

In-Class: AWS CDK app

Start Assignment

Due Thursday by 9pm Points 1 Submitting a file upload File Types doc and docx

Your first AWS CDK app

https://docs.aws.amazon.com/cdk/v2/guide/hello_world.html

Create the app

Build the app

List the stacks in the app

Add an Amazon S3 bucket

Synthesize an AWS CloudFormation template

Deploy the stack

Modifying the app

Destroy the app's resources

Create the app:

```
siri@siris-MacBook-Pro:~| ➡ mkdir hello-cdk
cd hello-cdk
```

Install all dependencies ,activate the virtual environment and Synthesize an AWS CloudFormation template

```
Enjoy!
Initializing a new git repository...
Please run 'python3 -m venv .venv'!
Executing Creating virtualenv...
✔ All done!

siri@siris-MacBook-Pro:~/hello-cdk|main - source .venv/bin/activate
python -m pip install -r requirements.txt
Collecting aws-cdk-lib==2.68.0
  Downloading aws_cdk_lib-2.68.0-py3-none-any.whl (26.8 MB)
    26.8/26.8 MB 39.6 MB/s eta 0:00:00
Collecting constructs<10.0.0,>=10.0.0
  Downloading constructs-10.1.273-py3-none-any.whl (57 kB)
    57.8/57.8 kB 2.4 MB/s eta 0:00:00
Collecting aws-cdk.asset-kubectl-v20<3.0.0,>=2.1.1
  Downloading aws_cdk_asset_kubectl_v20-2.1.1-py3-none-any.whl (25.4 MB)
    25.4/25.4 MB 46.7 MB/s eta 0:00:00
Collecting aws-cdk.asset-awscli-v1<3.0.0,>=2.2.97
  Downloading aws_cdk_asset_awscli_v1-2.2.100-py3-none-any.whl (14.7 MB)
    14.7/14.7 MB 47.1 MB/s eta 0:00:00
Collecting typeguard==2.13.3
  Downloading typeguard-2.13.3-py3-none-any.whl (17 kB)
Collecting jsii<2.0.0,>=1.77.0
  Downloading jsii-1.77.0-py3-none-any.whl (571 kB)
    571.4/571.4 kB 19.4 MB/s eta 0:00:00
Collecting aws-cdk.asset-node-proxy-agent-v5<3.0.0,>=2.0.77
  Downloading aws_cdk_asset_node_proxy_agent_v5-2.0.80-py3-none-any.whl (1.3 MB)
    1.3/1.3 MB 25.1 MB/s eta 0:00:00
Collecting publication==0.0.3
  Downloading publication-0.0.3-py2.py3-none-any.whl (7.7 kB)
Collecting typing-extensions<5.0,>=3.7
  Downloading typing_extensions-4.5.0-py3-none-any.whl (27 kB)
Collecting importlib-resources==5.2.0
  Downloading importlib_resources-5.12.0-py3-none-any.whl (36 kB)
Collecting attrs<23.0,>=1.0
  Downloading attrs-22.2.0-py3-none-any.whl (35 kB)
Collecting attrs<23.0,>=21.2
  Downloading attrs-22.2.0-py3-none-any.whl (60 kB)
    60.0/60.0 kB 2.4 MB/s eta 0:00:00
Collecting python-dateutil
  Using cached python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
Collecting exceptiongroup
  Downloading exceptiongroup-1.1.0-py3-none-any.whl (14 kB)
Collecting six==1.5
  Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: publication, typing-extensions, typeguard, six, importlib-resources, exceptiongroup, attrs, python-dateutil, cattrs, jsii, constructs, aws-cdk.asset-node-proxy-agent-v5, a
ws-cdk.asset-kubectl-v20, aws-cdk.asset-awscli-v1, aws-cdk-lib
Successfully installed attrs-22.2.0 aws-cdk-lib-2.68.0 aws-cdk.asset-awscli-v1-2.2.100 aws-cdk.asset-kubectl-v20-2.1.1 aws-cdk.asset-node-proxy-agent-v5-2.0.80 cattrs-22.2.0 constructs-10.1.273 exceptio
ngrp-1.1.0 importlib-resources-5.12.0 jsii-1.77.0 publication-0.0.3 python-dateutil-2.8.2 six-1.16.0 typeguard-2.13.3 typing-extensions-4.5.0

[notice] A new release of pip available: 22.2.1 -> 23.0.1
[notice] To update, run: pip install --upgrade pip
siri@siris-MacBook-Pro:~/hello-cdk|main - cdk ls
HelloCdkStack

siri@siris-MacBook-Pro:~/hello-cdk|main - code .
siri@siris-MacBook-Pro:~/hello-cdk|main - cdk synth
```

```
Resources:
  MyFirstBucketB8884501:
    Type: AWS::S3::Bucket
    Properties:
      VersioningConfiguration:
        Status: Enabled
      UpdateReplacePolicy: Retain
      DeletionPolicy: Retain
    Metadata:
      aws:cdk:path: HelloCdkStack/MyFirstBucket/Resource
  CDKMetadata:
    Type: AWS::CDK::Metadata
    Properties:
      Analytics: v2:deflate64:H4sIAAAAAA/yXITQ5AMBBA4bPYt+MvEwsuI8XaQ1pRpkkJYi4O2L1vrMihKSaDi8VJ0RQ45wdTwoI97V+xyuKiiJdQz/bo/ttrb4JT+XFuakNHSILZqTF0tXDmkCRb6ROKCM4a2r8PnTWD+3AAAAA=
    Metadata:
      aws:cdk:path: HelloCdkStack/CDKMetadata/Default
    Condition: CDKMetadataAvailable
  Conditions:
    CDKMetadataAvailable:
      Fn::Or:
        - Fn::Or:
            - Fn::Equals:
                - Ref: AWS::Region
                - af-south-1
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-east-1
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-northeast-1
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-northeast-2
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-south-1
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-southeast-1
            - Fn::Equals:
                - Ref: AWS::Region
                - ap-southeast-2
            - Fn::Equals:
                - Ref: AWS::Region
                - ca-central-1
            - Fn::Equals:
                - Ref: AWS::Region
                - cn-north-1
            - Fn::Equals:
                - Ref: AWS::Region
                - cn-northwest-1
        - Fn::Or:
            - Ref: AWS::Region
            - eu-central-1
            - Ref: AWS::Region
            - eu-north-1
```

```
[sirir@siris-MacBook-Pro:~/hello-cdk|main] ✨ ➔ cdk bootstrap
⚠ Bootstrapping environment aws://971480383380/us-east-1...
Trusted accounts for deployment: (none)
Trusted accounts for lookup: (none)
Using default execution policy of 'arn:aws:iam::aws:policy/AdministratorAccess'. Pass '--cloudformation-execution-policies' to customize.
CDKToolkit: creating CloudFormation changeset...
✔ Environment aws://971480383380/us-east-1 bootstrapped.
```

```
[sirir@siris-MacBook-Pro:~/hello-cdk|main] ✨ ➔ cdk deploy
```

```
⚡ Synthesis time: 4.45s
```

