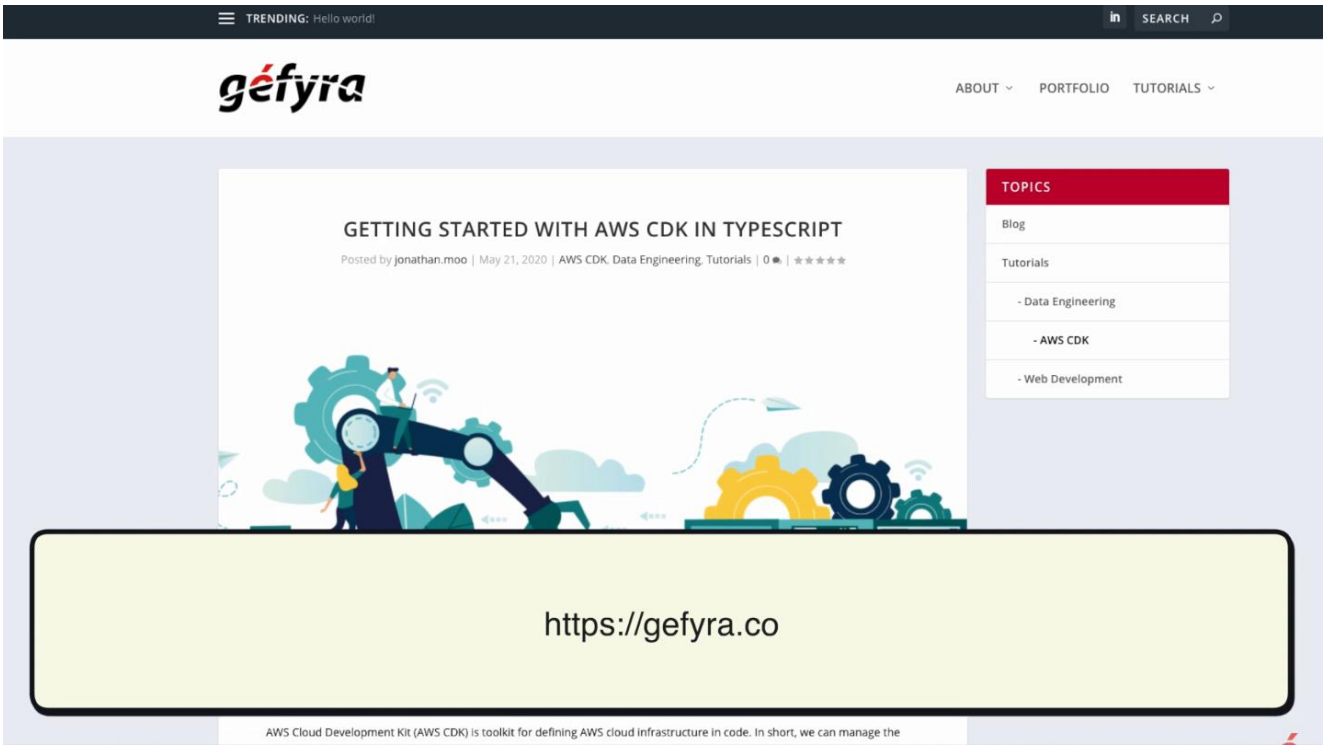
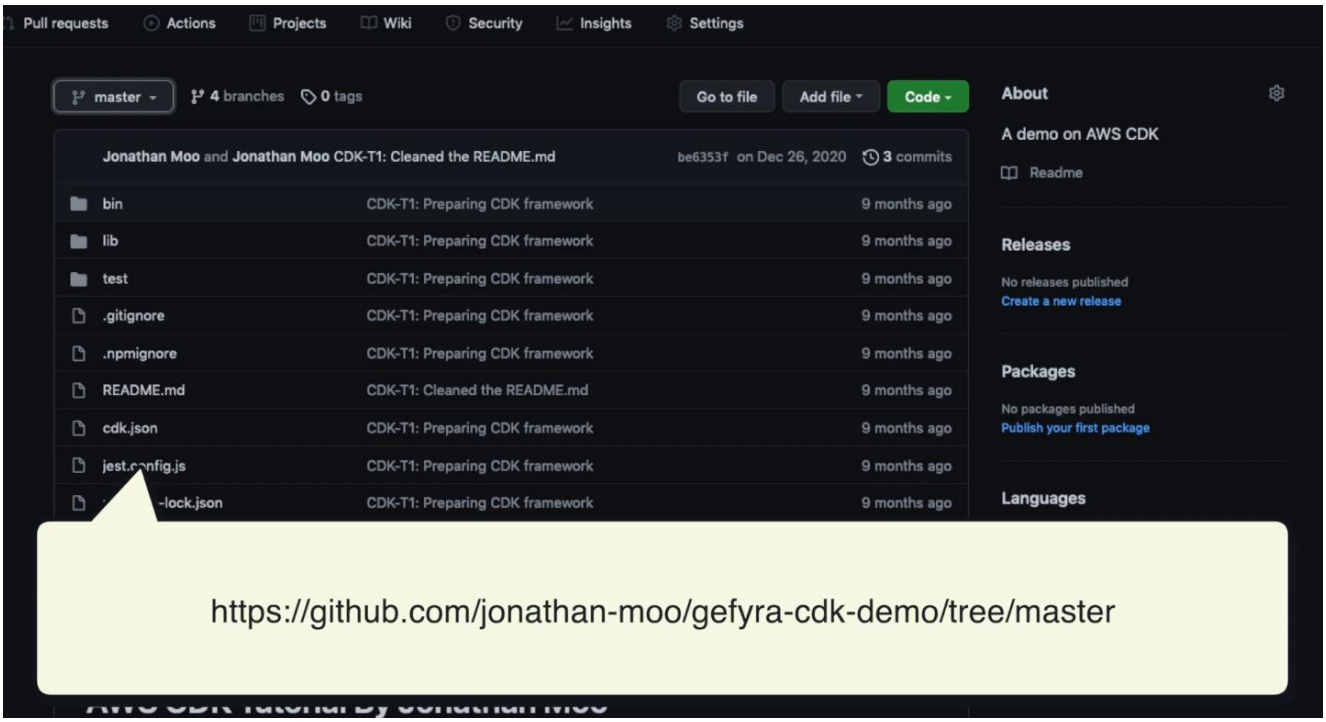
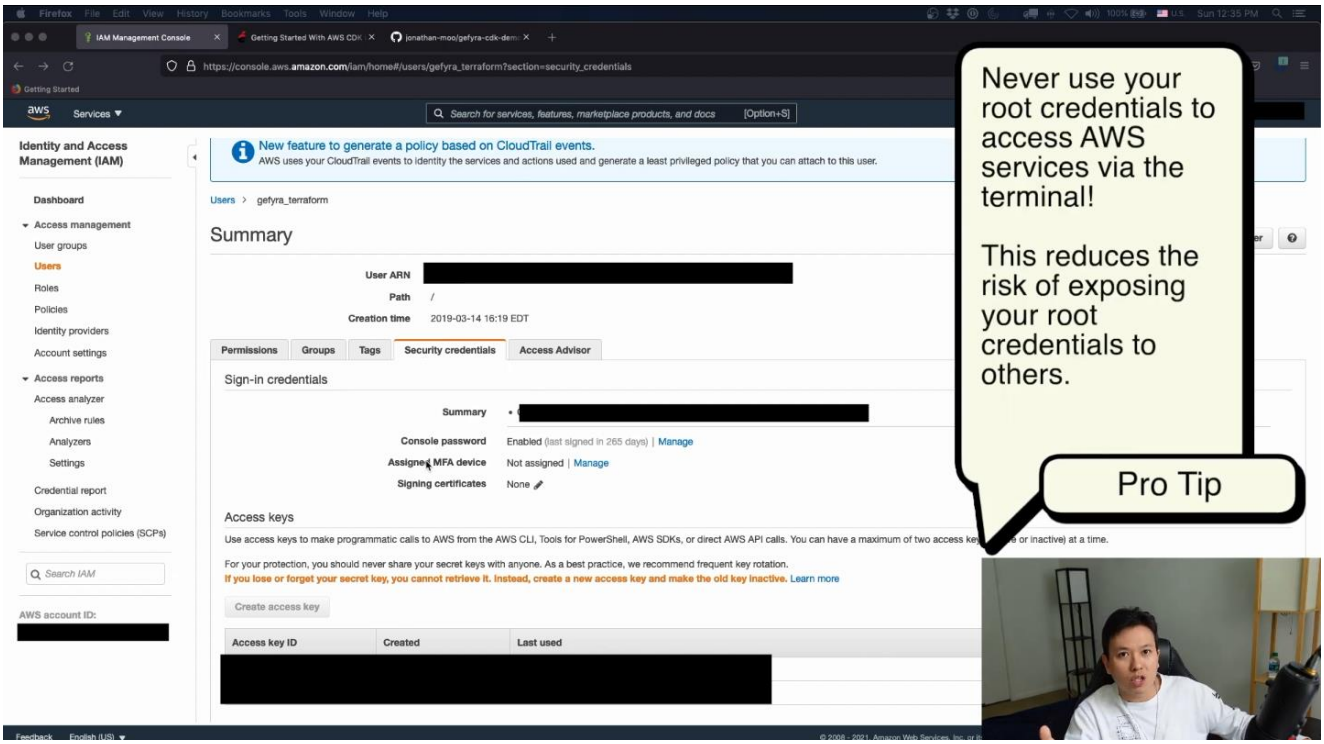
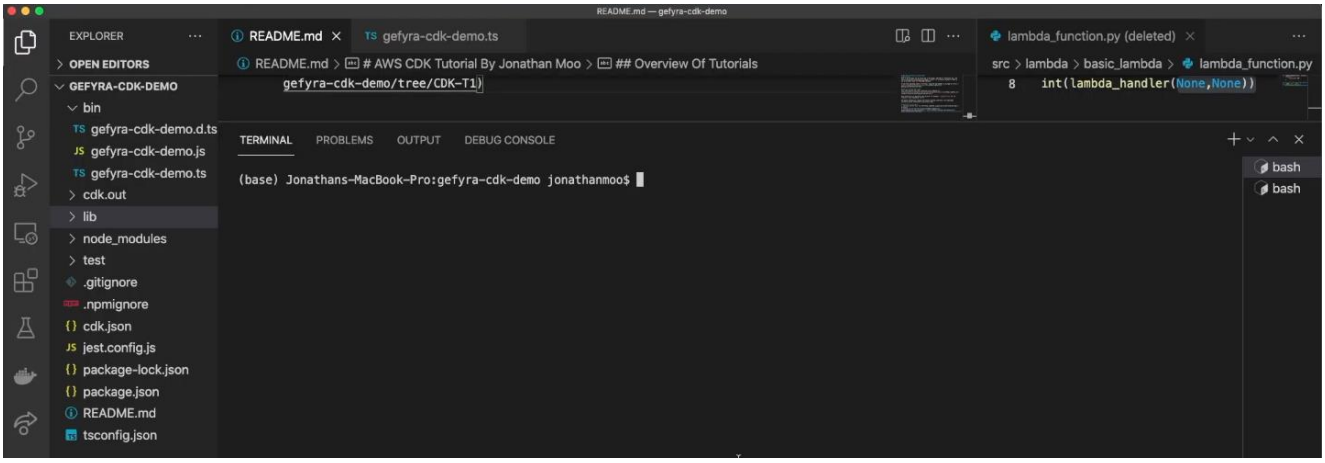
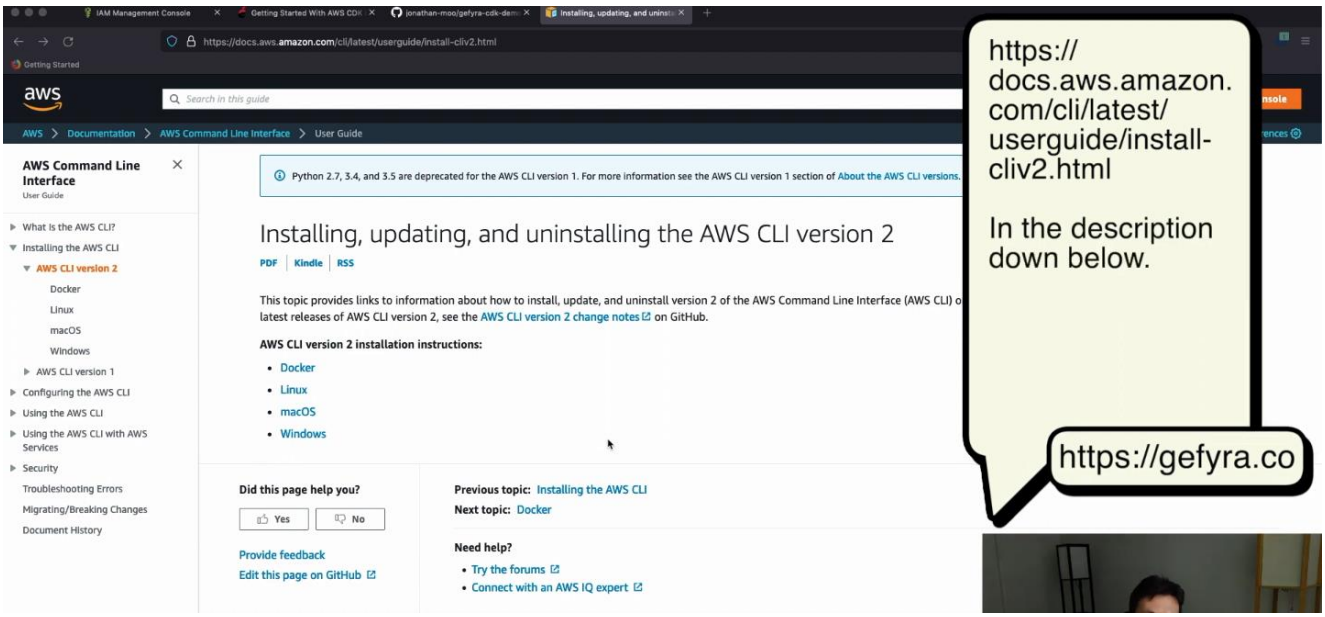
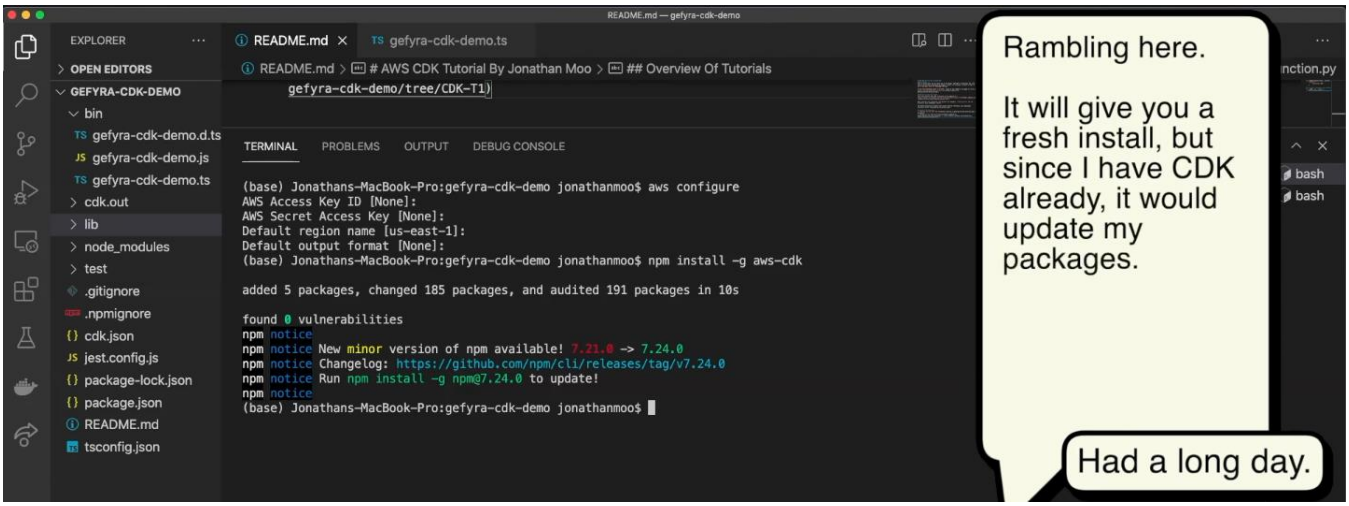

TRENDING: Hello world!
SEARCH
gefyra
ABOUT
PORTFOLIO
TUTORIALS
GETTING STARTED WITH AWS CDK IN TYPESCRIPT
Posted by jonathan.moo | May 21, 2020 | AWS CDK, Data Engineering, Tutorials | 0
TOPICS
Blog
Tutorials
- Data Engineering
- AWS CDK
- Web Development
https://gefyra.co
AWS Cloud Development Kit (AWS CDK) is toolkit for defining AWS cloud infrastructure in code. In short, we can manage the


Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
master
4 branches
0 tags
Go to file
Add file
Code
Jonathan Moo and Jonathan Moo CDK-T1: Cleaned the README.md
be6353f on Dec 26, 2020
3 commits
bin CDK-T1: Preparing CDK framework 9 months ago
lib CDK-T1: Preparing CDK framework 9 months ago
test CDK-T1: Preparing CDK framework 9 months ago
.gitignore CDK-T1: Preparing CDK framework 9 months ago
.npmignore CDK-T1: Preparing CDK framework 9 months ago
README.md CDK-T1: Cleaned the README.md 9 months ago
cdk.json CDK-T1: Preparing CDK framework 9 months ago
jest.config.js CDK-T1: Preparing CDK framework 9 months ago
-lock.json CDK-T1: Preparing CDK framework 9 months ago
About
A demo on AWS CDK
Readme
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package
Languages
https://github.com/jonathan-moo/gefyra-cdk-demo/tree/master

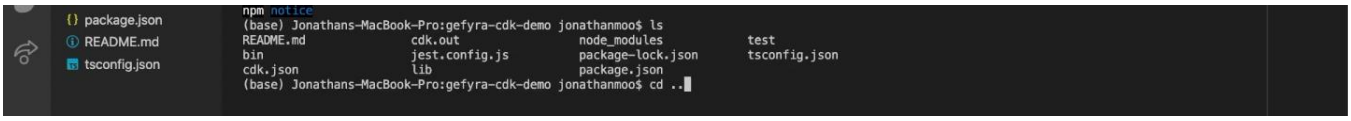

Never use your root credentials to access AWS services via the terminal!
This reduces the risk of exposing your root credentials to others.
Pro Tip

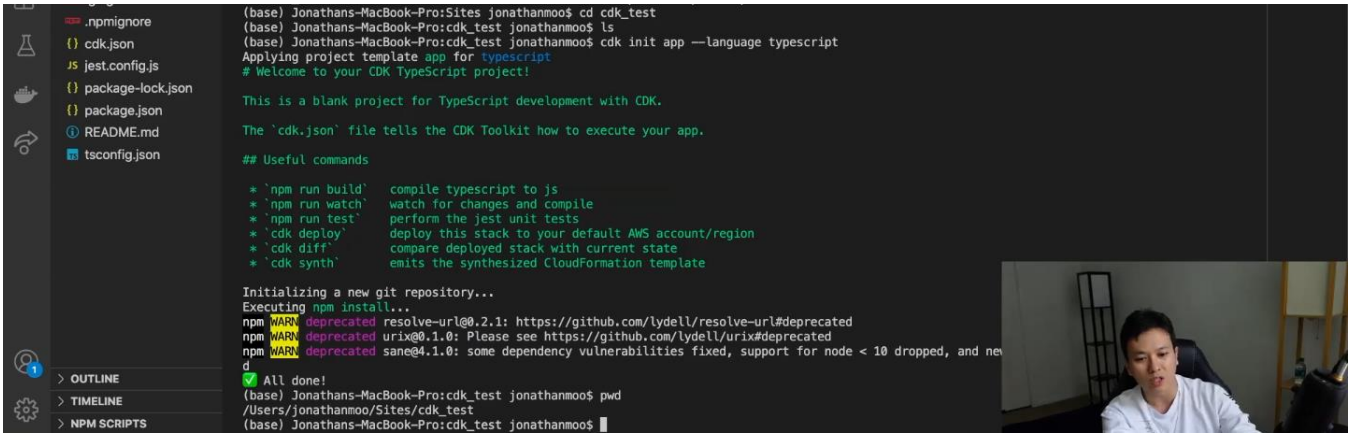

README.md — gefyra-cdk-demo
EXPLORER
README.md
gefyra-cdk-demo.ts
lambda_function.py (deleted)
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
README.md
tsconfig.json
TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$
bash
bash

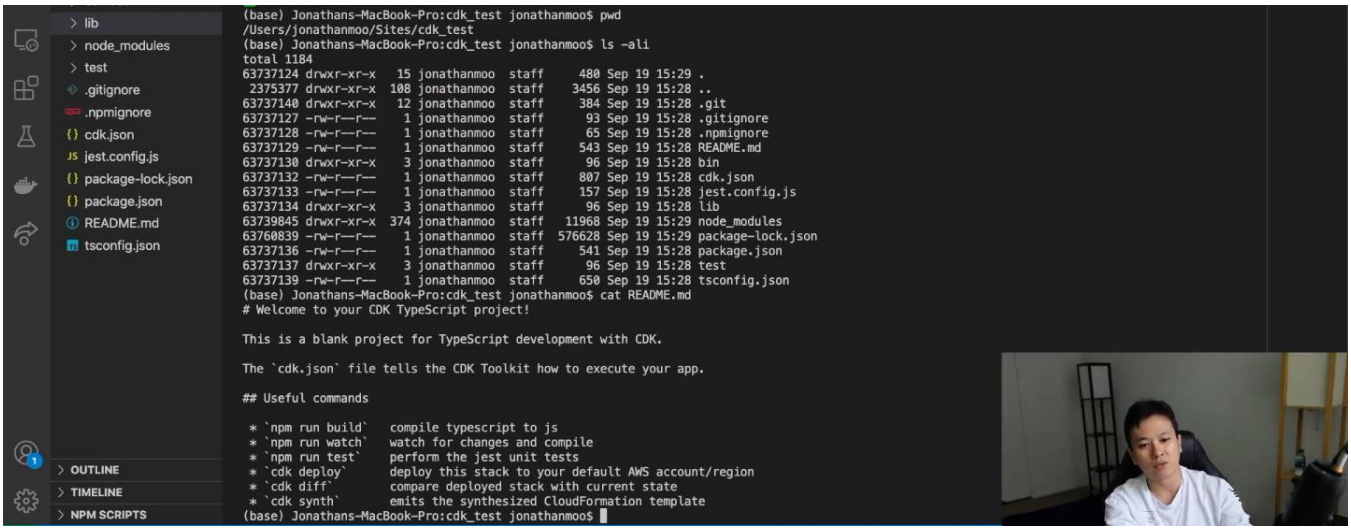

https://docs.aws.amazon.com/cli/latest/userguide/install-cliv2.html
AWS Command Line Interface
Installing, updating, and uninstalling the AWS CLI version 2
https://docs.aws.amazon.com/cli/latest/userguide/install-cliv2.html
In the description down below.
https://gefyra.co

