRole

(NOTE: There may be security-related changes not in this list. See https://github.com/aws/aws-cdk/issues/1299)

Do you wish to deploy these changes (y/n)? y
TodoAppStack: deploying...
[0%] start: Publishing 440eccd9dfdac1feba363ef2ee73f83708f21361a7561d6d7f52042bef136515:current_account-current_region
[0%] start: Publishing 558dc75fbdc793c8e2f64f85d2d7ed2cb820c727ec7e9b08666ad1af0103992e:current_account-current_region
[0%] start: Publishing 60655c99f61c5d9055be84a792828722629af4d7ade01fe604dce42ab1a4a7a0:current_account-current_region
[33%] success: Published 440eccd9dfdac1feba363ef2ee73f83708f21361a7561d6d7f52042bef136515:current_account-current_region
[66%] success: Published 60655c99f61c5d9055be84a792828722629af4d7ade01fe604dce42ab1a4a7a0:current_account-current_region
[100%] success: Published 558dc75fbdc793c8e2f64f85d2d7ed2cb820c727ec7e9b08666ad1af0103992e:current_account-current_region
TodoAppStack: creating CloudFormation changeset...

✅ TodoAppStack

✨ Deployment time: 87.21s

Outputs:
TodoAppStack.ApiGatewayEndpoint5AA8EC3A = https://gt4hwq4xme.execute-api.ap-southeast-2.amazonaws.com/prod/
Stack ARN:
arn:aws:cloudformation:ap-southeast-2:683793928497:stack/TodoAppStack/62665ff0-e491-11ec-981a-0219e5a28b7a

✨ Total time: 93.73s

~/source-code/youtube/todo-app master !3 74   ✓ 1m 39s

aws Services | Search for services, features, blogs, docs, and more [Option+S] | Sydney ▾ | jack @ 6837-9392-8497 ▾

Layers (0)

API Gateway

+ Add trigger

Add destination

Last modified
3 minutes ago

Function ARN
arn:aws:lambda:ap-southeast-2:683793928497:function:TodoAppStack-he
althC878E2FF-Ycb6JZmakoTO

Application
TodoAppStack

Function URL   Info
-

Code | Test | Monitor | Configuration | Aliases | Versions

Code source   Info

Upload from ▾

File Edit Find View Go Tools Window   Test ▾   Deploy

Go to Anything (⌘ P)   index.js

```
16  };
17  var __toCommonJS = (mod) => __copyProps(__defProp({}, "__esModule", { value: true }), mod);
18
19  // asset-input/backend/lambda/health.ts
20  var health_exports = {};
21  __export(health_exports, {
22    handler: () => handler
23  });
24  module.exports = __toCommonJS(health_exports);
25  var handler = async (event) => {
26    console.log("health lambda executed", event);
27    return {
28      body: "OK",
29      statusCode: 200
30    };
31  };
32  // Annotate the CommonJS export names for ESM import in node:
33  0 && (module.exports = {
34    handler
35  });
36
```


✅ TodoAppStack

✨ Deployment time: 87.21s

Outputs:
TodoAppStack.ApiGatewayEndpoint5AA8EC3A = https://gt4hwq4xme.execute-api.ap-southeast-2.amazonaws.com/prod/
Stack ARN:
arn:aws:cloudformation:ap-southeast-2:683793928497:stack/TodoAppStack/62665ff0-e491-11ec-981a-0219e5a28b7a

✨ Total time: 93.73s

Postman File Edit View Window Help   Sun 5 Jun 15:42

Postman

Home Workspaces ▾ API Network ▾ Reports Explore   Search Postman   Invite Upgrade ▾

Tutorial   New Import   Todo App   GET Health   DEV   No Environment ▾

Globals   DEV

DEV

Collections

APIs

Environments

Mock Servers

Monitors

Fork 0 Save Share •••

VARIABLE	TYPE	INITIAL VALUE	CURRENT VALUE	Persist All Reset All
☑ URL	default	https://gt4hwq4xme.execute-api.ap-southeast-2.a	https://gt4hwq4xme.execute-api.ap-southeast-2.amazonaws.com/prod/	
Add a new variable				

Postman File Edit View Window Help   Sun 5 Jun 15:43

Postman

Home Workspaces ▾ API Network ▾ Reports Explore   Search Postman   Invite Upgrade ▾

Tutorial   New Import   Todo App   GET Health   DEV   DEV ▾

Globals   Todo App / Health

DEV

Collections   GET ▾   {{URL}}/health   Send ▾

APIs   Params Authorization Headers (7) Body Pre-request Script Tests Settings   Cookies

Environments   Query Params

Mock Servers | KEY | VALUE | DESCRIPTION |
|---|---|---|
| Key | Value | Description |

Monitors

Flows

History

Body Cookies Headers (11) Test Results   Status: 200 OK Time: 556 ms Size: 488 B Save Response ▾

Pretty Raw Preview Visualize JSON ▾

```
1  OK
```