HelloCdkStack: building assets...

```
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[0%] start: Building 5bb8eb8371e56620ed5b4d0c83689a608770cdfc75ca94830ef0c26e24af46be:current_account-current_region
[100%] success: Built 5bb8eb8371e56620ed5b4d0c83689a608770cdfc75ca94830ef0c26e24af46be:current_account-current_region
```

HelloCdkStack: assets built

```
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-lookup-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
(to get rid of this warning, please upgrade to bootstrap version >= 8)
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
HelloCdkStack: deploying... [1/1]
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[0%] start: Publishing 5bb8eb8371e56620ed5b4d0c83689a608770cdfc75ca94830ef0c26e24af46be:current_account-current_region
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-file-publishing-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[100%] success: Published 5bb8eb8371e56620ed5b4d0c83689a608770cdfc75ca94830ef0c26e24af46be:current_account-current_region
HelloCdkStack: creating CloudFormation changeset...
```

```
✔ HelloCdkStack
```

```
⚡ Deployment time: 38.69s
```

Stack ARN:

```
arn:aws:cloudformation:us-east-1:971480383380:stack/HelloCdkStack/f5b0cfa0-beef-11ed-b47d-0adbb06ea993
```

```
⚡ Total time: 43.14s
```

```
[sirir@siris-MacBook-Pro:~/hello-cdk|main] ✨ ➔ cdk diff
```

Stack HelloCdkStack

```
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-lookup-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
(to get rid of this warning, please upgrade to bootstrap version >= 8)
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fds-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
IAM Statement Changes
```