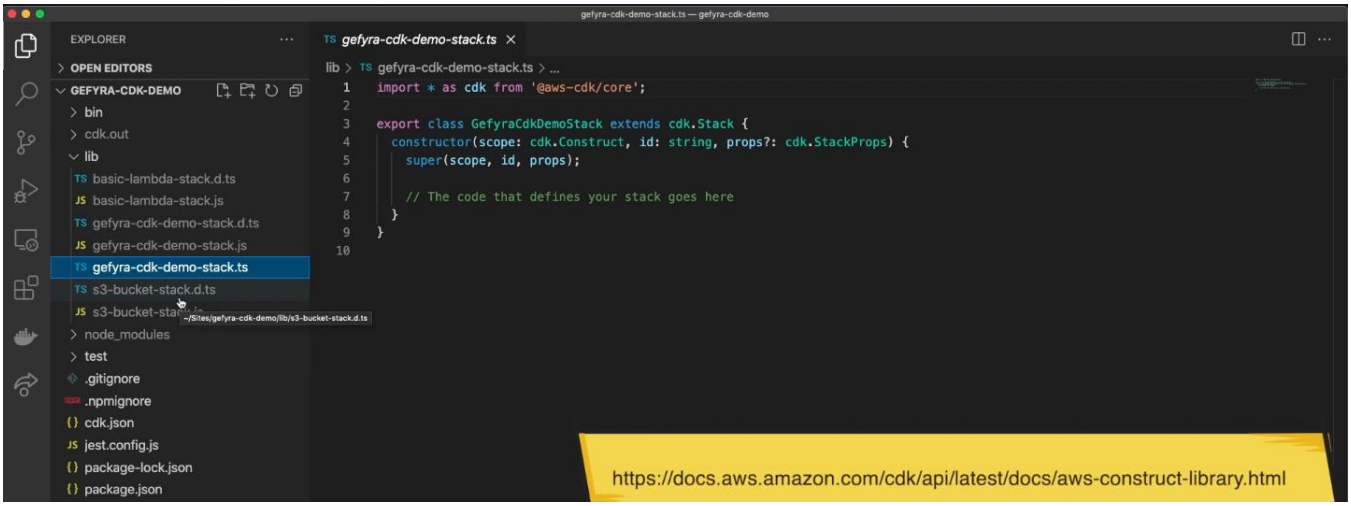


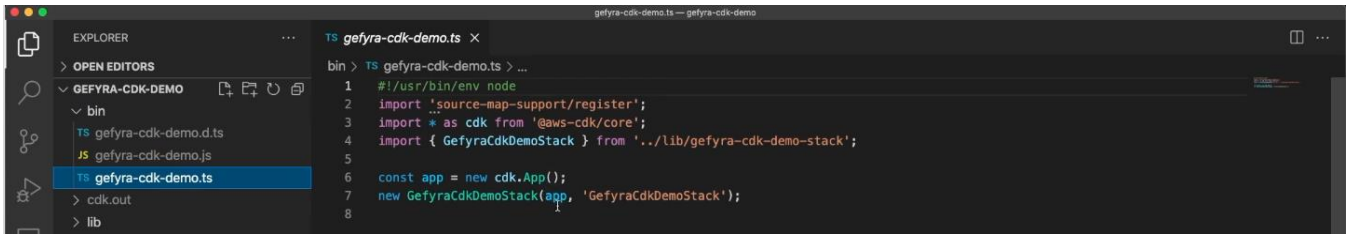
Configure your AWS account for access, then install the AWS CDK

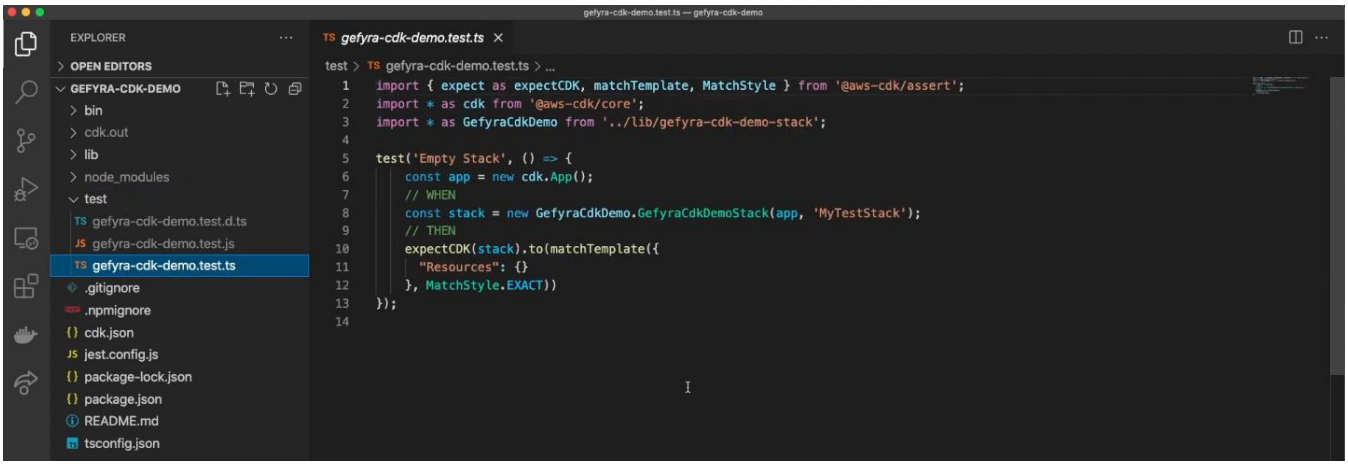


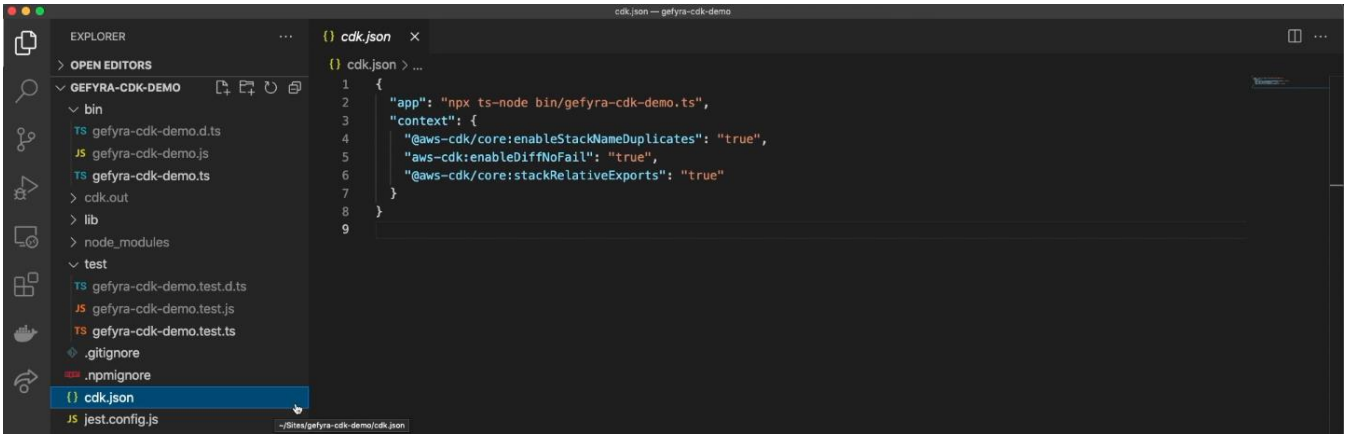


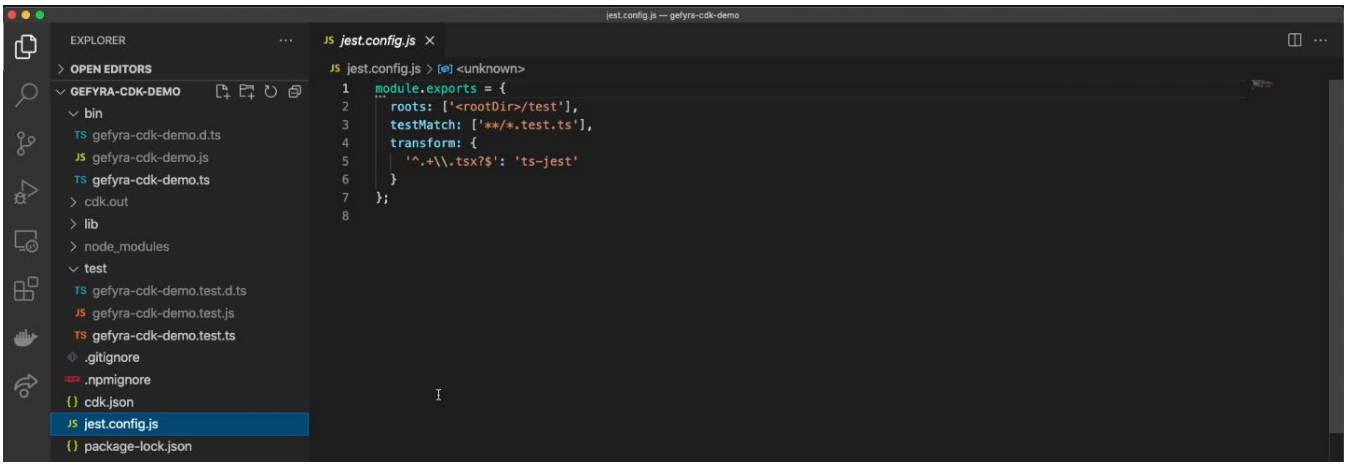


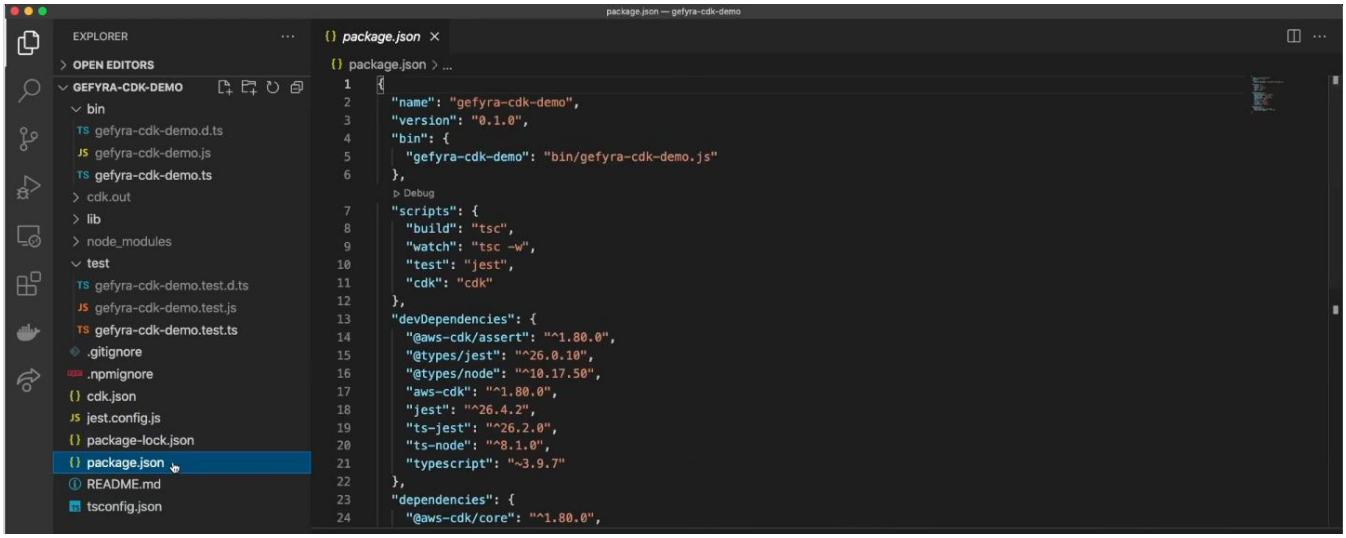

gefyra-cdk-demo-stack.ts — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
cdk.out
lib
basic-lambda-stack.d.ts
basic-lambda-stack.js
gefyra-cdk-demo-stack.d.ts
gefyra-cdk-demo-stack.js
gefyra-cdk-demo-stack.ts
s3-bucket-stack.d.ts
node_modules
test
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
gefyra-cdk-demo-stack.ts
lib > gefyra-cdk-demo-stack.ts > ...
import * as cdk from '@aws-cdk/core';
export class GefyraCdkDemoStack extends cdk.Stack {
constructor(scope: cdk.Construct, id: string, props?: cdk.StackProps) {
super(scope, id, props);
// The code that defines your stack goes here
}
}
https://docs.aws.amazon.com/cdk/api/latest/docs/aws-construct-library.html

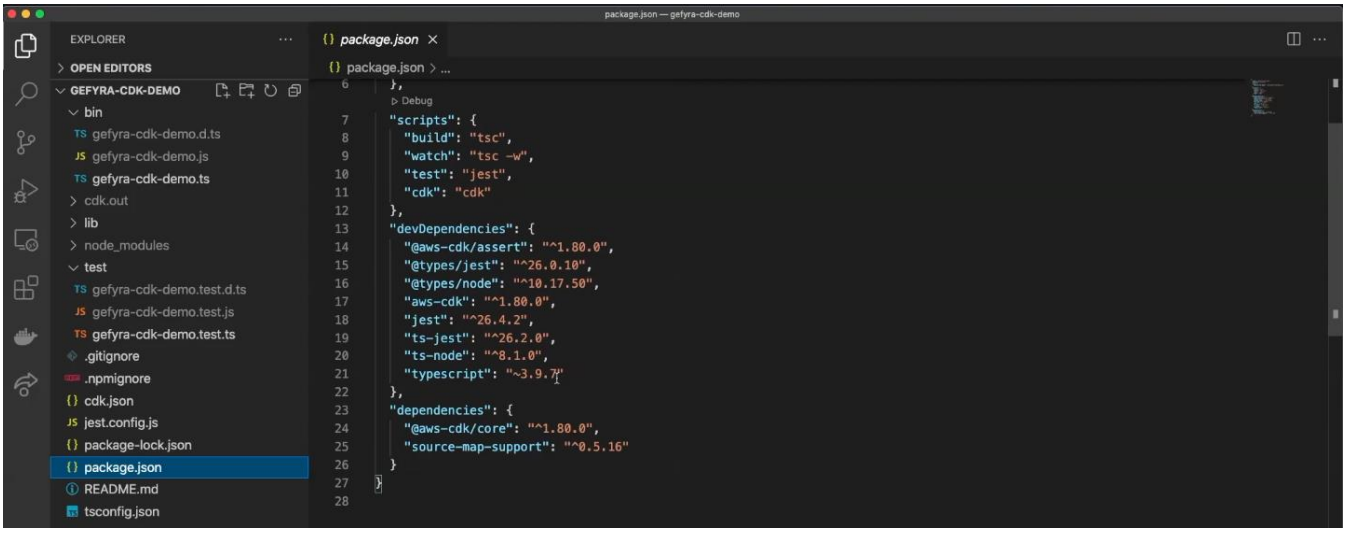

gefyra-cdk-demo.ts — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
gefyra-cdk-demo.ts
bin > gefyra-cdk-demo.ts > ...
#!/usr/bin/env node
import 'source-map-support/register';
import * as cdk from '@aws-cdk/core';
import { GefyraCdkDemoStack } from '../lib/gefyra-cdk-demo-stack';
const app = new cdk.App();
new GefyraCdkDemoStack(app, 'GefyraCdkDemoStack');

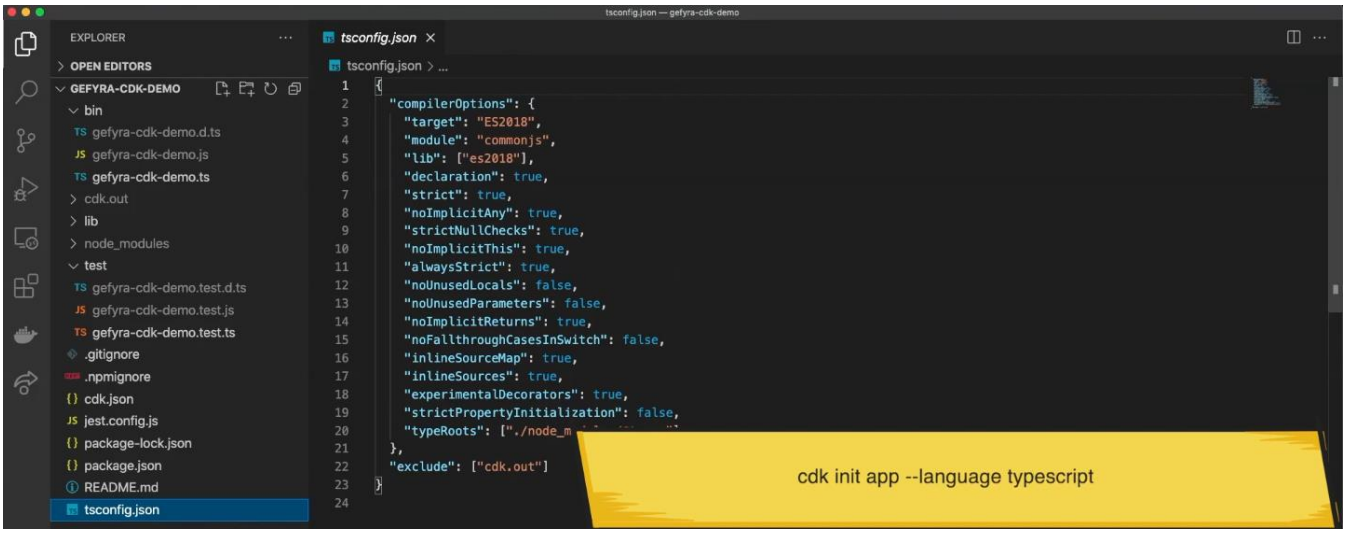

gefyra-cdk-demo.test.ts — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
README.md
tsconfig.json
gefyra-cdk-demo.test.ts
test > gefyra-cdk-demo.test.ts > ...
import { expect as expectCDK, matchTemplate, MatchStyle } from '@aws-cdk/assert';
import * as cdk from '@aws-cdk/core';
import * as GefyraCdkDemo from '../lib/gefyra-cdk-demo-stack';
test('Empty Stack', () => {
const app = new cdk.App();
// WHEN
const stack = new GefyraCdkDemo.GefyraCdkDemoStack(app, 'MyTestStack');
// THEN
expectCDK(stack).to(matchTemplate({
"Resources": {}
}, MatchStyle.EXACT))
});


cdk.json — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
cdk.json
cdk.json > ...
{
"app": "npx ts-node bin/gefyra-cdk-demo.ts",
"context": {
"@aws-cdk/core:enableStackNameDuplicates": "true",
"aws-cdk:enableDiffNoFail": "true",
"@aws-cdk/core:stackRelativeExports": "true"
}
}

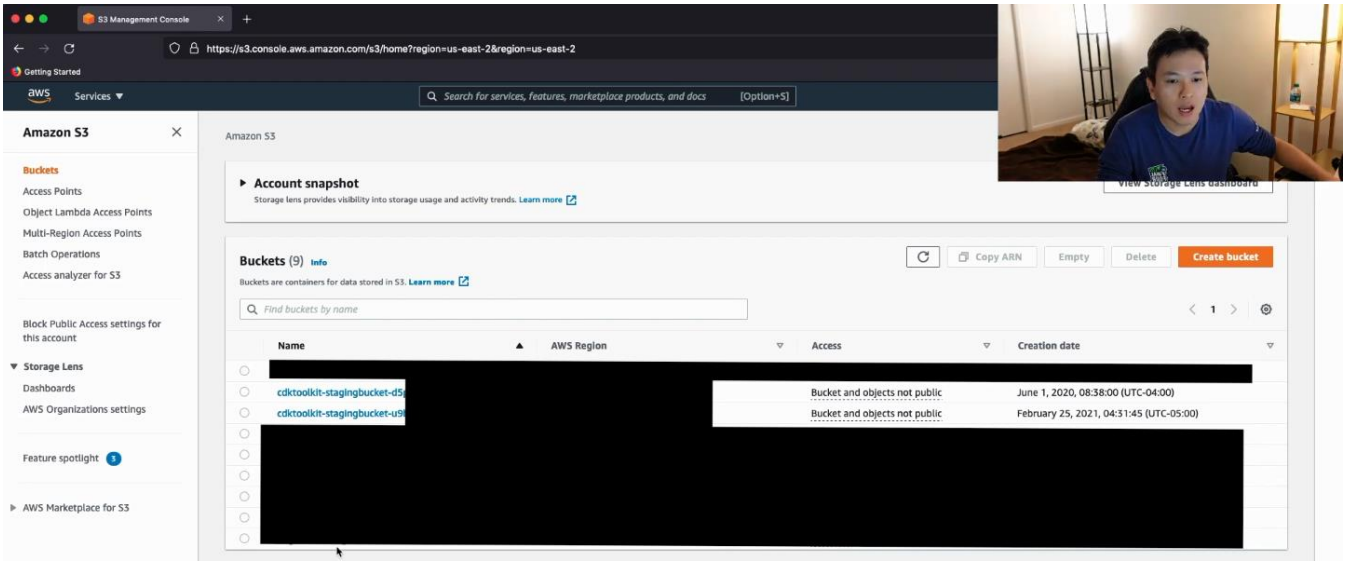

jest.config.js — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
jest.config.js
jest.config.js > <unknown>
module.exports = {
roots: ['<rootDir>/test'],
testMatch: ['**/*.test.ts'],
transform: {
'^.+\\.tsx?$': 'ts-jest'
}
};

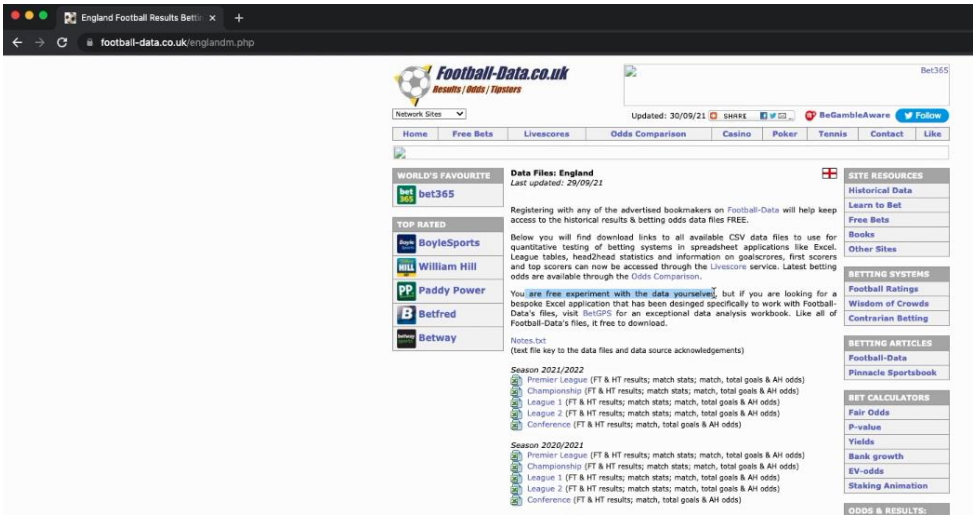

package.json — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
README.md
tsconfig.json
package.json
package.json > ...
{
"name": "gefyra-cdk-demo",
"version": "0.1.0",
"bin": {
"gefyra-cdk-demo": "bin/gefyra-cdk-demo.js"
},
Debug
"scripts": {
"build": "tsc",
"watch": "tsc -w",
"test": "jest",
"cdk": "cdk"
},
"devDependencies": {
"@aws-cdk/assert": "^1.80.0",
"@types/jest": "^26.0.10",
"@types/node": "^10.17.50",
"aws-cdk": "^1.80.0",
"jest": "^26.4.2",
"ts-jest": "^26.2.0",
"ts-node": "^8.1.0",
"typescript": "~3.9.7"
},
"dependencies": {
"@aws-cdk/core": "^1.80.0",

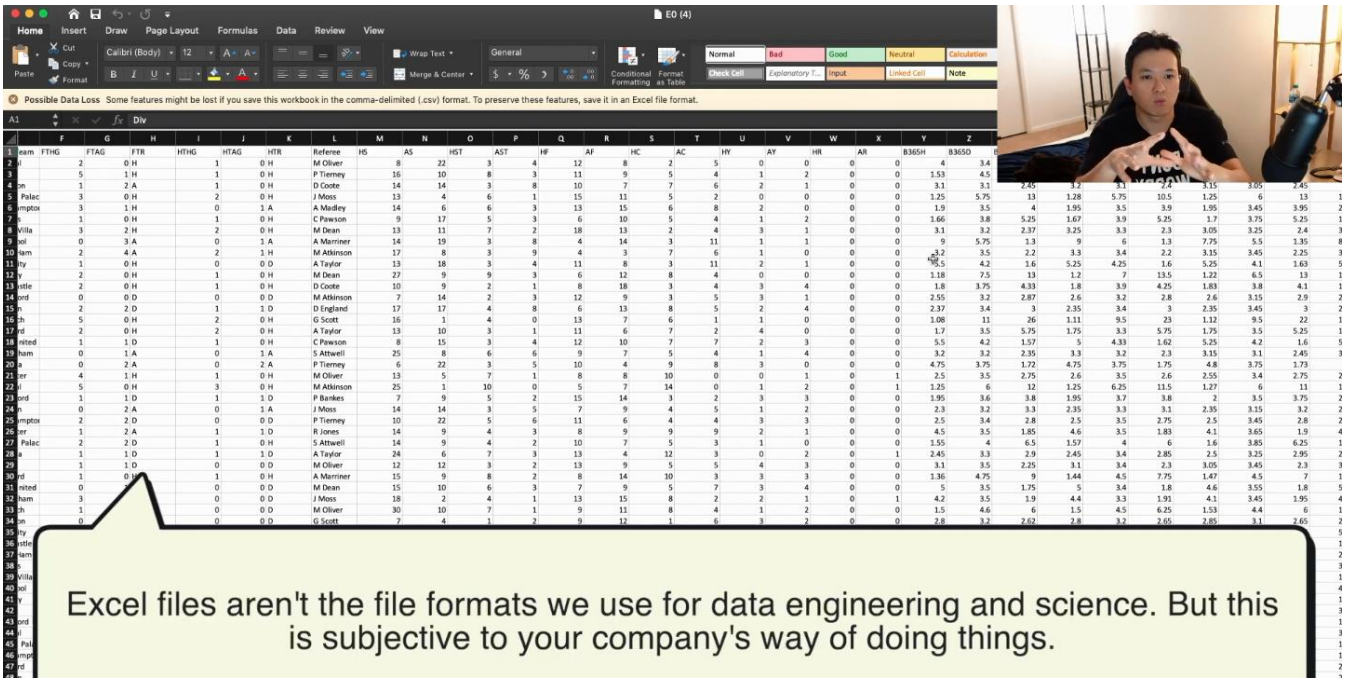

package.json — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
README.md
tsconfig.json
package.json
package.json > ...
},
Debug
"scripts": {
"build": "tsc",
"watch": "tsc -w",
"test": "jest",
"cdk": "cdk"
},
"devDependencies": {
"@aws-cdk/assert": "^1.80.0",
"@types/jest": "^26.0.10",
"@types/node": "^10.17.50",
"aws-cdk": "^1.80.0",
"jest": "^26.4.2",
"ts-jest": "^26.2.0",
"ts-node": "^8.1.0",
"typescript": "~3.9.7"
},
"dependencies": {
"@aws-cdk/core": "^1.80.0",
"source-map-support": "^0.5.16"
}
}


tsconfig.json — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
README.md
tsconfig.json
tsconfig.json
{
"compilerOptions": {
"target": "ES2018",
"module": "commonjs",
"lib": ["es2018"],
"declaration": true,
"strict": true,
"noImplicitAny": true,
"strictNullChecks": true,
"noImplicitThis": true,
"alwaysStrict": true,
"noUnusedLocals": false,
"noUnusedParameters": false,
"noImplicitReturns": true,
"noFallthroughCasesInSwitch": false,
"inlineSourceMap": true,
"inlineSources": true,
"experimentalDecorators": true,
"strictPropertyInitialization": false,
"typeRoots": ["./node_m
},
"exclude": ["cdk.out"]
}
cdk init app --language typescript

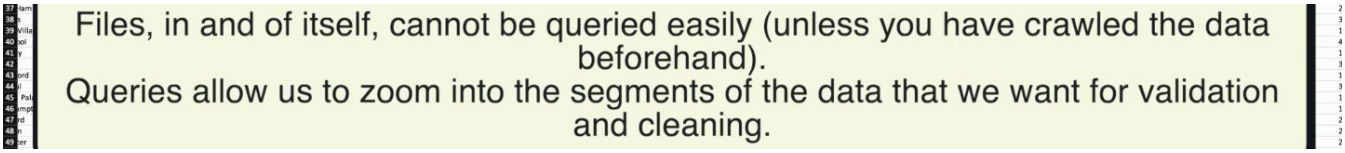

package-lock.json M
package.json
README.md
tsconfig.json
aws-cdk 1.90.1 1.1
jest 26.6.3 26.
source-map-support 0.5.19 0.5.
ts-jest 26.5.1 26.5
ts-node 8.10.2 8.10
typescript 3.9.9 3.9.
(base) Jonathans-MacBook-Pro:gefyra-c
Your AWS profile, and this is especially needed if you're handling more than 1 default AWS account.

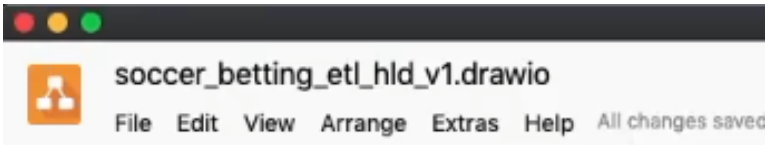

S3 Management Console
https://s3.console.aws.amazon.com/s3/home?region=us-east-2&region=us-east-2
Getting Started
aws
Services
Search for services, features, marketplace products, and docs [Option+S]
Amazon S3
Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
AWS Organizations settings
Feature spotlight 3
AWS Marketplace for S3
Amazon S3
Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
Buckets (9) Info
Buckets are containers for data stored in S3. Learn more
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
AWS Region
Access
Creation date
cdktoolkit-stagingbucket-d5
cdktoolkit-stagingbucket-u9
Bucket and objects not public
June 1, 2020, 08:38:00 (UTC-04:00)
Bucket and objects not public
February 25, 2021, 04:31:45 (UTC-05:00)

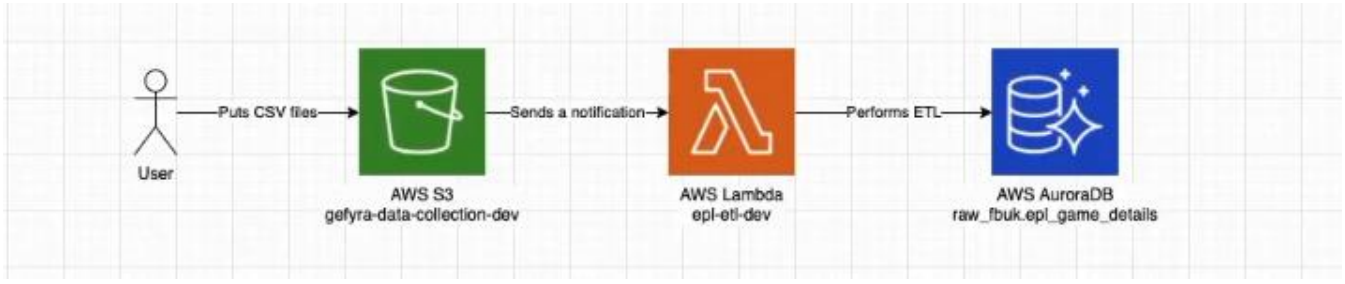

England Football Results Betti
football-data.co.uk/englandm.php
Football-Data.co.uk
Results | Odds | Tipsters
Bet365
Updated: 30/09/21
BeGambleAware
Follow
Home
Free Bets
Livescores
Odds Comparison
Casino
Poker
Tennis
Contact
Like
WORLD'S FAVOURITE
bet365
TOP RATED
BoyleSports
William Hill
Paddy Power
Betfred
Betway
Data Files: England
Last updated: 29/09/21
Registering with any of the advertised bookmakers on Football-Data will help keep access to the historical results & betting odds data files FREE.
Below you will find download links to all available CSV data files to use for quantitative testing of betting systems in spreadsheet applications like Excel. League tables, head2head statistics and information on goalscrores, first scorers and top scorers can now be accessed through the Livescore service. Latest betting odds are available through the Odds Comparison.
You are free experiment with the data yourselves, but if you are looking for a bespoke Excel application that has been desinged specifically to work with Football-Data's files, visit BetGPS for an exceptional data analysis workbook. Like all of Football-Data's files, it free to download.
Notes.txt
(text file key to the data files and data source acknowledgements)
Season 2021/2022
Premier League (FT & HT results; match stats; match, total goals & AH odds)
Championship (FT & HT results; match stats; match, total goals & AH odds)
League 1 (FT & HT results; match stats; match, total goals & AH odds)
League 2 (FT & HT results; match stats; match, total goals & AH odds)
Conference (FT & HT results; match, total goals & AH odds)
Season 2020/2021
Premier League (FT & HT results; match stats; match, total goals & AH odds)
Championship (FT & HT results; match stats; match, total goals & AH odds)
League 1 (FT & HT results; match stats; match, total goals & AH odds)
League 2 (FT & HT results; match stats; match, total goals & AH odds)
Conference (FT & HT results; match, total goals & AH odds)
SITE RESOURCES
Historical Data
Learn to Bet
Free Bets
Books
Other Sites
BETTING SYSTEMS
Football Ratings
Wisdom of Crowds
Contrarian Betting
BETTING ARTICLES
Football-Data
Pinnacle Sportsbook
BET CALCULATORS
Fair Odds
P-value
Yields
Bank growth
EV-odds
Staking Animation
ODDS & RESULTS:

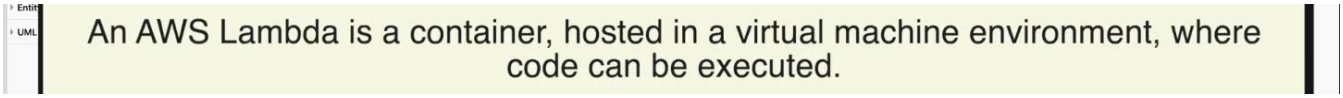


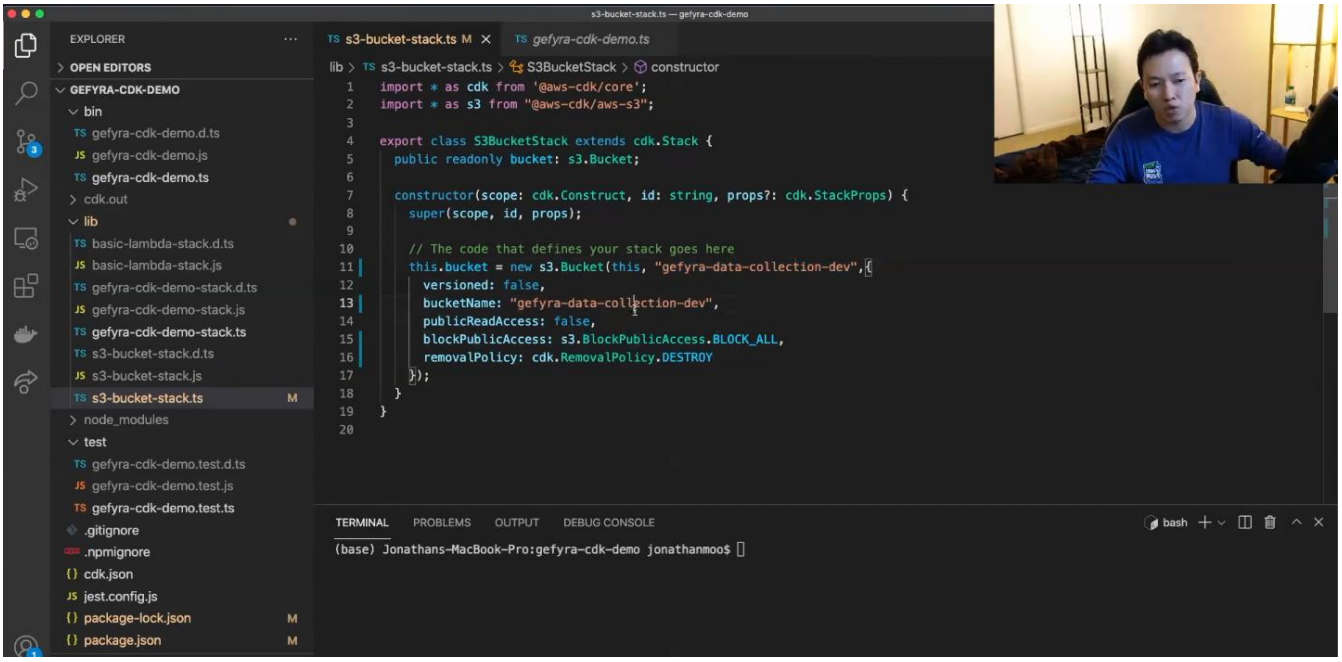
We want this flat file data in S3 to be stored/ingested in some database like DynamoDB to allow querying.



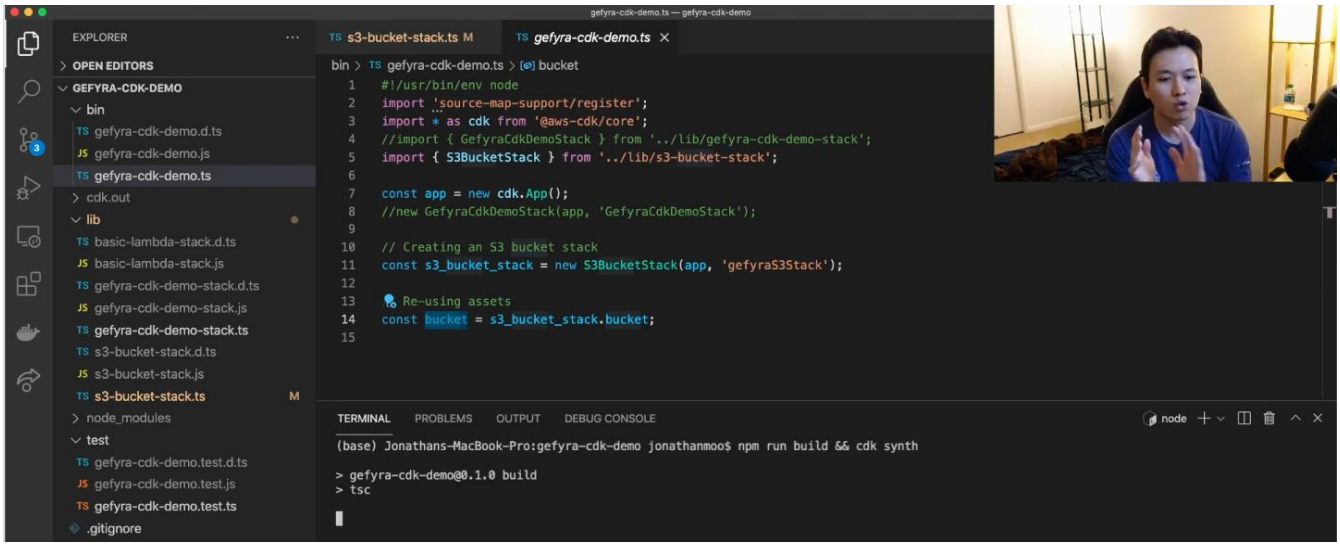




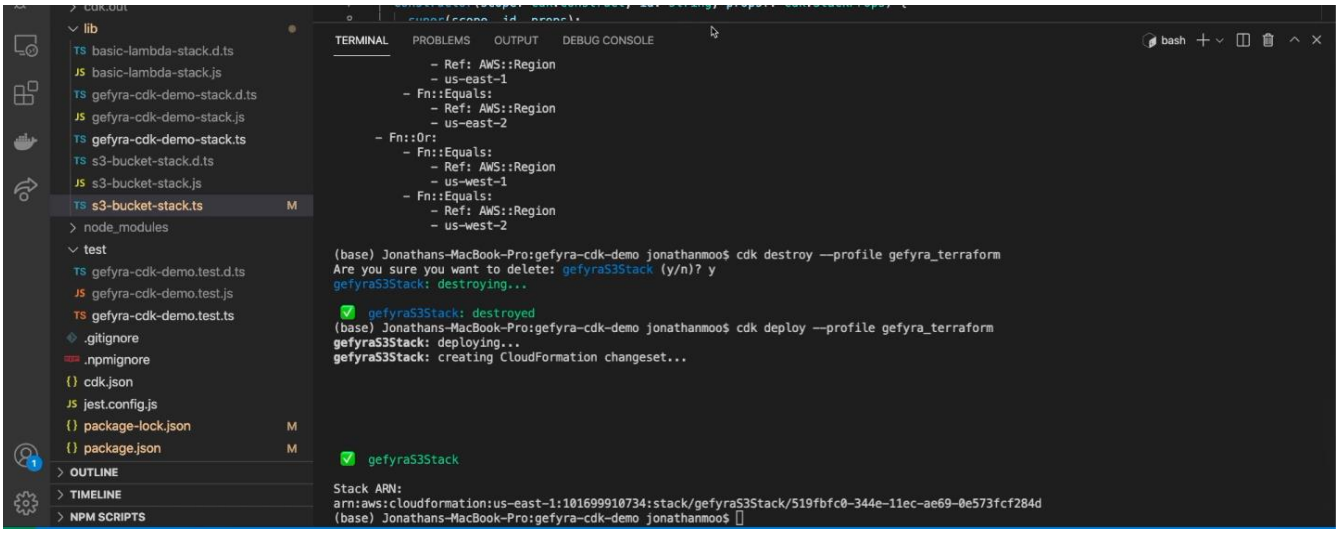


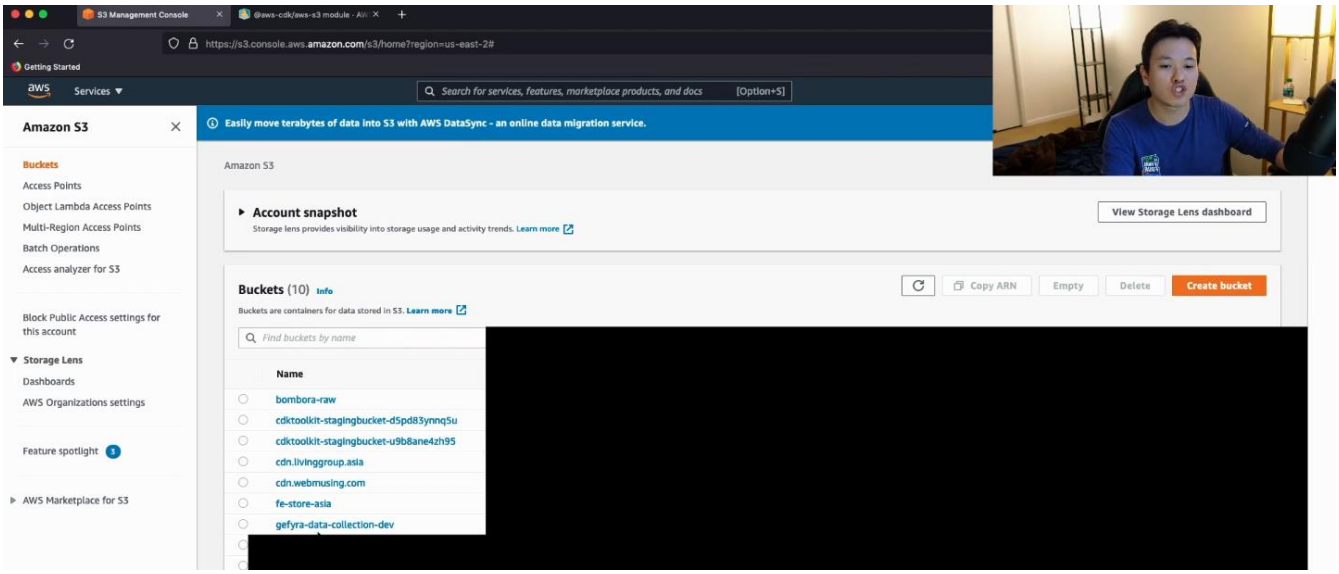


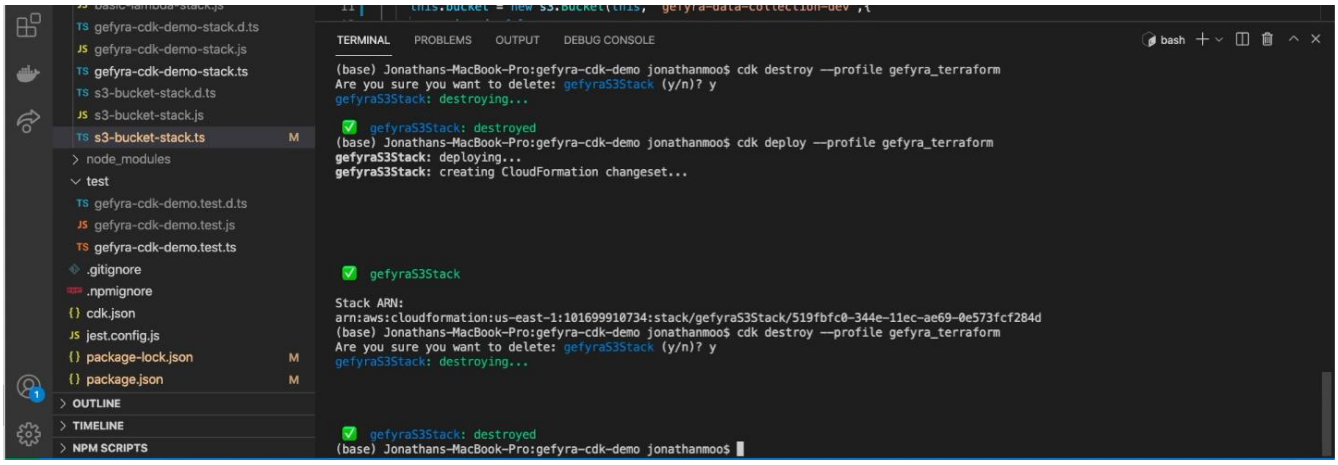
This tells AWS CDK to configure for you, above is the S3 bucket stack with the exported class we create.

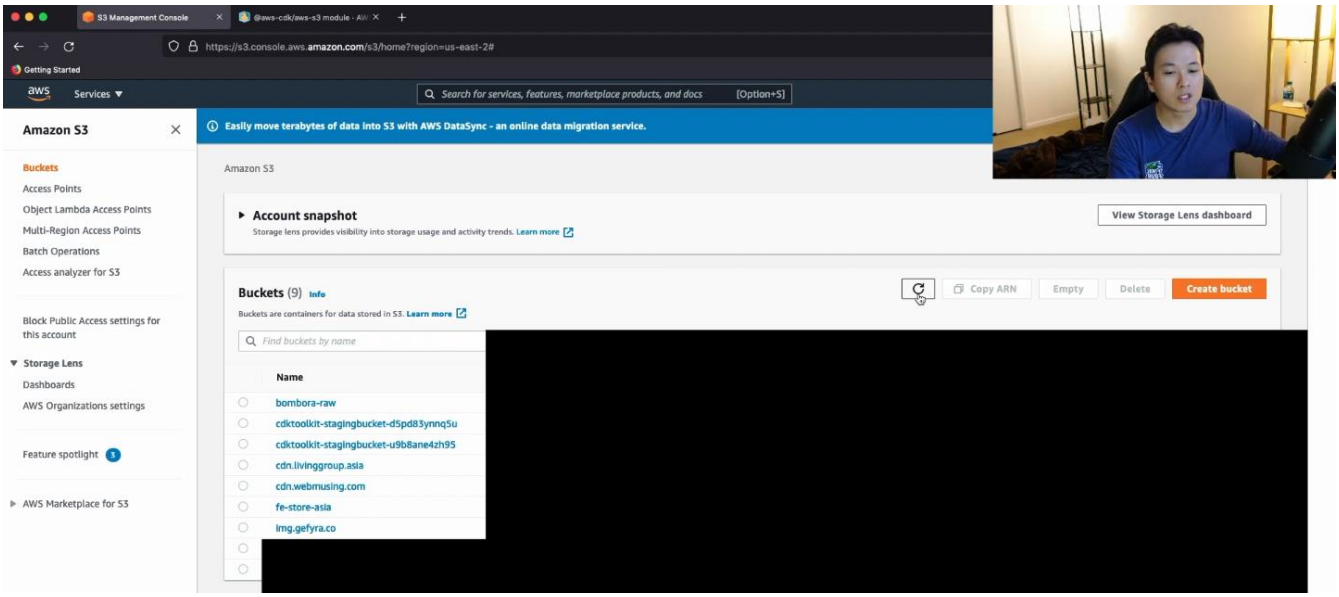


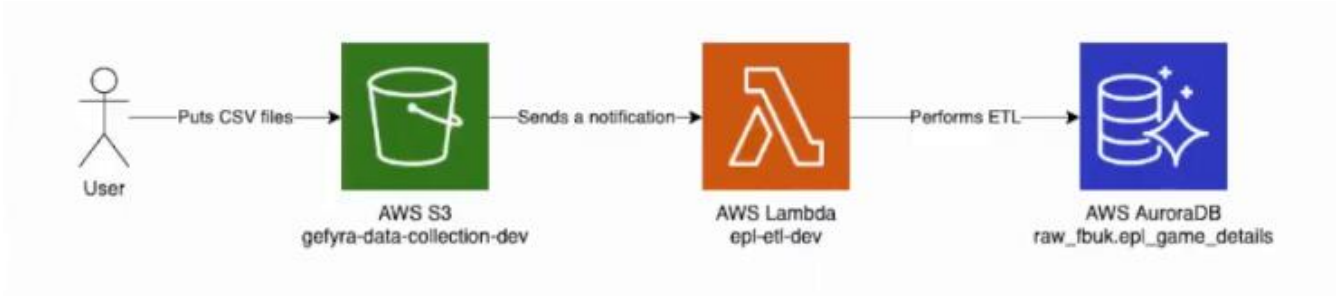
We are assigning a name to the S3 bucket on line 14 to allow us to refer to it when reusing it with other integrations. IAM roles that are unique to your stack can be defined if different from the common IAM role created by default.


TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
bash
- 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
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk destroy --profile gefyra_terraform
Are you sure you want to delete: gefyraS3Stack (y/n)? y
gefyraS3Stack: destroying...
gefyraS3Stack: destroyed
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk deploy --profile gefyra_terraform
gefyraS3Stack: deploying...
gefyraS3Stack: creating CloudFormation changeset...
gefyraS3Stack
Stack ARN:
arn:aws:cloudformation:us-east-1:101699910734:stack/gefyraS3Stack/519fbfc0-344e-11ec-ae69-0e573fcf284d
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$
lib
basic-lambda-stack.d.ts
basic-lambda-stack.js
gefyra-cdk-demo-stack.d.ts
gefyra-cdk-demo-stack.js
gefyra-cdk-demo-stack.ts
s3-bucket-stack.d.ts
s3-bucket-stack.js
s3-bucket-stack.ts
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
OUTLINE
TIMELINE
NPM SCRIPTS


S3 Management Console
https://s3.console.aws.amazon.com/s3/home?region=us-east-2#
Getting Started
Services
Search for services, features, marketplace products, and docs
[Option+S]
Amazon S3
Easily move terabytes of data into S3 with AWS DataSync - an online data migration service.
Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
AWS Organizations settings
Feature spotlight
AWS Marketplace for S3
Amazon S3
Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
Buckets (10) Info
Buckets are containers for data stored in S3. Learn more
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
bombora-raw
cdktoolkit-stagingbucket-d5pd83ynnq5u
cdktoolkit-stagingbucket-u9b8ane4zh95
cdn.livinggroup.asia
cdn.webmusing.com
fe-store-asia
gefyra-data-collection-dev

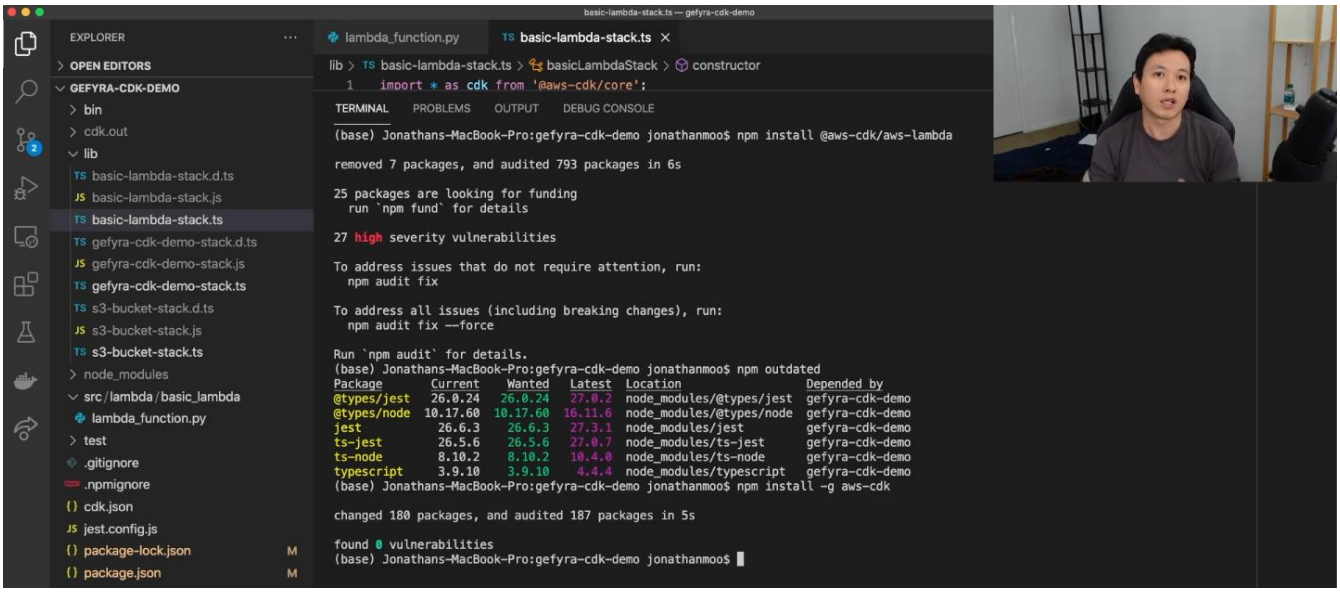

TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
bash
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk destroy --profile gefyra_terraform
Are you sure you want to delete: gefyraS3Stack (y/n)? y
gefyraS3Stack: destroying...
gefyraS3Stack: destroyed
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk deploy --profile gefyra_terraform
gefyraS3Stack: deploying...
gefyraS3Stack: creating CloudFormation changeset...
gefyraS3Stack
Stack ARN:
arn:aws:cloudformation:us-east-1:101699910734:stack/gefyraS3Stack/519fbfc0-344e-11ec-ae69-0e573fcf284d
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk destroy --profile gefyra_terraform
Are you sure you want to delete: gefyraS3Stack (y/n)? y
gefyraS3Stack: destroying...
gefyraS3Stack: destroyed
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$
gefyra-cdk-demo-stack.d.ts
gefyra-cdk-demo-stack.js
gefyra-cdk-demo-stack.ts
s3-bucket-stack.d.ts
s3-bucket-stack.js
s3-bucket-stack.ts
node_modules
test
gefyra-cdk-demo.test.d.ts
gefyra-cdk-demo.test.js
gefyra-cdk-demo.test.ts
.gitignore
.npmignore
cdk.json
jest.config.js
package-lock.json
package.json
OUTLINE
TIMELINE
NPM SCRIPTS



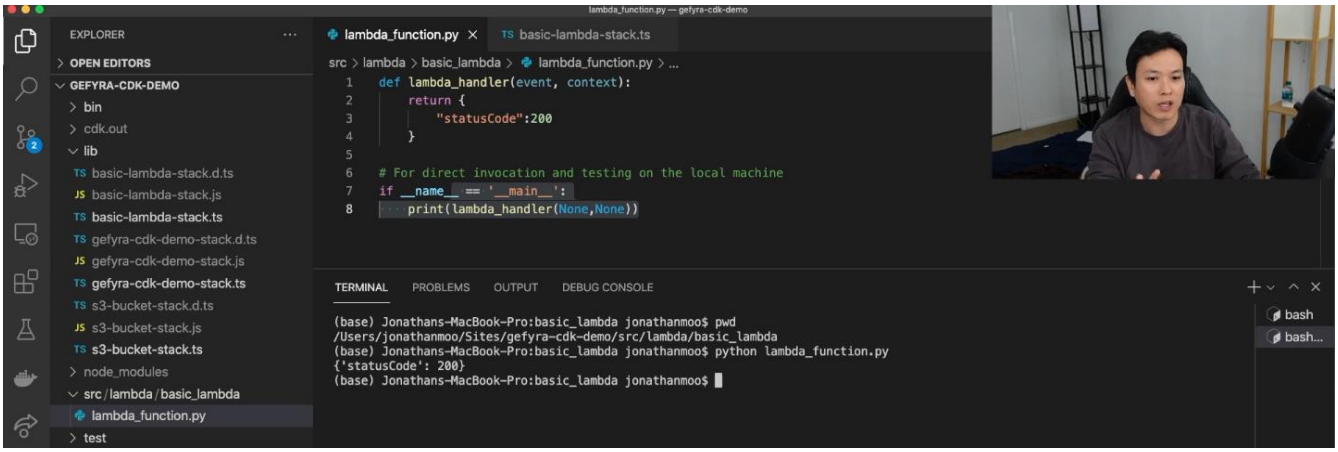


We deploy a Lambda to get a S3 new file notification, retrieve the file, process the file contents, then store results in DB.

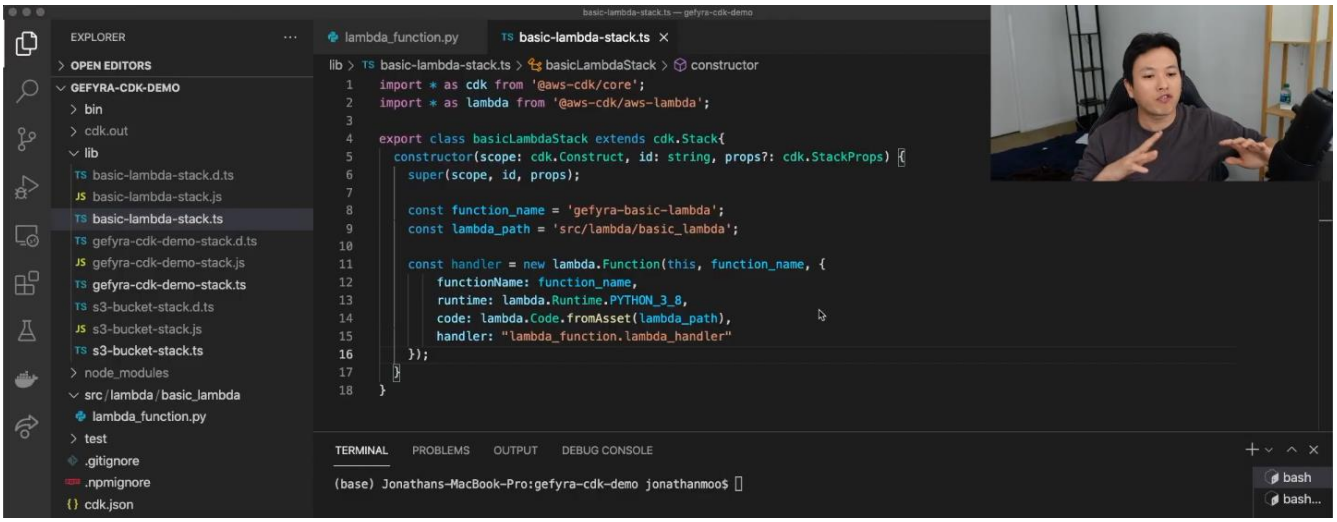
npm install @aws-cdk/aws-lambda

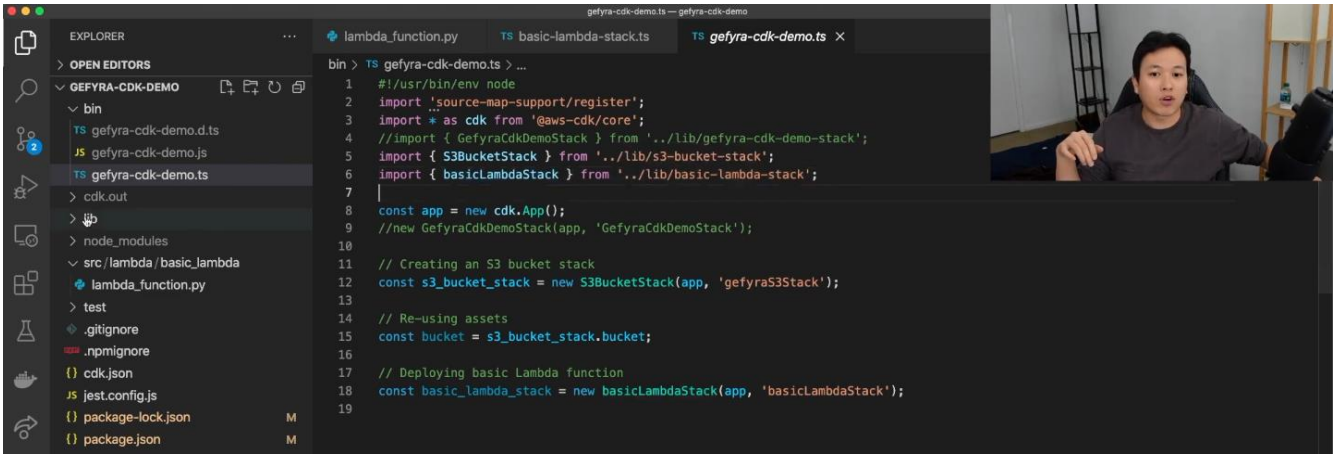


https://github.com/jonathan-moo/gefyra-cdk-demo/tree/CDK-T3

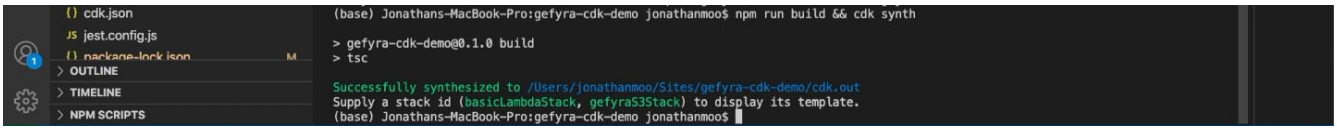


Now that we have our basic function, it is time to write the infrastructure code to create a Lambda to run the code.

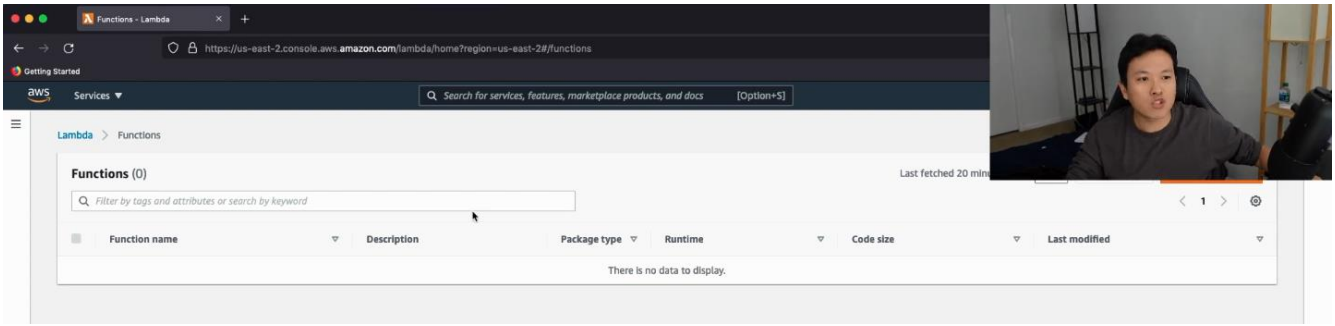


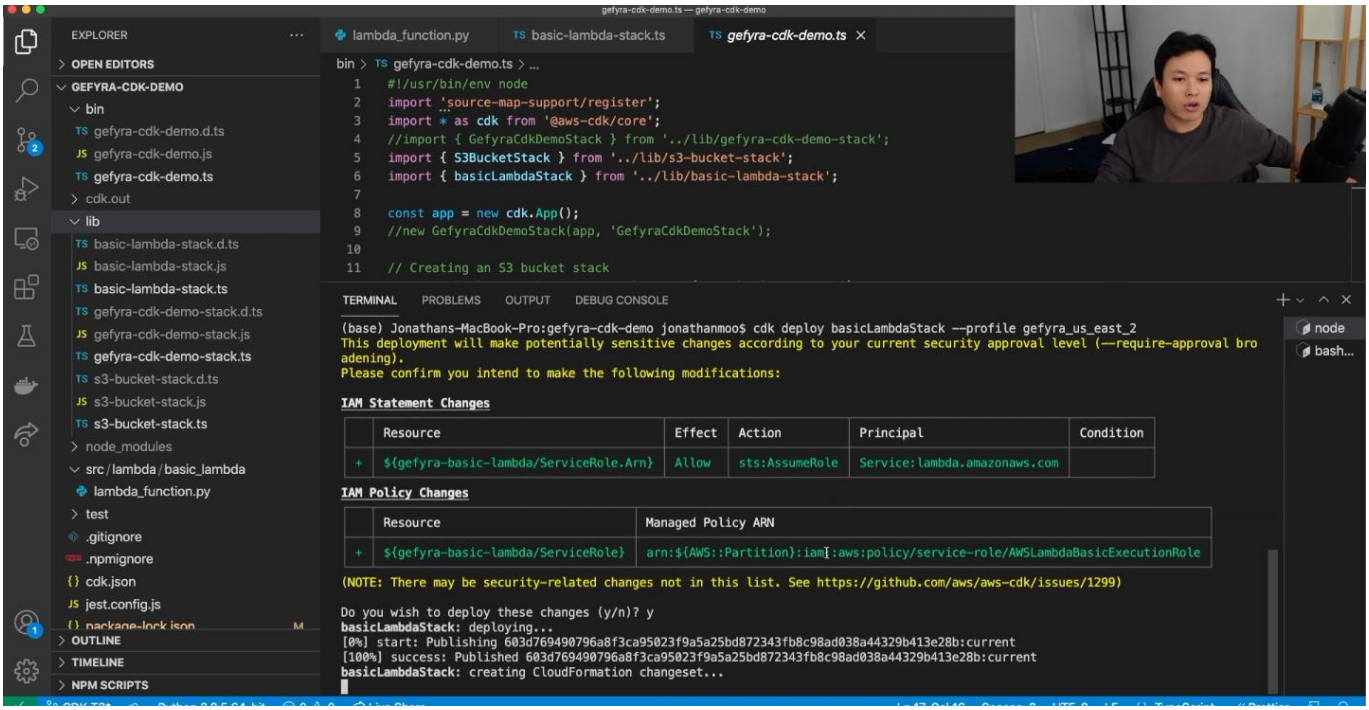


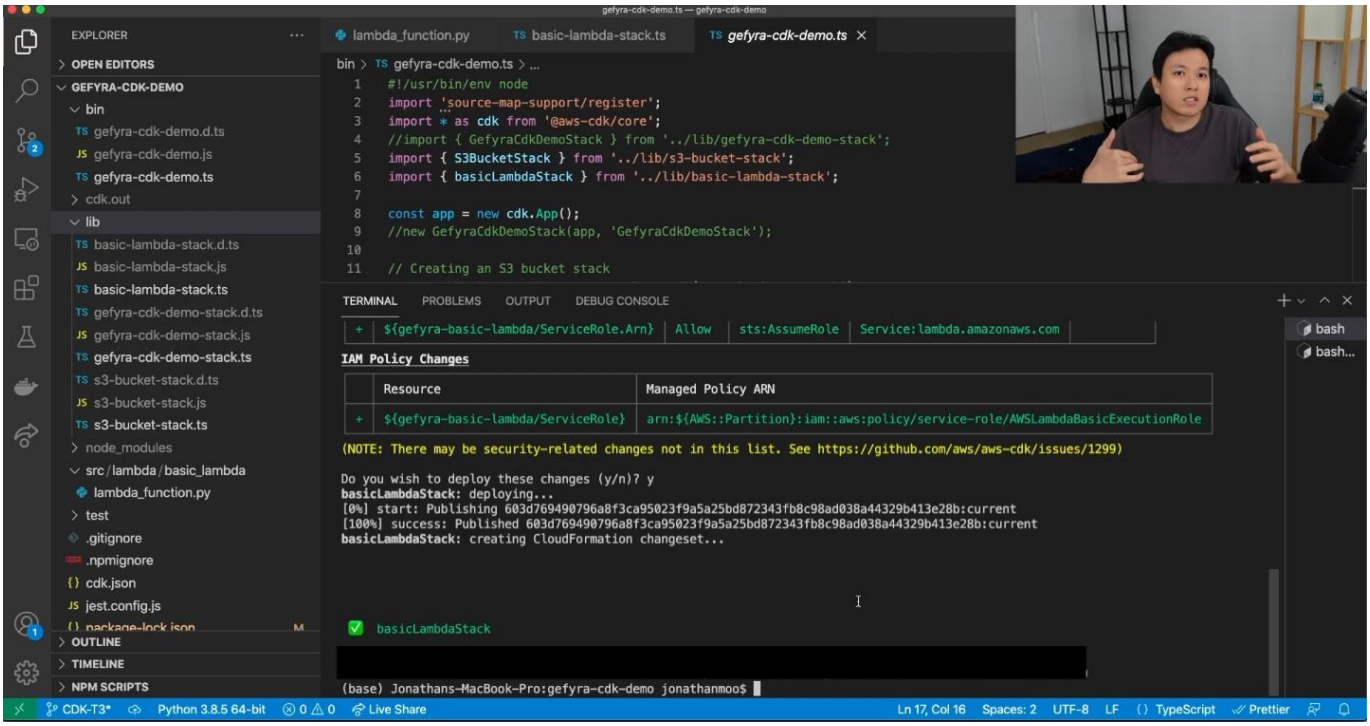
We then add the LambdaStack to our app on line 18 for deployment

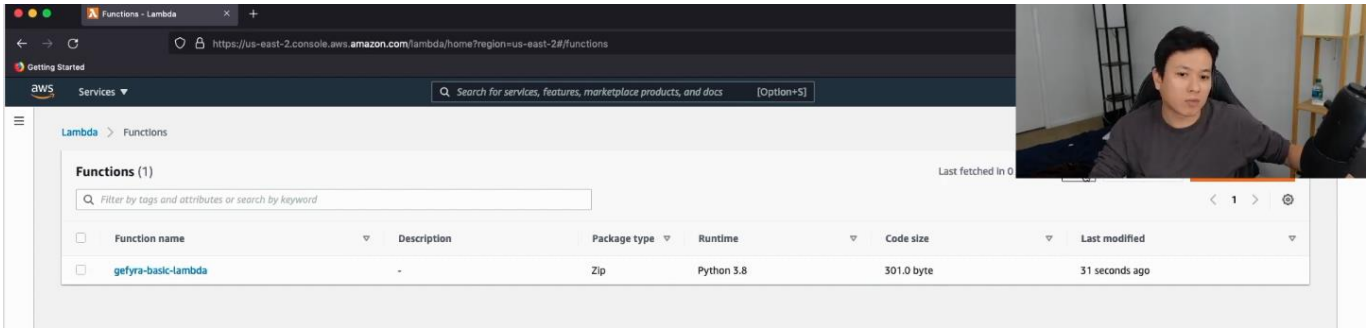


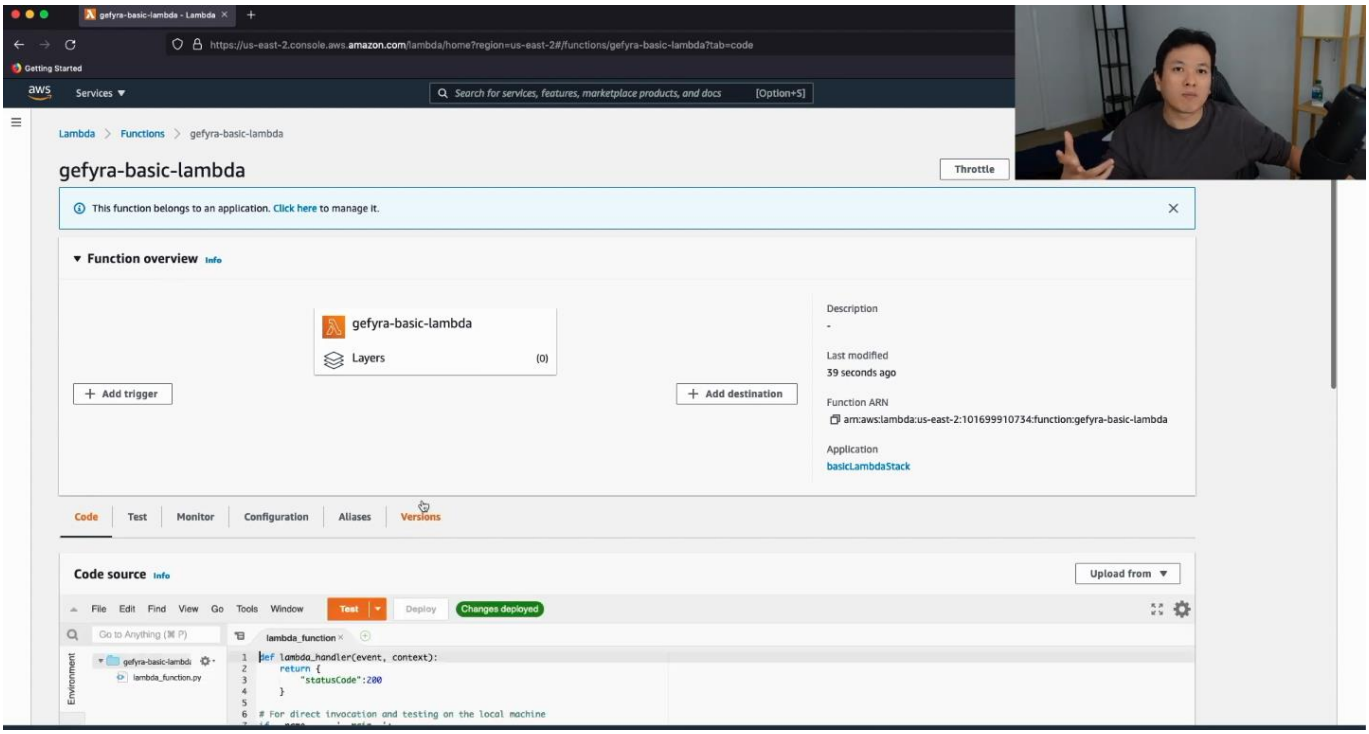
We can choose which of the 2 stacks (S3BucketStack and the basicLambdaStack) we have that needs to be deployed.