Resource	Effect	Action	Principal	Condition
+ \$(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role.Arn)	Allow	sts:AssumeRole	Service:lambda.amazonaws.com	
+ \$(MyFirstBucket.Arn) \$(MyFirstBucket.Arn)*	Allow	s3:DeleteObject* s3:GetBucket* s3:List*	AWS:\$(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role.Arn)	

IAM Policy Changes

Resource	Managed Policy ARN
+ \$(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role)	{"Fn::Sub": "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>)

Resources

```
[+] AWS::S3::Bucket SiriFirst2020DCFC2B9 orphan
[+] AWS::S3::Bucket MyFirstBucket MyFirstBucketB8884501
[+] AWS::S3::BucketPolicy MyFirstBucketPolicy MyFirstBucketPolicy32430EFD
[+] Custom::S3AutoDeleteObjects MyFirstBucketAutoDeleteObjectsCustomResource MyFirstBucketAutoDeleteObjectsCustomResourceC52FCFAE
[+] AWS::IAM::Role Custom::S3AutoDeleteObjectsCustomResourceProvider/Role CustomS3AutoDeleteObjectsCustomResourceProviderRole381BD092
[+] AWS::Lambda::Function Custom::S3AutoDeleteObjectsCustomResourceProvider/Handler CustomS3AutoDeleteObjectsCustomResourceProviderHandler9D98184F
```

Deploy the stack

```
[siri@siris-MacBook-Pro:~/hello-cdk|main] ➦ cdk deploy
* Synthesis time: 4.6s

HelloCdkStack: building assets...

current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[0%] start: Building 2332a8953f2d92ebffdc01cf20d5a2f5b5f2ef29764cda4186f01c55ede8c73:current_account-current_region
[0%] start: Building ae4309db3131cf6a9d6cdbf11e34fa5cb659e08b7cca594294e16086f65c77d8:current_account-current_region
[90%] success: Built 2332a8953f2d92ebffdc01cf20d5a2f5b5f2ef29764cda4186f01c55ede8c73:current_account-current_region
[100%] success: Built ae4309db3131cf6a9d6cdbf11e34fa5cb659e08b7cca594294e16086f65c77d8:current_account-current_region

HelloCdkStack: assets built

current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-lookup-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
(to get rid of this warning, please upgrade to bootstrap version >= 8)
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
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: $(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role.Arn) Effect: Allow Action: sts:AssumeRole Principal: Service:lambda.amazonaws.com Condition:
+ Resource: $(MyFirstBucket.Arn) $(MyFirstBucket.Arn)/* Effect: Allow Action: s3:DeleteObject* s3:DeleteBucket* s3:List* Principal: AWS:$(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role.Arn) Condition:

IAM Policy Changes
+ Resource: $(Custom::S3AutoDeleteObjectsCustomResourceProvider/Role) Managed Policy ARN: ("Fn::Sub": "arn:${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
HelloCdkStack: deploying... [1/1]
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[0%] start: Publishing 2332a8953f2d92ebffdc01cf20d5a2f5b5f2ef29764cda4186f01c55ede8c73:current_account-current_region
[0%] start: Publishing ae4309db3131cf6a9d6cdbf11e34fa5cb659e08b7cca594294e16086f65c77d8:current_account-current_region
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-file-publishing-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-file-publishing-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.
[50%] success: Published 2332a8953f2d92ebffdc01cf20d5a2f5b5f2ef29764cda4186f01c55ede8c73:current_account-current_region
[100%] success: Published ae4309db3131cf6a9d6cdbf11e34fa5cb659e08b7cca594294e16086f65c77d8:current_account-current_region
HelloCdkStack: creating CloudFormation changeset...

[✓] HelloCdkStack
* Deployment time: 68.52s

Stack ARN:
arn:aws:cloudformation:us-east-1:971480383380:stack/HelloCdkStack/f5b0cfa0-beef-11ed-b47d-0adbb06ea993

* Total time: 73.12s
.
```

Destroy the app's resources

```
[siri@siris-MacBook-Pro:~/hello-cdk|main] ➦ cdk destroy
Are you sure you want to delete: HelloCdkStack (y/n)? y
HelloCdkStack: destroying... [1/1]
current credentials could not be used to assume 'arn:aws:iam::971480383380:role/cdk-hnb659fda-deploy-role-971480383380-us-east-1', but are for the right account. Proceeding anyway.

[✓] HelloCdkStack: destroyed

[siri@siris-MacBook-Pro:~/hello-cdk|main] ➦
```