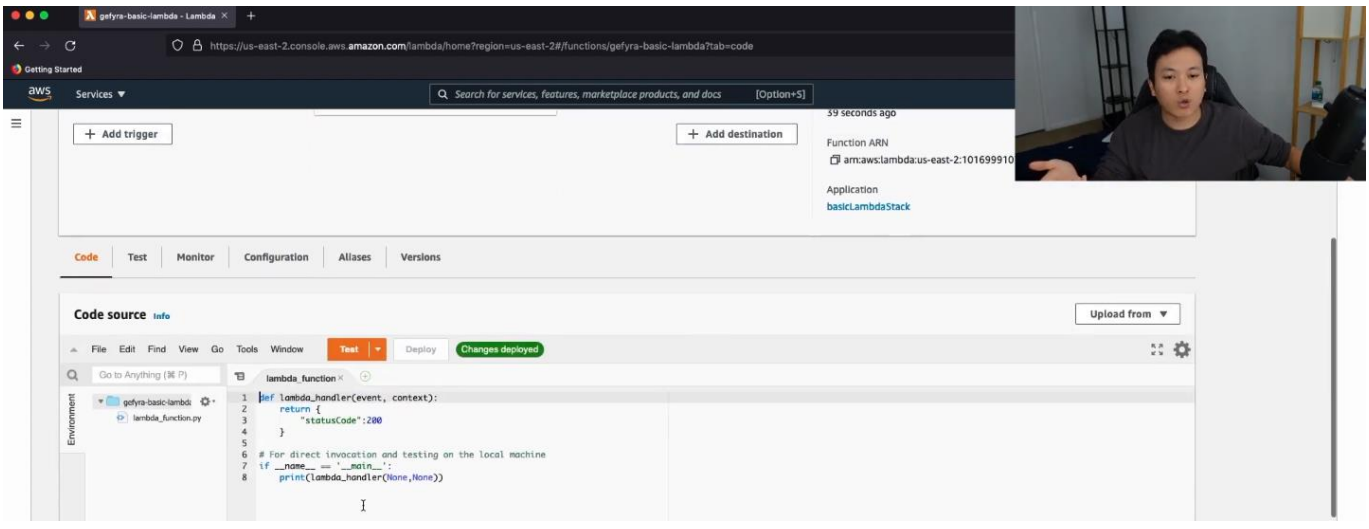

Functions - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions
Getting Started
aws
Services
Search for services, features, marketplace products, and docs [Option+S]
Lambda > Functions
Functions (0)
Last fetched 20 min
Filter by tags and attributes or search by keyword
Function name
Description
Package type
Runtime
Code size
Last modified
There is no data to display.

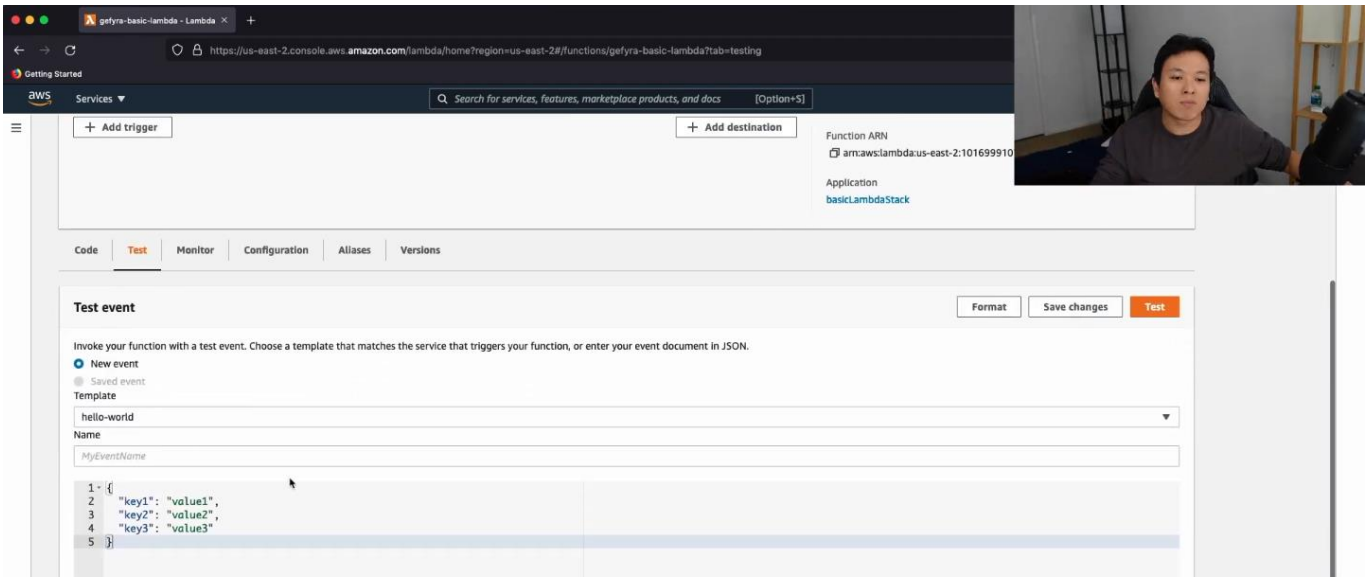

gefyra-cdk-demo.ts — gefyra-cdk-demo
EXPLORER
lambda_function.py
basic-lambda-stack.ts
gefyra-cdk-demo.ts
bin > gefyra-cdk-demo.ts > ...
#!/usr/bin/env node
import 'source-map-support/register';
import * as cdk from '@aws-cdk/core';
//import { GefyraCdkDemoStack } from '../lib/gefyra-cdk-demo-stack';
import { S3BucketStack } from '../lib/s3-bucket-stack';
import { basicLambdaStack } from '../lib/basic-lambda-stack';
const app = new cdk.App();
//new GefyraCdkDemoStack(app, 'GefyraCdkDemoStack');
// Creating an S3 bucket stack
OPEN EDITORS
GEFYRA-CDK-DEMO
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
basic-lambda-stack.d.ts
basic-lambda-stack.js
basic-lambda-stack.ts
gefyra-cdk-demo-stack.d.ts
gefyra-cdk-demo-stack.js
gefyra-cdk-demo-stack.ts
s3-bucket-stack.d.ts
s3-bucket-stack.js
s3-bucket-stack.ts
node_modules
src/lambda/basic_lambda
lambda_function.py
test
.gitignore
.npmignore
cdk.json
jest.config.js
OUTLINE
TIMELINE
NPM SCRIPTS
TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$ cdk deploy basicLambdaStack --profile gefyra_us_east_2
This deployment will make potentially sensitive changes according to your current security approval level (--require-approval broadening).
Please confirm you intend to make the following modifications:
IAM Statement Changes
Resource
Effect
Action
Principal
Condition
+ ${gefyra-basic-lambda/ServiceRole.Arn}
Allow
sts:AssumeRole
Service:lambda.amazonaws.com
IAM Policy Changes
Resource
Managed Policy ARN
+ ${gefyra-basic-lambda/ServiceRole}
arn:${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
basicLambdaStack: deploying...
[0%] start: Publishing 603d769490796a8f3ca95023f9a5a25bd872343fb8c98ad038a44329b413e28b:current
[100%] success: Published 603d769490796a8f3ca95023f9a5a25bd872343fb8c98ad038a44329b413e28b:current
basicLambdaStack: creating CloudFormation changeset...
node
bash...

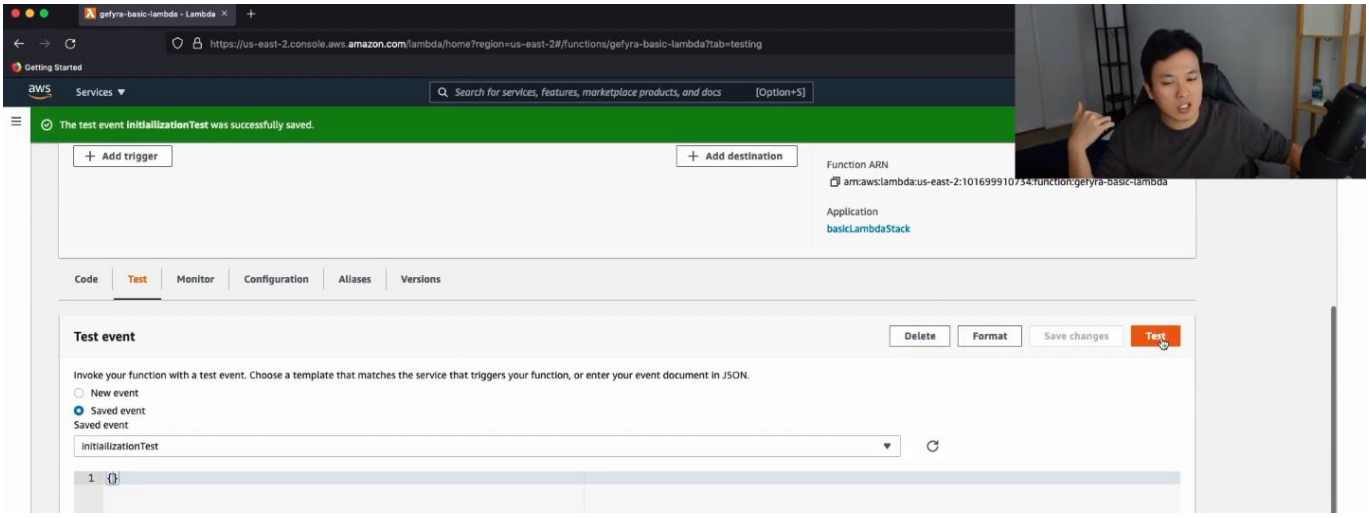

gefyra-cdk-demo.ts — gefyra-cdk-demo
EXPLORER
lambda_function.py
basic-lambda-stack.ts
gefyra-cdk-demo.ts
bin > gefyra-cdk-demo.ts > ...
#!/usr/bin/env node
import 'source-map-support/register';
import * as cdk from '@aws-cdk/core';
//import { GefyraCdkDemoStack } from '../lib/gefyra-cdk-demo-stack';
import { S3BucketStack } from '../lib/s3-bucket-stack';
import { basicLambdaStack } from '../lib/basic-lambda-stack';
const app = new cdk.App();
//new GefyraCdkDemoStack(app, 'GefyraCdkDemoStack');
// Creating an S3 bucket stack
TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
+ ${gefyra-basic-lambda/ServiceRole.Arn}
Allow
sts:AssumeRole
Service:lambda.amazonaws.com
IAM Policy Changes
Resource
Managed Policy ARN
+ ${gefyra-basic-lambda/ServiceRole}
arn:${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
basicLambdaStack: deploying...
[0%] start: Publishing 603d769490796a8f3ca95023f9a5a25bd872343fb8c98ad038a44329b413e28b:current
[100%] success: Published 603d769490796a8f3ca95023f9a5a25bd872343fb8c98ad038a44329b413e28b:current
basicLambdaStack: creating CloudFormation changeset...
basicLambdaStack
(base) Jonathans-MacBook-Pro:gefyra-cdk-demo jonathanmoo$
CDK-T3*
Python 3.8.5 64-bit
Live Share
Ln 17, Col 16
Spaces: 2
UTF-8
LF
TypeScript
Prettier

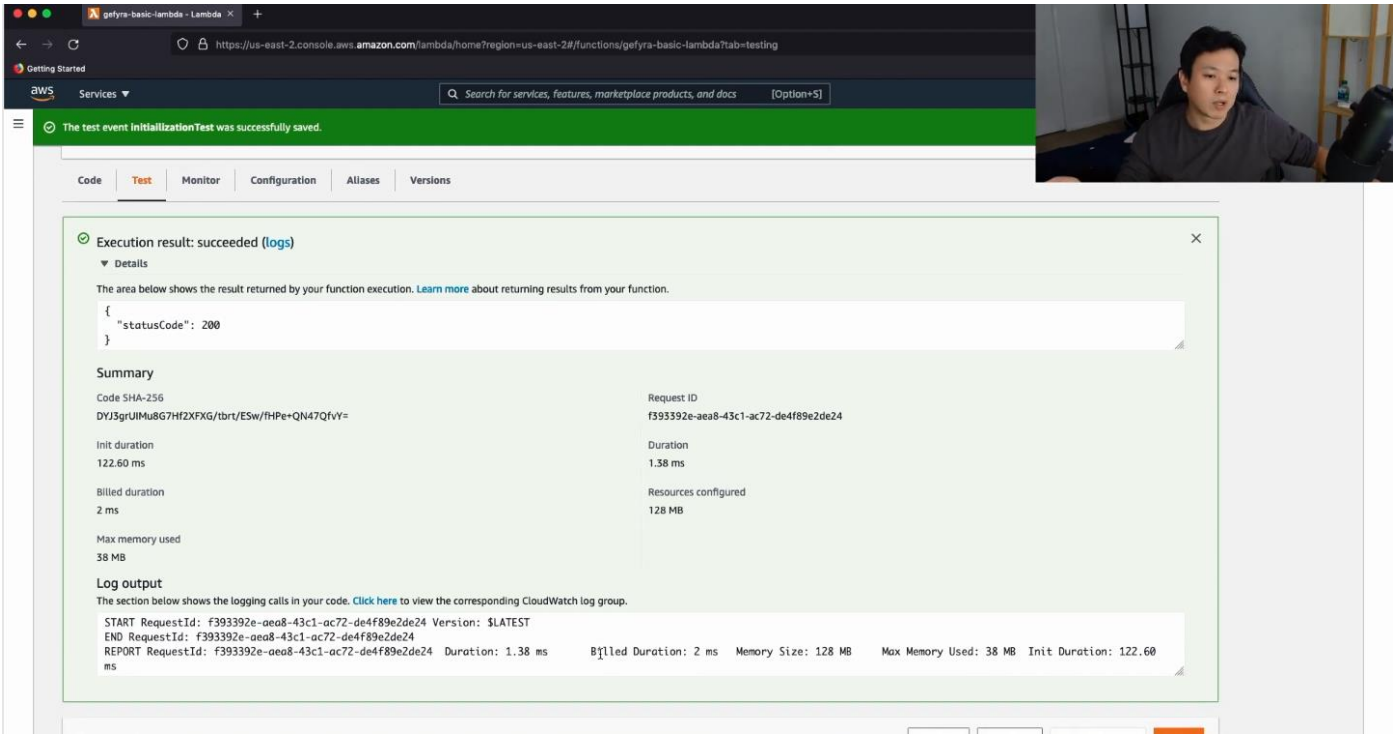

Functions - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
Lambda > Functions
Functions (1)
Last fetched in 0
Filter by tags and attributes or search by keyword
Function name
Description
Package type
Runtime
Code size
Last modified
gefyra-basic-lambda
-
Zip
Python 3.8
301.0 byte
31 seconds ago

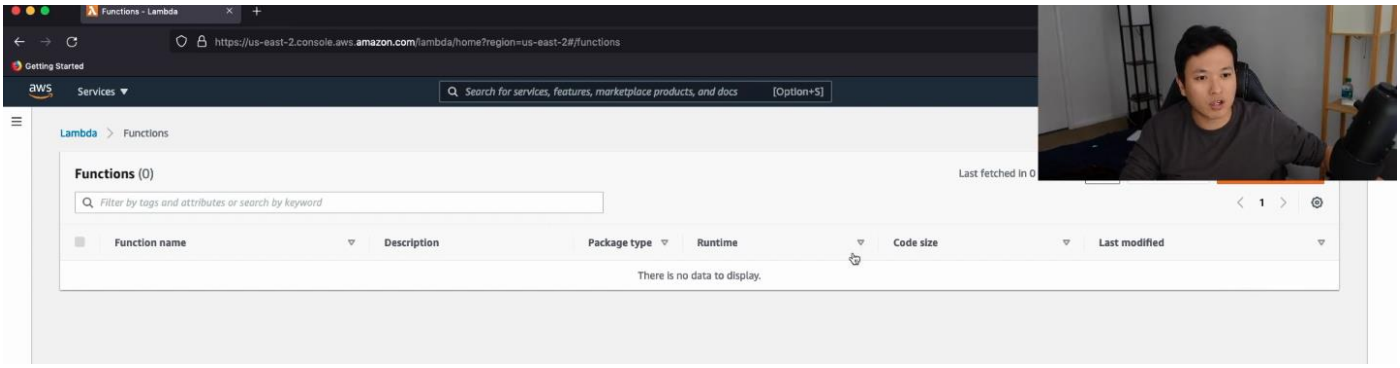

gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=code
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
Lambda > Functions > gefyra-basic-lambda
gefyra-basic-lambda
Throttle
This function belongs to an application. Click here to manage it.
Function overview Info
gefyra-basic-lambda
Layers (0)
+ Add trigger
+ Add destination
Description
-
Last modified
39 seconds ago
Function ARN
arn:aws:lambda:us-east-2:101699910734:function:gefyra-basic-lambda
Application
basicLambdaStack
Code
Test
Monitor
Configuration
Aliases
Versions
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
Changes deployed
Go to Anything (⌘ P)
lambda_function
Environment
gefyra-basic-lambda
lambda_function.py
def lambda_handler(event, context):
return {
"statusCode":200
}
# For direct invocation and testing on the local machine

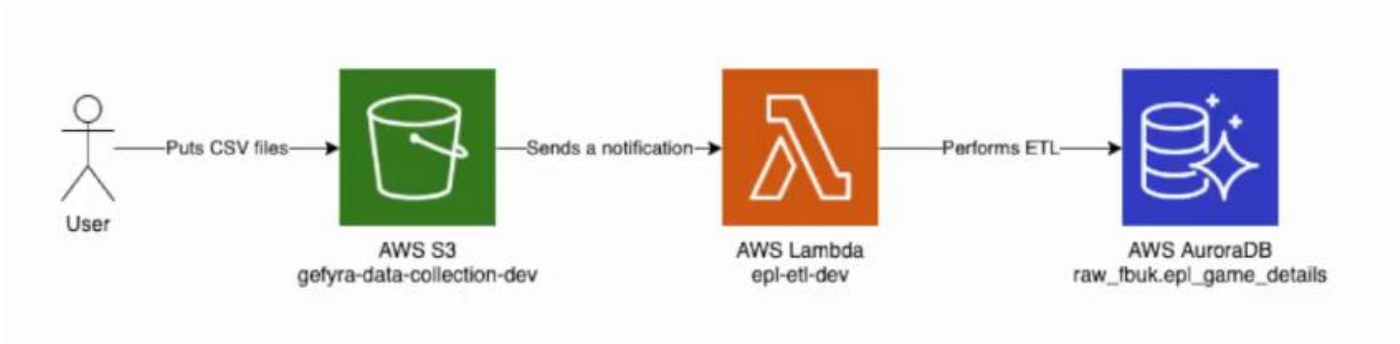

gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=code
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
39 seconds ago
+ Add trigger
+ Add destination
Function ARN
arn:aws:lambda:us-east-2:101699910
Application
basicLambdaStack
Code
Test
Monitor
Configuration
Aliases
Versions
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
Changes deployed
Go to Anything (⌘ P)
lambda_function
Environment
gefyra-basic-lambda
lambda_function.py
def lambda_handler(event, context):
return {
"statusCode":200
}
# For direct invocation and testing on the local machine
if __name__ == '__main__':
print(lambda_handler(None,None))


gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=testing
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
Add trigger
Add destination
Function ARN
Application
basicLambdaStack
Code
Test
Monitor
Configuration
Aliases
Versions
Test event
Format
Save changes
Test
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Template
hello-world
Name
MyEventName
{
"key1": "value1",
"key2": "value2",
"key3": "value3"
}

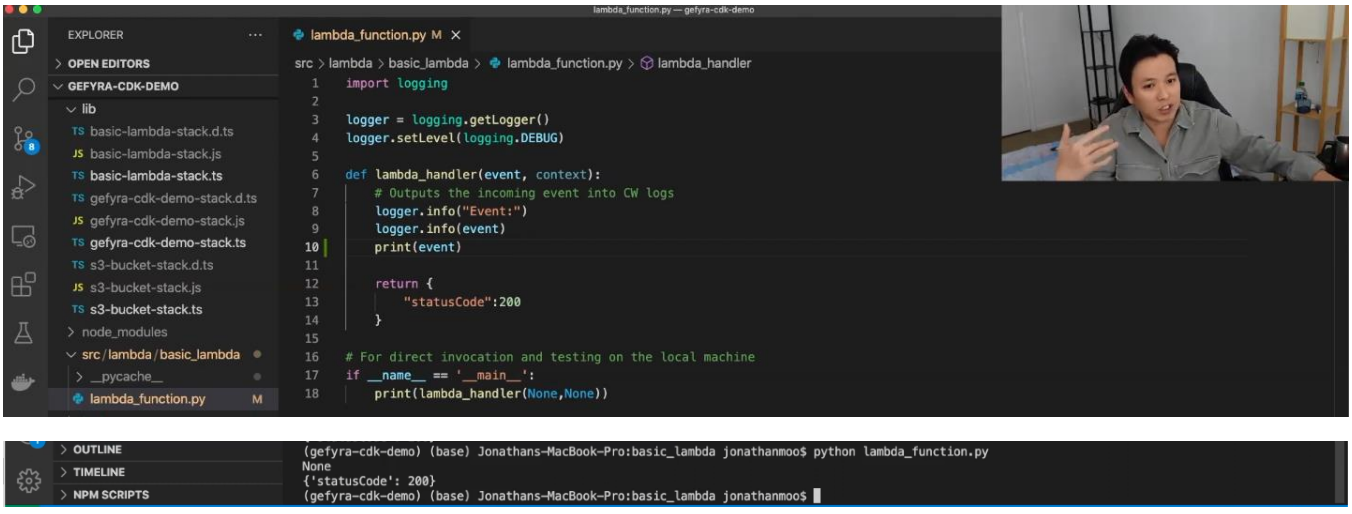

gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=testing
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
The test event initiallizationTest was successfully saved.
Add trigger
Add destination
Function ARN
arn:aws:lambda:us-east-2:101699910734:function:gefyra-basic-lambda
Application
basicLambdaStack
Code
Test
Monitor
Configuration
Aliases
Versions
Test event
Delete
Format
Save changes
Test
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Saved event
initiallizationTest
{}


gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=testing
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
The test event initiallizationTest was successfully saved.
Code
Test
Monitor
Configuration
Aliases
Versions
Execution result: succeeded (logs)
Details
The area below shows the result returned by your function execution. Learn more about returning results from your function.
{
"statusCode": 200
}
Summary
Code SHA-256
DYJ3grUIMu8G7Hf2XFXG/tbrt/ESw/fHPe+QN47QfvY=
Request ID
f393392e-aea8-43c1-ac72-de4f89e2de24
Init duration
122.60 ms
Duration
1.38 ms
Billed duration
2 ms
Resources configured
128 MB
Max memory used
38 MB
Log output
The section below shows the logging calls in your code. Click here to view the corresponding CloudWatch log group.
START RequestId: f393392e-aea8-43c1-ac72-de4f89e2de24 Version: $LATEST
END RequestId: f393392e-aea8-43c1-ac72-de4f89e2de24
REPORT RequestId: f393392e-aea8-43c1-ac72-de4f89e2de24 Duration: 1.38 ms Billed Duration: 2 ms Memory Size: 128 MB Max Memory Used: 38 MB Init Duration: 122.60 ms

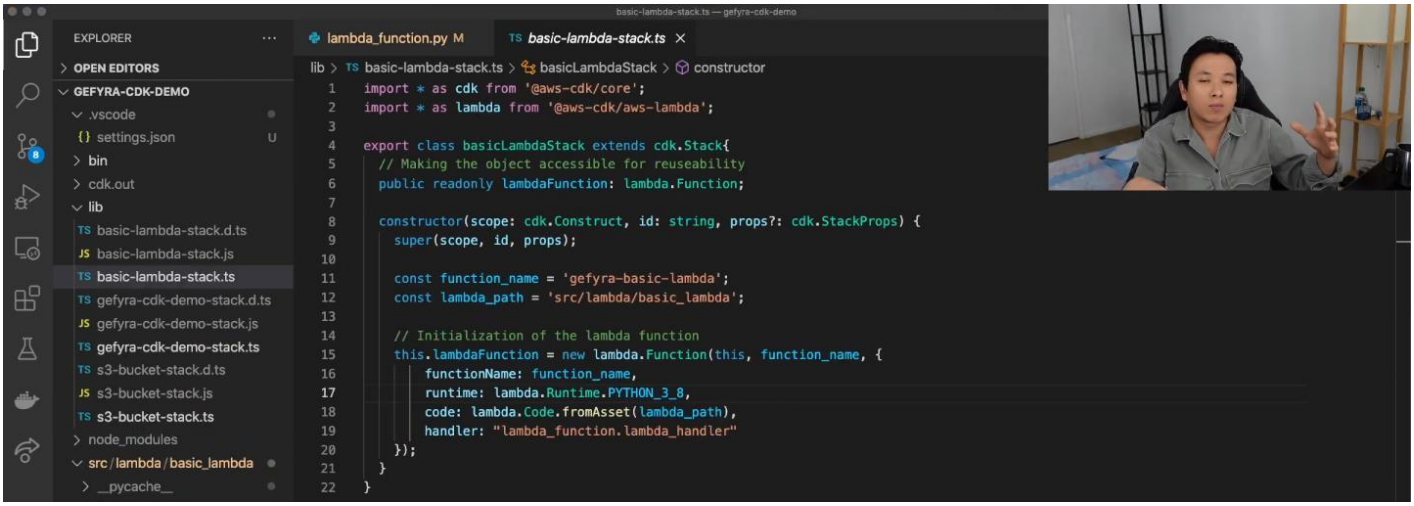




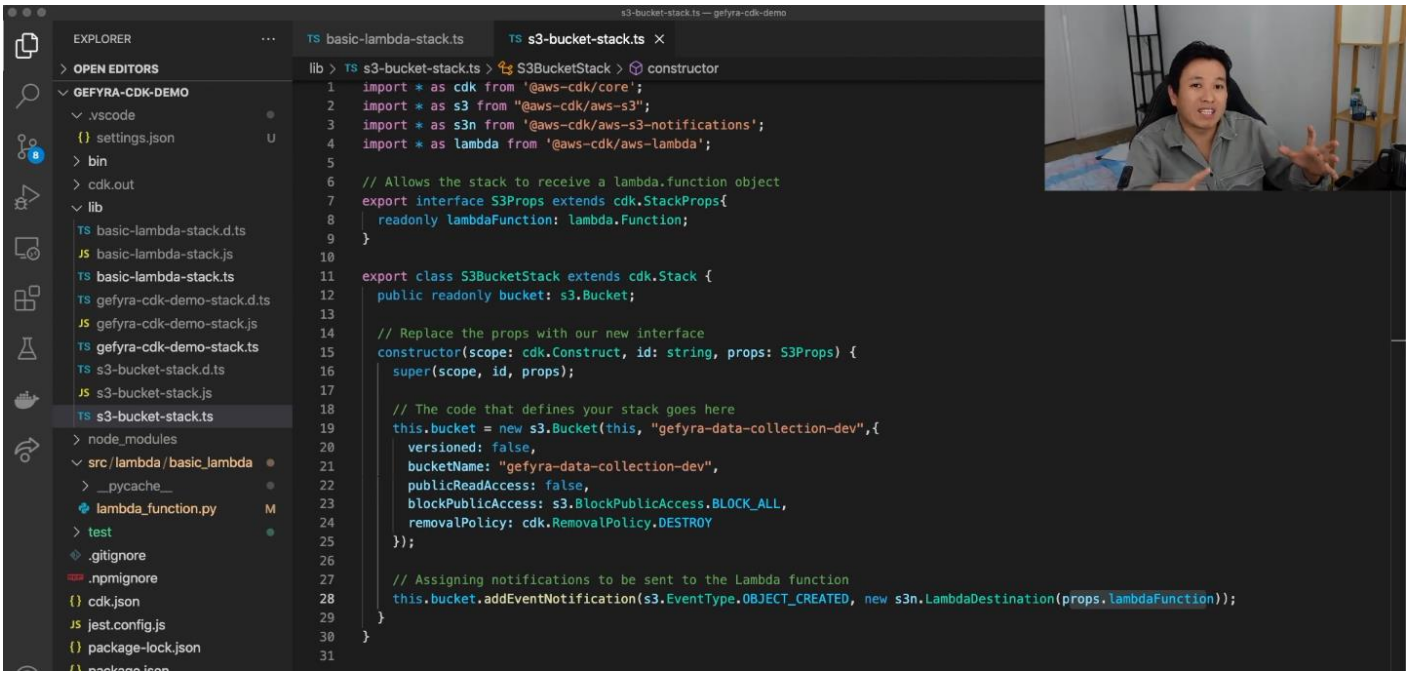
We now need to connect our S3 bucket to the Lambda, we need to make sure that the Lambda captures the S3 event.



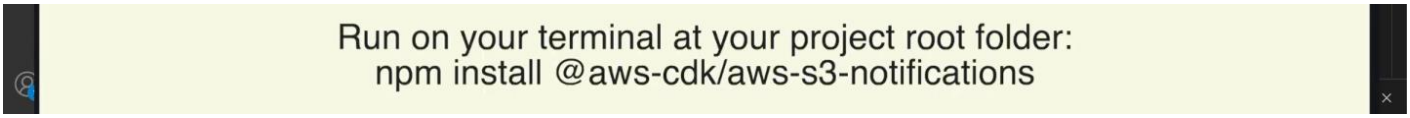
When we run the function, we won't see the logger logs on the console BUT they should be in CloudWatch where we can use it to trigger an event. The event is **None** since we haven't set an event up yet.

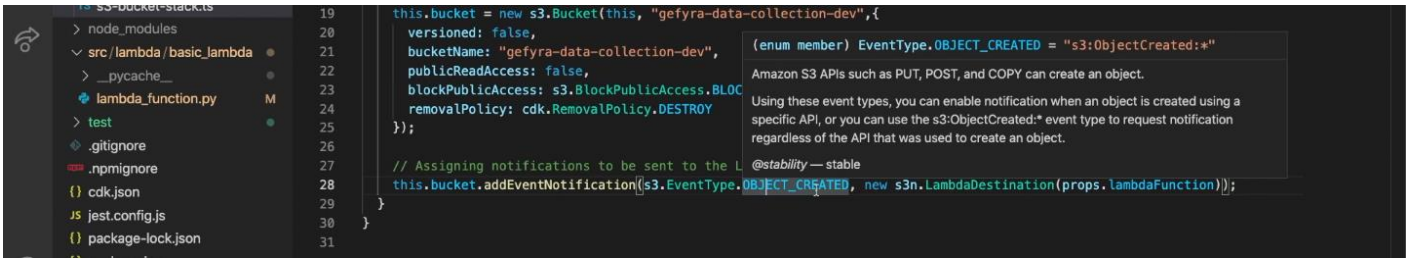


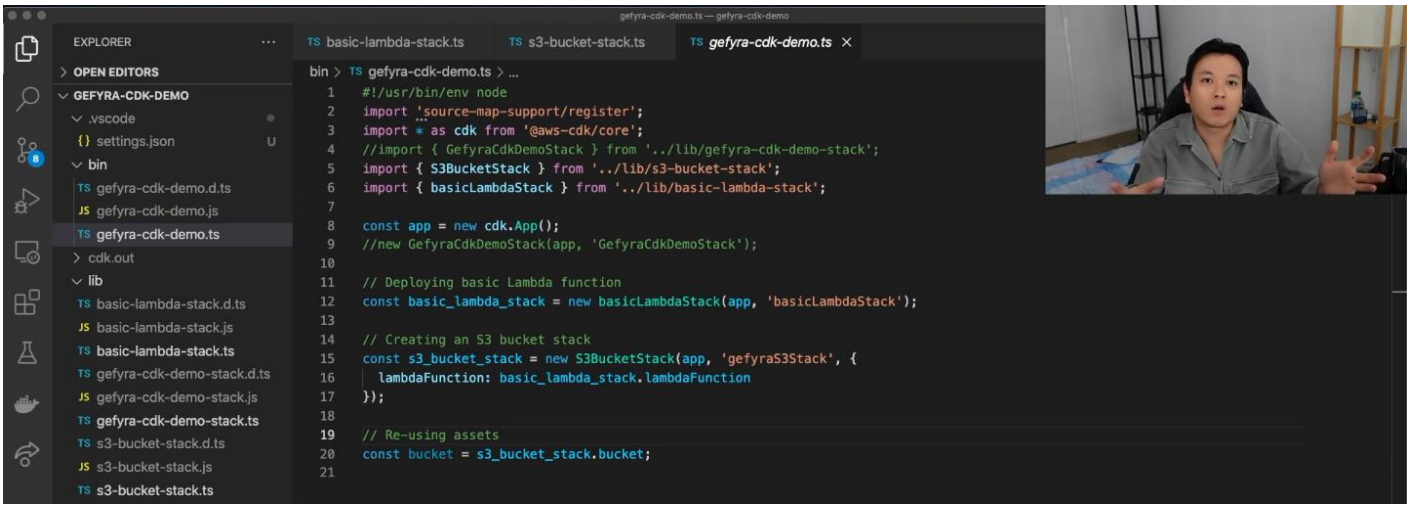
We can now expose our Lambda resource as an object within the AWS CDK, we define the basicLambdaStack. We declare a new LambdaFunction as a variable that can be reused in other stack on line 6 as public readonly.



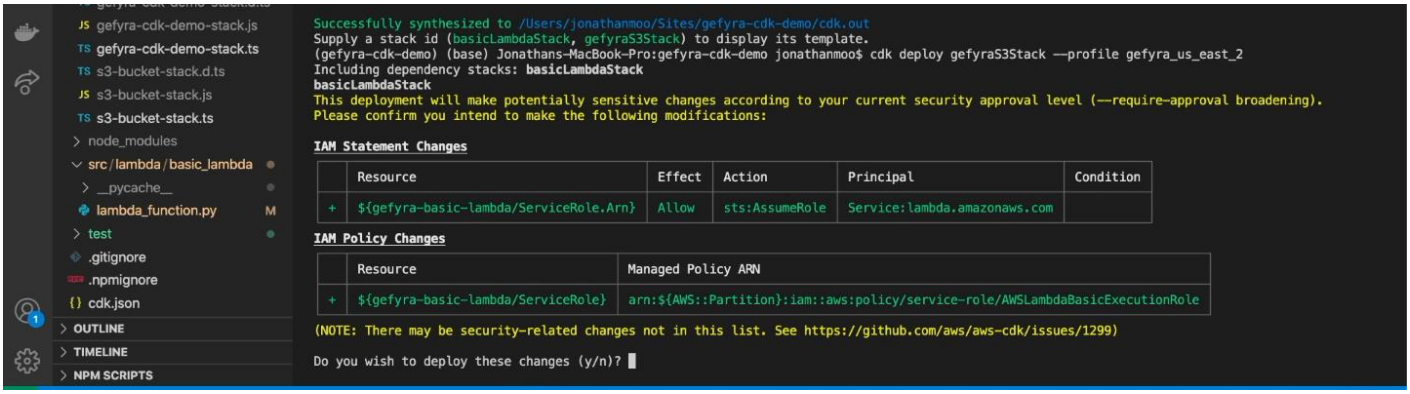
Our S3 bucket needs to know where to send the notifications to, we define an interface on line 7 to extend the class and passed as the props on line 15. We then add the event notification on line 28.

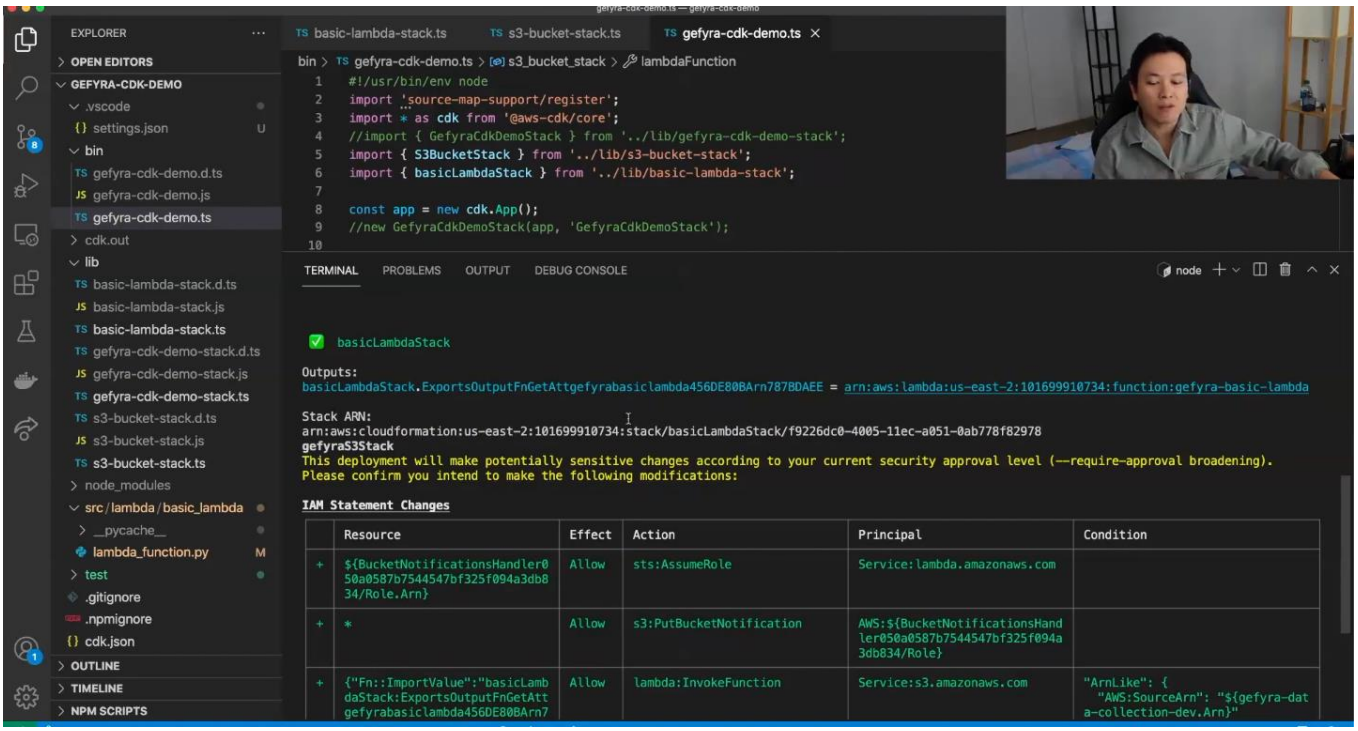


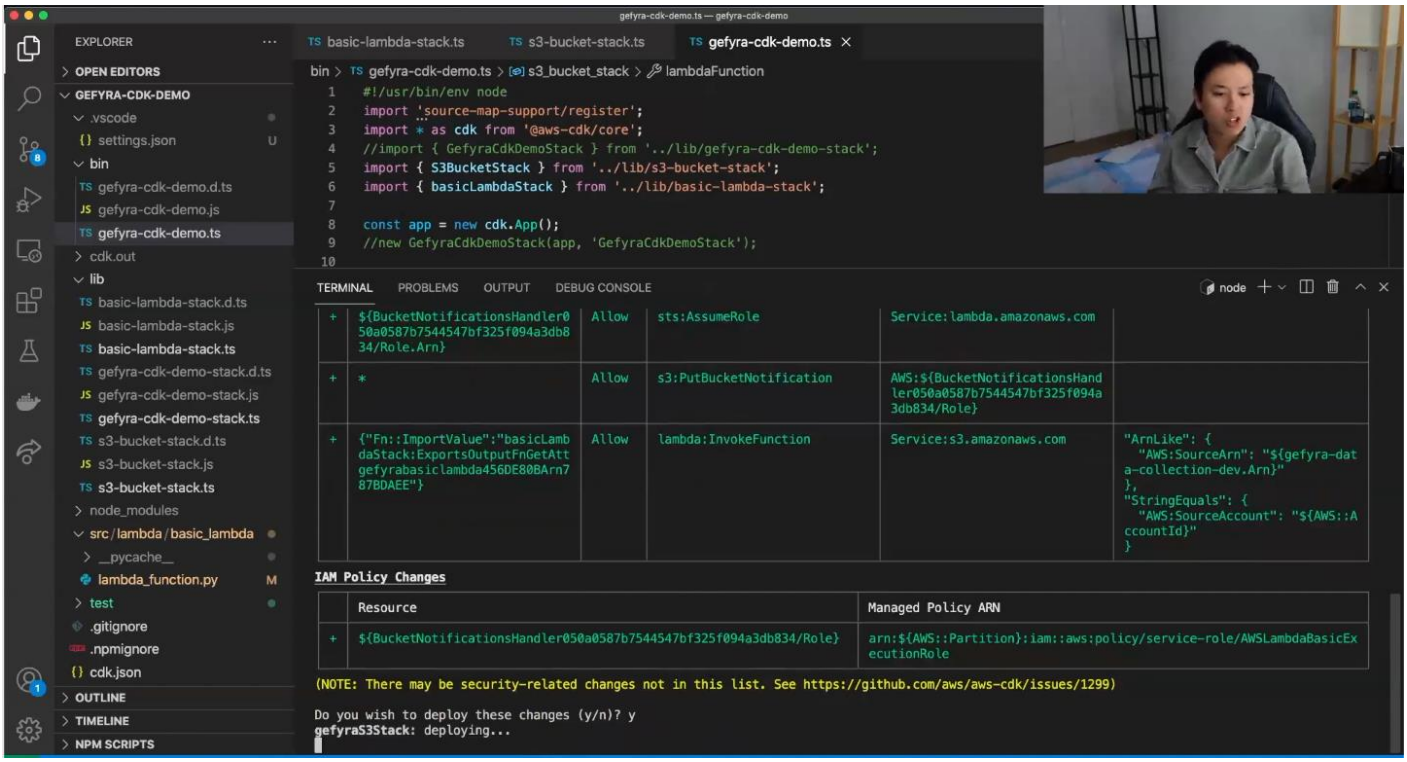


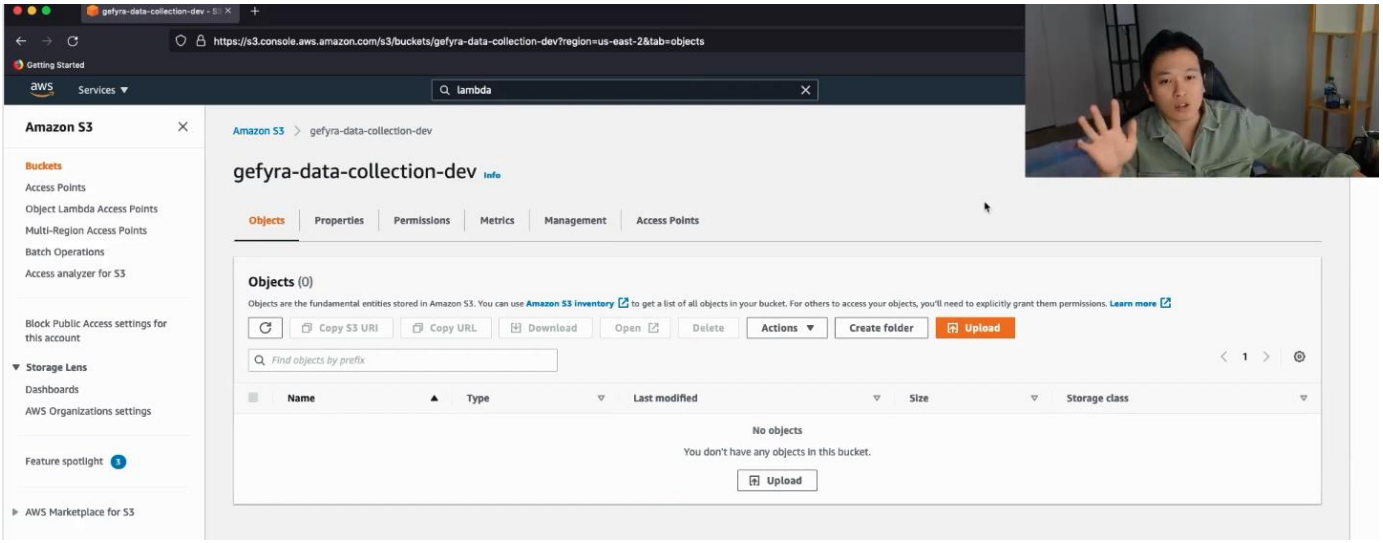


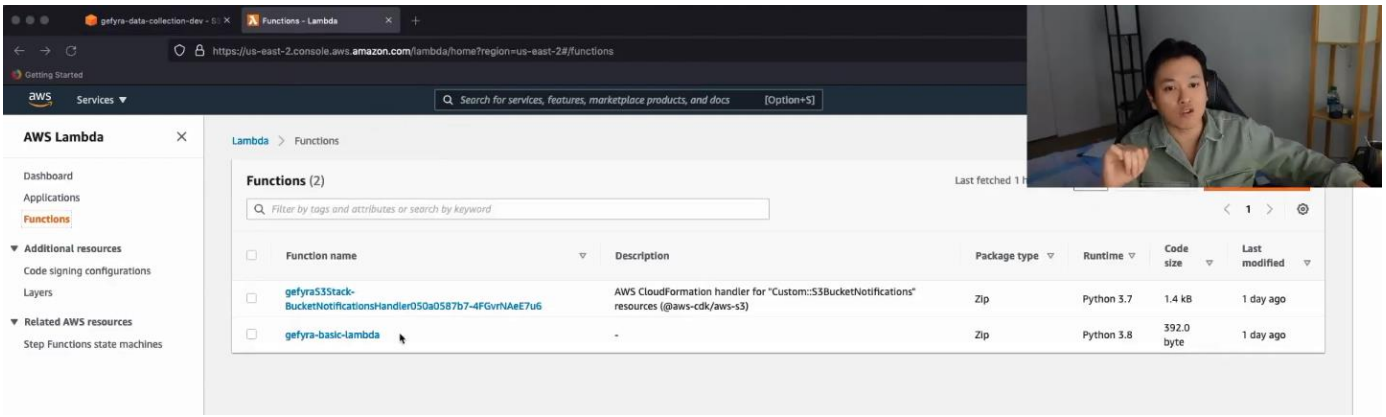
We rearrange to create the lambda stack, then the S3 bucket to use the Lambda stack as above

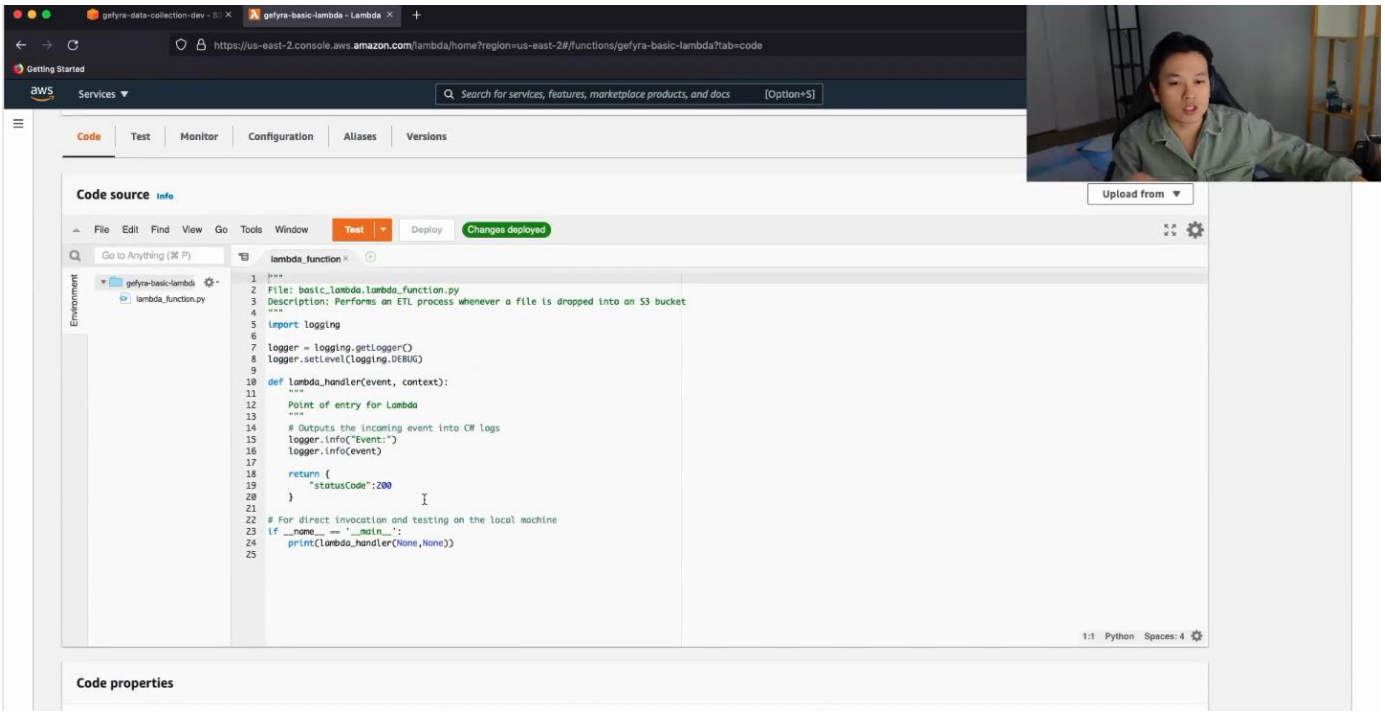


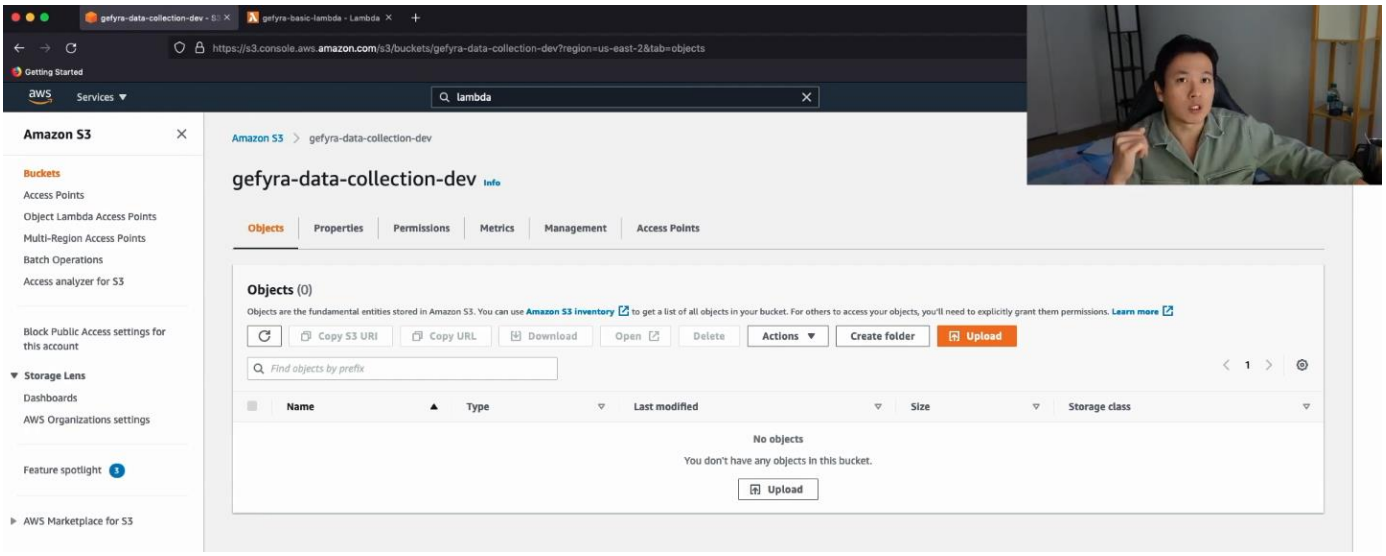


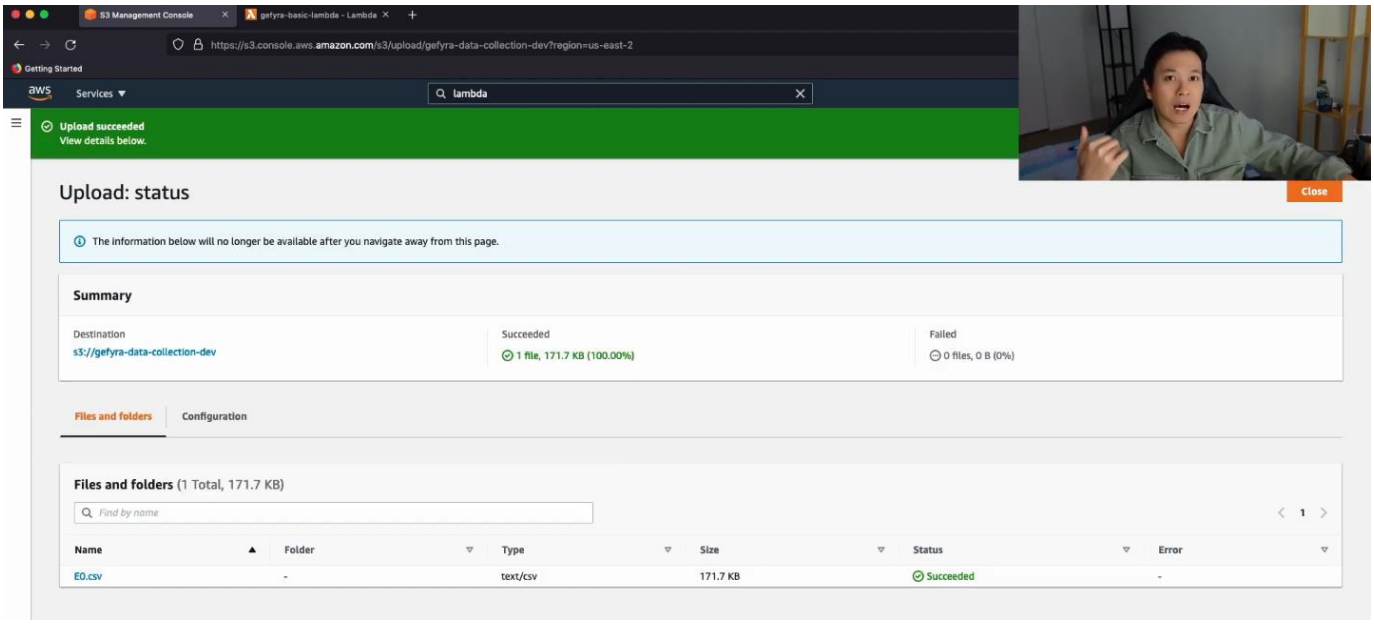

gefyra-cdk-demo.ts — gefyra-cdk-demo
EXPLORER
OPEN EDITORS
GEFYRA-CDK-DEMO
.vscode
settings.json
bin
gefyra-cdk-demo.d.ts
gefyra-cdk-demo.js
gefyra-cdk-demo.ts
cdk.out
lib
basic-lambda-stack.d.ts
basic-lambda-stack.js
basic-lambda-stack.ts
gefyra-cdk-demo-stack.d.ts
gefyra-cdk-demo-stack.js
gefyra-cdk-demo-stack.ts
s3-bucket-stack.d.ts
s3-bucket-stack.js
s3-bucket-stack.ts
node_modules
src/lambda/basic_lambda
__pycache__
lambda_function.py
test
.gitignore
.npmignore
cdk.json
OUTLINE
TIMELINE
NPM SCRIPTS
basic-lambda-stack.ts
s3-bucket-stack.ts
gefyra-cdk-demo.ts
bin > gefyra-cdk-demo.ts > s3_bucket_stack > lambdaFunction
#!/usr/bin/env node
import 'source-map-support/register';
import * as cdk from '@aws-cdk/core';
//import { GefyraCdkDemoStack } from '../lib/gefyra-cdk-demo-stack';
import { S3BucketStack } from '../lib/s3-bucket-stack';
import { basicLambdaStack } from '../lib/basic-lambda-stack';
const app = new cdk.App();
//new GefyraCdkDemoStack(app, 'GefyraCdkDemoStack');
TERMINAL
PROBLEMS
OUTPUT
DEBUG CONSOLE
node
+ ${BucketNotificationsHandler050a0587b7544547bf325f094a3db834/Role.Arn} Allow sts:AssumeRole Service:lambda.amazonaws.com
+ * Allow s3:PutBucketNotification AWS:${BucketNotificationsHandler050a0587b7544547bf325f094a3db834/Role}
+ {"Fn::ImportValue":"basicLambdaStack:ExportsOutputFnGetAttgefyrabasiclambda456DE80BArn787BDAEE"} Allow lambda:InvokeFunction Service:s3.amazonaws.com "ArnLike": { "AWS:SourceArn": "${gefyra-data-collection-dev.Arn}" }, "StringEquals": { "AWS:SourceAccount": "${AWS::AccountId}" }
IAM Policy Changes
Resource
Managed Policy ARN
+ ${BucketNotificationsHandler050a0587b7544547bf325f094a3db834/Role} arn:${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
gefyraS3Stack: deploying...

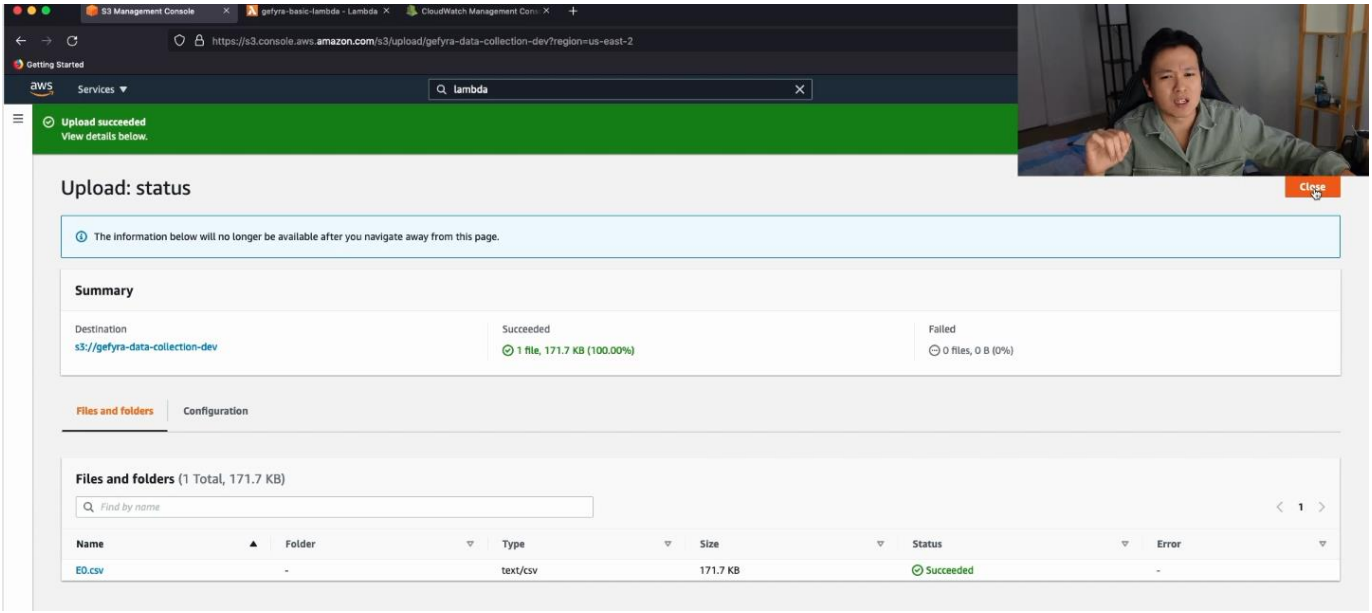

https://s3.console.aws.amazon.com/s3/buckets/gefyra-data-collection-dev?region=us-east-2&tab=objects
Services
lambda
Amazon S3
Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
AWS Organizations settings
Feature spotlight
AWS Marketplace for S3
Amazon S3 > gefyra-data-collection-dev
gefyra-data-collection-dev Info
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (0)
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Find objects by prefix
Name
Type
Last modified
Size
Storage class
No objects
You don't have any objects in this bucket.
Upload


https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions
Services
Search for services, features, marketplace products, and docs
[Option+S]
AWS Lambda
Dashboard
Applications
Functions
Additional resources
Code signing configurations
Layers
Related AWS resources
Step Functions state machines
Lambda > Functions
Functions (2)
Filter by tags and attributes or search by keyword
Function name
Description
Package type
Runtime
Code size
Last modified
gefyraS3Stack-BucketNotificationsHandler050a0587b7-4FGvrNAeE7u6
AWS CloudFormation handler for "Custom::S3BucketNotifications" resources (@aws-cdk/aws-s3)
Zip
Python 3.7
1.4 kB
1 day ago
gefyra-basic-lambda
-
Zip
Python 3.8
392.0 byte
1 day ago

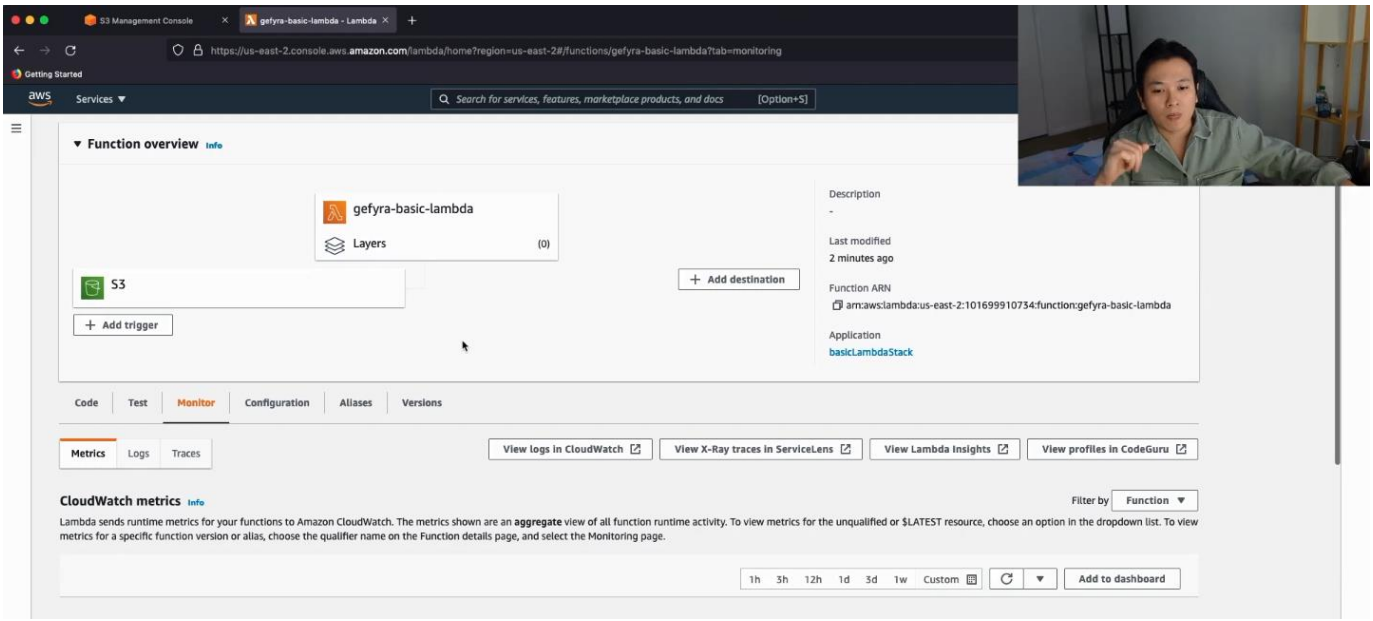

gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=code
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
Code
Test
Monitor
Configuration
Aliases
Versions
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
Changes deployed
Go to Anything (⌘ P)
lambda_function
Environment
gefyra-basic-lambda
lambda_function.py
"""
File: basic_lambda.lambda_function.py
Description: Performs an ETL process whenever a file is dropped into an S3 bucket
"""
import logging
logger = logging.getLogger()
logger.setLevel(logging.DEBUG)
def lambda_handler(event, context):
"""
Point of entry for Lambda
"""
# Outputs the incoming event into CW logs
logger.info("Event:")
logger.info(event)
return {
"statusCode":200
}
# For direct invocation and testing on the local machine
if __name__ == '__main__':
print(lambda_handler(None,None))
1:1 Python Spaces: 4
Code properties

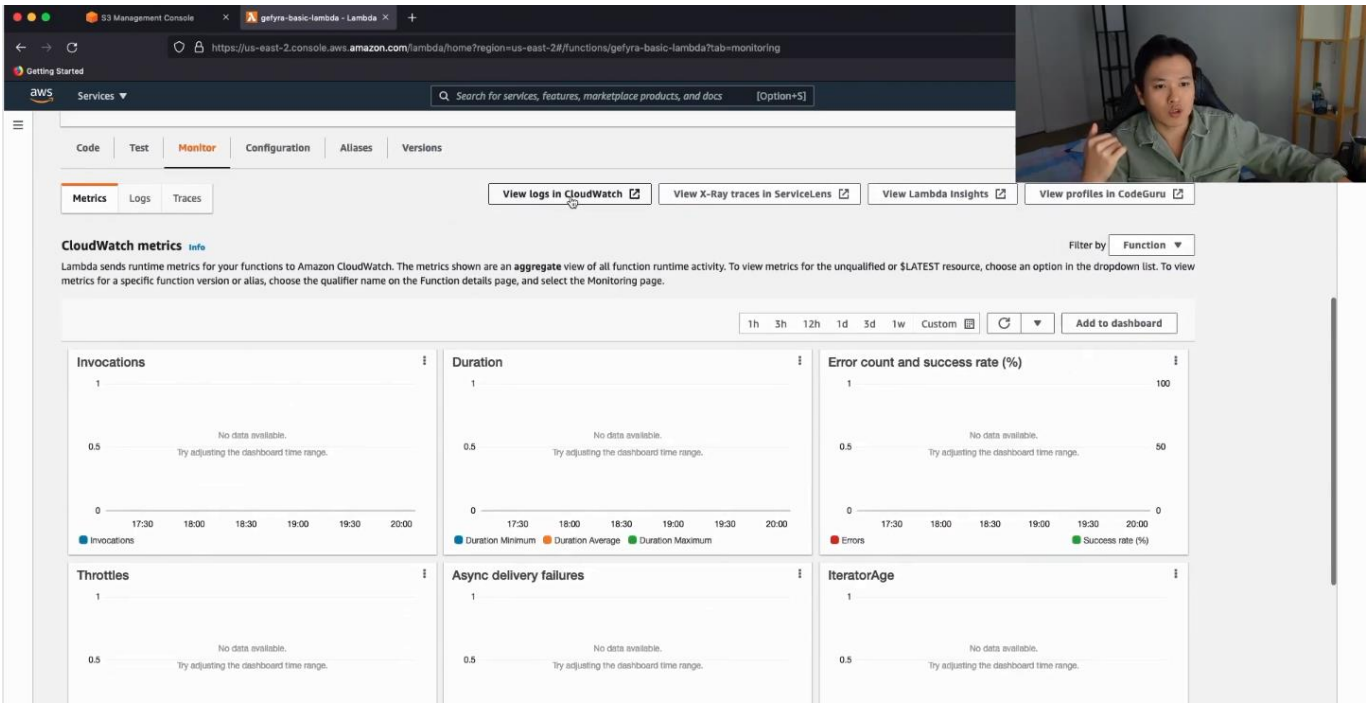

https://s3.console.aws.amazon.com/s3/buckets/gefyra-data-collection-dev?region=us-east-2&tab=objects
Getting Started
Services
lambda
Amazon S3
Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
AWS Organizations settings
Feature spotlight
AWS Marketplace for S3
Amazon S3 > gefyra-data-collection-dev
gefyra-data-collection-dev Info
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (0)
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Find objects by prefix
Name
Type
Last modified
Size
Storage class
No objects
You don't have any objects in this bucket.
Upload

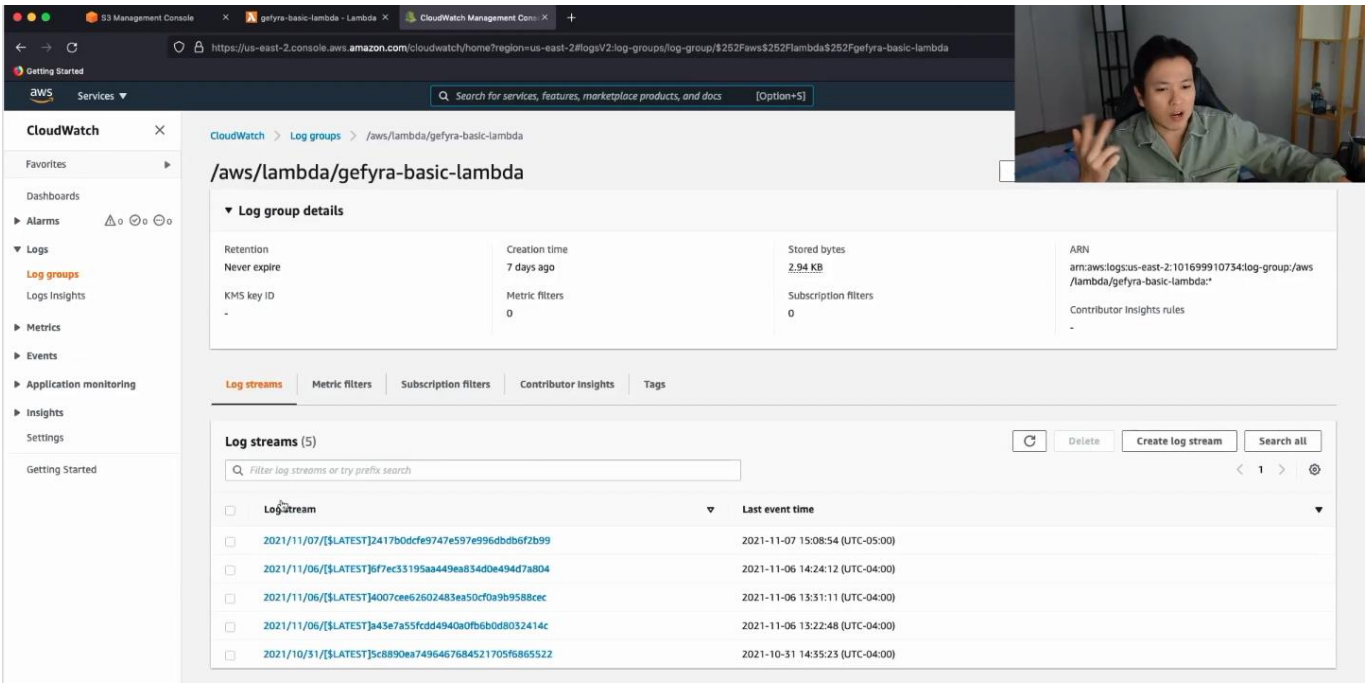

S3 Management Console
gefyra-basic-lambda - Lambda
https://s3.console.aws.amazon.com/s3/upload/gefyra-data-collection-dev?region=us-east-2
Getting Started
Services
lambda
Upload succeeded
View details below.
Upload: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Destination
s3://gefyra-data-collection-dev
Succeeded
1 file, 171.7 KB (100.00%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (1 Total, 171.7 KB)
Find by name
Name
Folder
Type
Size
Status
Error
E0.csv
-
text/csv
171.7 KB
Succeeded
-

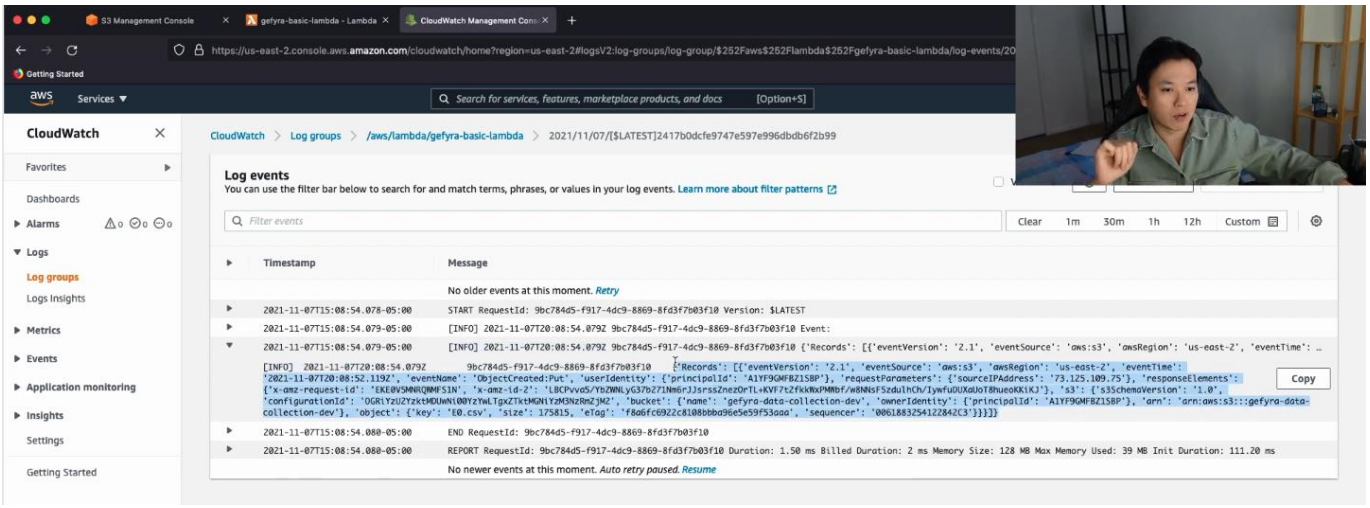


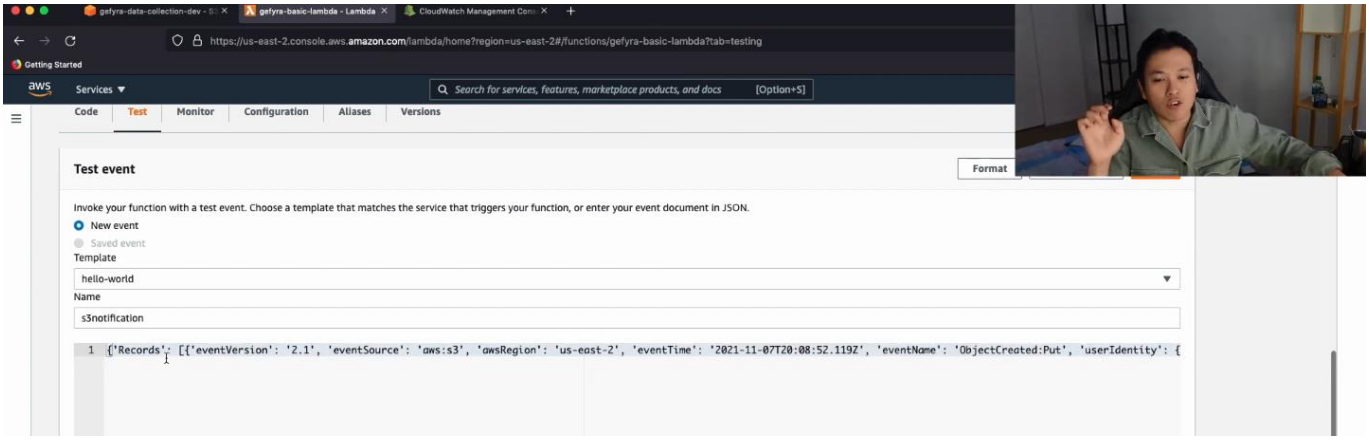
We drop a file into the S3 bucket, let us check to see if the Lambda notification event was triggered

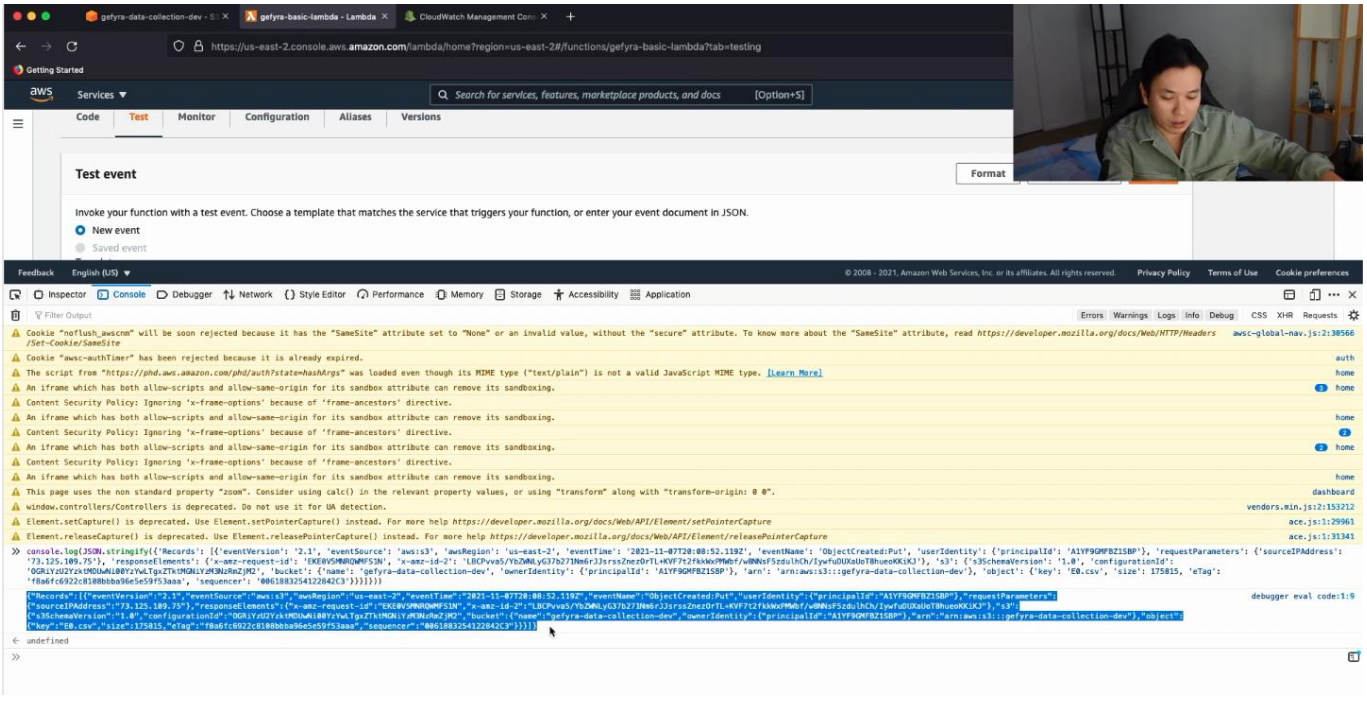


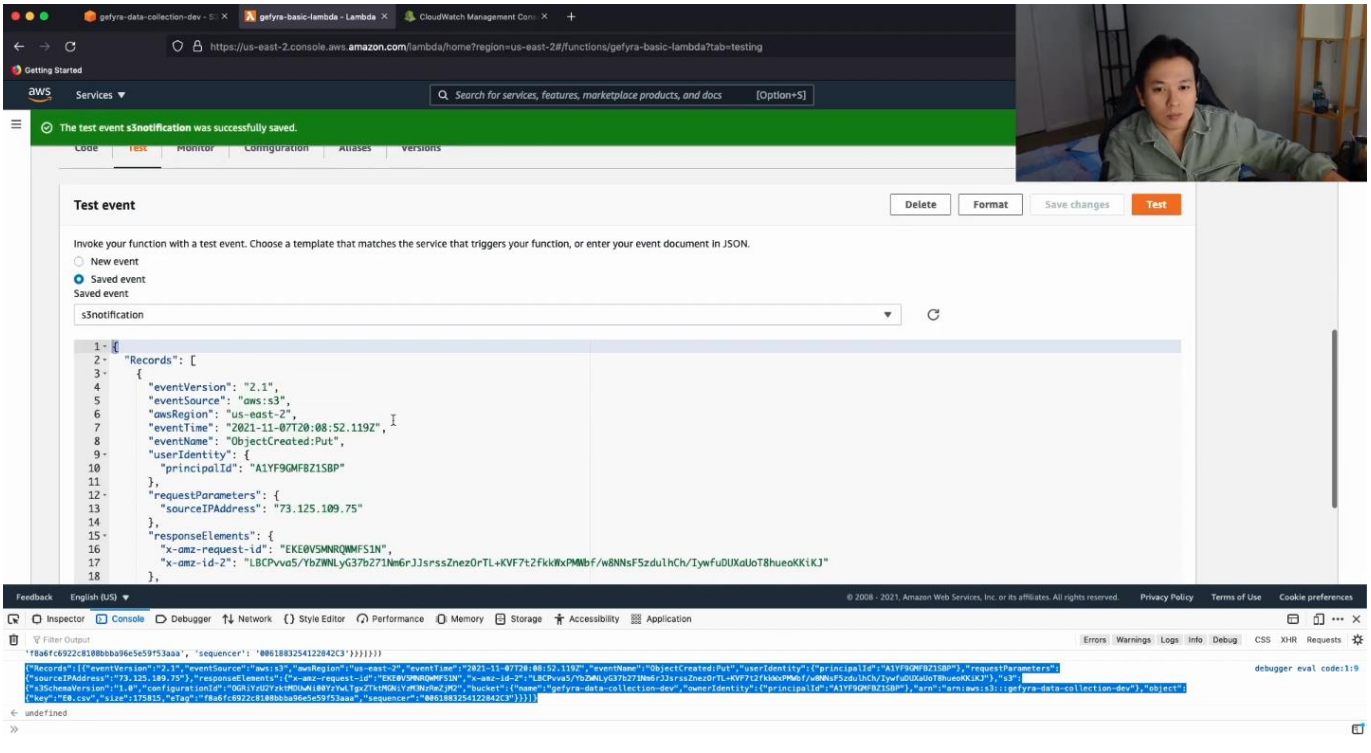

S3 Management Console
gefyra-basic-lambda - Lambda
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=monitoring
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
Code
Test
Monitor
Configuration
Aliases
Versions
Metrics
Logs
Traces
View logs in CloudWatch
View X-Ray traces in ServiceLens
View Lambda Insights
View profiles in CodeGuru
CloudWatch metrics Info
Filter by Function
Lambda sends runtime metrics for your functions to Amazon CloudWatch. The metrics shown are an aggregate view of all function runtime activity. To view metrics for the unqualified or $LATEST resource, choose an option in the dropdown list. To view metrics for a specific function version or alias, choose the qualifier name on the Function details page, and select the Monitoring page.
1h 3h 12h 1d 3d 1w Custom
Add to dashboard
Invocations
Duration
Error count and success rate (%)
No data available.
Try adjusting the dashboard time range.
17:30 18:00 18:30 19:00 19:30 20:00
Invocations
Duration Minimum
Duration Average
Duration Maximum
Errors
Success rate (%)
Throttles
Async delivery failures
IteratorAge

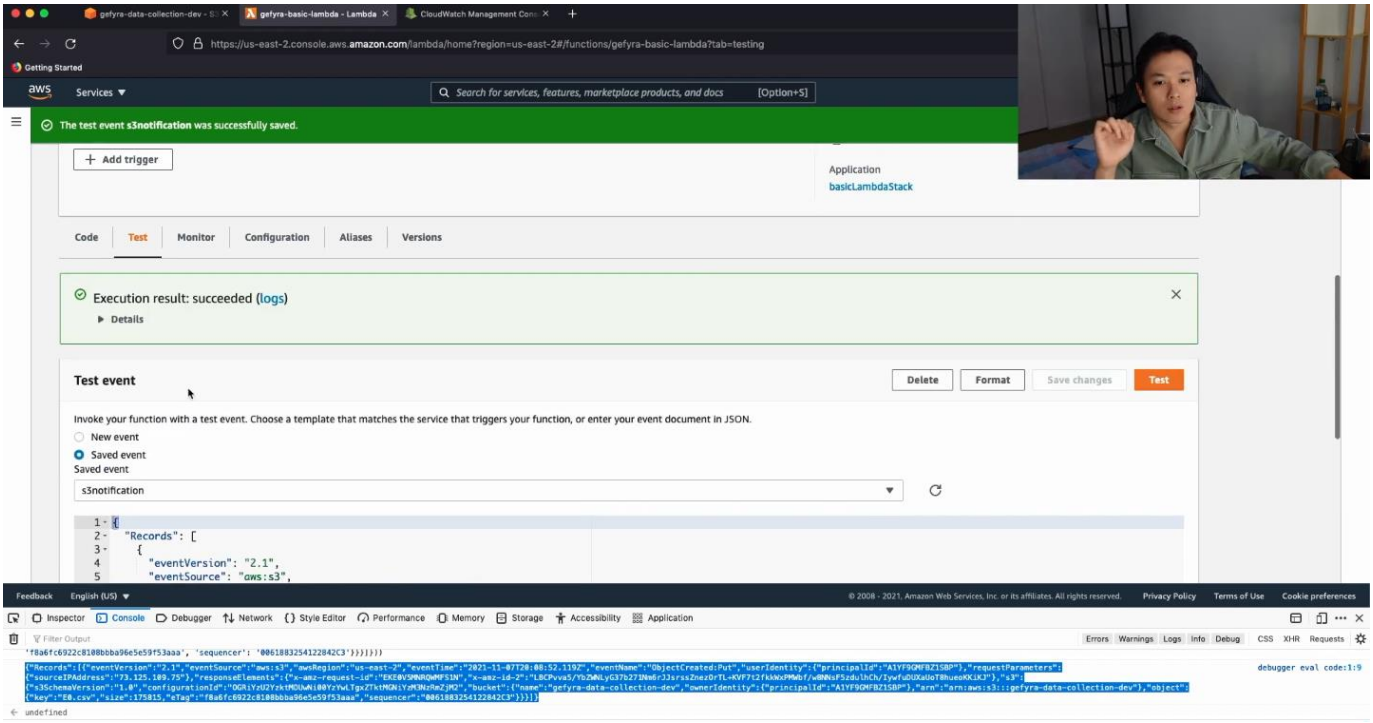

S3 Management Console
gefyra-basic-lambda - Lambda
CloudWatch Management Cons
https://us-east-2.console.aws.amazon.com/cloudwatch/home?region=us-east-2#logsV2:log-groups/log-group/$252Faws$252Flambda$252Fgefyra-basic-lambda
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
CloudWatch
Favorites
Dashboards
Alarms
Logs
Log groups
Logs Insights
Metrics
Events
Application monitoring
Insights
Settings
Getting Started
CloudWatch > Log groups > /aws/lambda/gefyra-basic-lambda
/aws/lambda/gefyra-basic-lambda
Log group details
Retention
Never expire
Creation time
7 days ago
Stored bytes
2.94 KB
ARN
arn:aws:logs:us-east-2:101699910734:log-group:/aws/lambda/gefyra-basic-lambda:*
KMS key ID
-
Metric filters
0
Subscription filters
0
Contributor Insights rules
-
Log streams
Metric filters
Subscription filters
Contributor Insights
Tags
Log streams (5)
Delete
Create log stream
Search all
Filter log streams or try prefix search
Log stream
Last event time
2021/11/07/[$LATEST]2417b0dcfe9747e597e996dbdb6f2b99
2021-11-07 15:08:54 (UTC-05:00)
2021/11/06/[$LATEST]6f7ec33195aa449ea834d0e494d7a804
2021-11-06 14:24:12 (UTC-04:00)
2021/11/06/[$LATEST]4007cee62602483ea50cf0a9b9588cec
2021-11-06 13:31:11 (UTC-04:00)
2021/11/06/[$LATEST]a45e7a55fcdd4940a0fb6b0d8032414c
2021-11-06 13:22:48 (UTC-04:00)
2021/10/31/[$LATEST]5c8890ea749646768452170 5f6865522
2021-10-31 14:55:23 (UTC-04:00)


CloudWatch
Log events
You can use the filter bar below to search for and match terms, phrases, or values in your log events. Learn more about filter patterns
Timestamp
Message
No older events at this moment. Retry
START RequestId: 9bc784d5-f917-4dc9-8869-8fd3f7b03f10 Version: $LATEST
[INFO] 2021-11-07T20:08:54.079Z 9bc784d5-f917-4dc9-8869-8fd3f7b03f10 Event:
Copy
END RequestId: 9bc784d5-f917-4dc9-8869-8fd3f7b03f10
REPORT RequestId: 9bc784d5-f917-4dc9-8869-8fd3f7b03f10 Duration: 1.50 ms Billed Duration: 2 ms Memory Size: 128 MB Max Memory Used: 39 MB Init Duration: 111.20 ms
No newer events at this moment. Auto retry paused. Resume


Test event
Format
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Template
hello-world
Name
s3notification


Test event
Format
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Inspector
Console
Debugger
Network
Style Editor
Performance
Memory
Storage
Accessibility
Application


gefyra-data-collection-dev - S
gefyra-basic-lambda - Lambda
CloudWatch Management Conc
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=testing
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
The test event s3notification was successfully saved.
Code Test Monitor Configuration Aliases Versions
Test event
Delete Format Save changes Test
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Saved event
s3notification
{
"Records": [
{
"eventVersion": "2.1",
"eventSource": "aws:s3",
"awsRegion": "us-east-2",
"eventTime": "2021-11-07T20:08:52.119Z",
"eventName": "ObjectCreated:Put",
"userIdentity": {
"principalId": "A1YF9GMFBZ1SBP"
},
"requestParameters": {
"sourceIPAddress": "73.125.109.75"
},
"responseElements": {
"x-amz-request-id": "EKE0VSMNRQWMFS1N",
"x-amz-id-2": "LBCPvva5/YbZWNLyG37b271Nm6rJJsrssZnezOrTL+KVF7t2fkkWxPMWbf/w8NNsF5zdulhCh/IywfuDUXaUoT8hueoKKiKJ"
},
Feedback English (US)
© 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy Terms of Use Cookie preferences
Inspector Console Debugger Network Style Editor Performance Memory Storage Accessibility Application
Filter Output
Errors Warnings Logs Info Debug CSS XHR Requests
'f8a6fc6922c8108bbba96e5e59f53aaa', 'sequencer': '0061883254122842C3'}}}}}}}
{"Records":[{"eventVersion":"2.1","eventSource":"aws:s3","awsRegion":"us-east-2","eventTime":"2021-11-07T20:08:52.119Z","eventName":"ObjectCreated:Put","userIdentity":{"principalId":"A1YF9GMFBZ1SBP"},"requestParameters":{"sourceIPAddress":"73.125.109.75"},"responseElements":{"x-amz-request-id":"EKE0VSMNRQWMFS1N","x-amz-id-2":"LBCPvva5/YbZWNLyG37b271Nm6rJJsrssZnezOrTL+KVF7t2fkkWxPMWbf/w8NNsF5zdulhCh/IywfuDUXaUoT8hueoKKiKJ"},"s3":{"s3SchemaVersion":"1.0","configurationId":"OGRiYzU2YzktMDUwNi00YzYwLTgxZTktMGNiYzM3NzRmZjMQ","bucket":{"name":"gefyra-data-collection-dev","ownerIdentity":{"principalId":"A1YF9GMFBZ1SBP"},"arn":"arn:aws:s3:::gefyra-data-collection-dev"},"object":{"key":"E0.csv","size":175815,"eTag":"f8a6fc6922c8108bbba96e5e59f53aaa","sequencer":"0061883254122842C3"}}}]}
debugger eval code:1:9
undefined


gefyra-data-collection-dev - S
gefyra-basic-lambda - Lambda
CloudWatch Management Conc
https://us-east-2.console.aws.amazon.com/lambda/home?region=us-east-2#/functions/gefyra-basic-lambda?tab=testing
Getting Started
Services
Search for services, features, marketplace products, and docs [Option+S]
The test event s3notification was successfully saved.
Add trigger
Application
basicLambdaStack
Code Test Monitor Configuration Aliases Versions
Execution result: succeeded (logs)
Details
Test event
Delete Format Save changes Test
Invoke your function with a test event. Choose a template that matches the service that triggers your function, or enter your event document in JSON.
New event
Saved event
Saved event
s3notification
{
"Records": [
{
"eventVersion": "2.1",
"eventSource": "aws:s3",
Feedback English (US)
© 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy Terms of Use Cookie preferences
Inspector Console Debugger Network Style Editor Performance Memory Storage Accessibility Application
Filter Output
Errors Warnings Logs Info Debug CSS XHR Requests
'f8a6fc6922c8108bbba96e5e59f53aaa', 'sequencer': '0061883254122842C3'}}}}}}}
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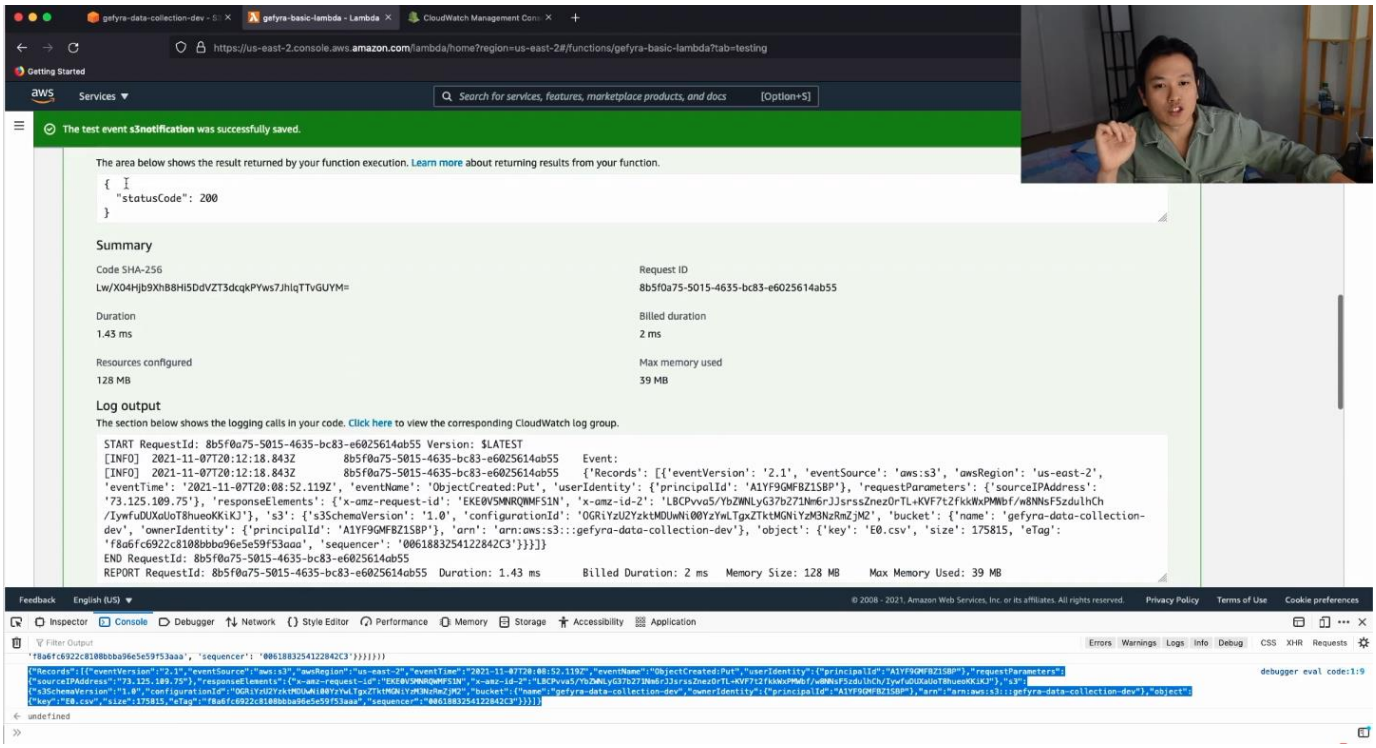
debugger eval code:1:9
undefined



This helps with unit testing. We have now connected the S3 bucket to the Lambda function and made sure that it works.