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AWS Cloud Development Kit

Infrastructure as Code can be easy!

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Overview

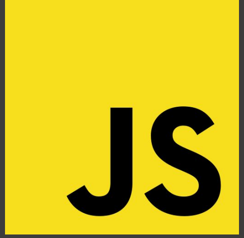
- AWS Cloud Development Kit
- Structure of a CDK Application
- Cloud Development Kit CLI
- Demonstration & Advanced Features
- CDK @ viesure
- Summary

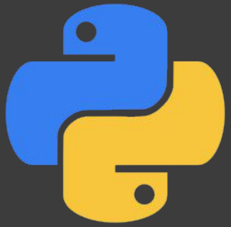
AWS Cloud Development Kit

- Framework for defining cloud applications
- Model cloud components as reusable constructs
- Write your Infrastructure in your favourite Programming Language
- CDK Core - CDK Construct Library - CDK CLI

Supported Languages

Currently Supported



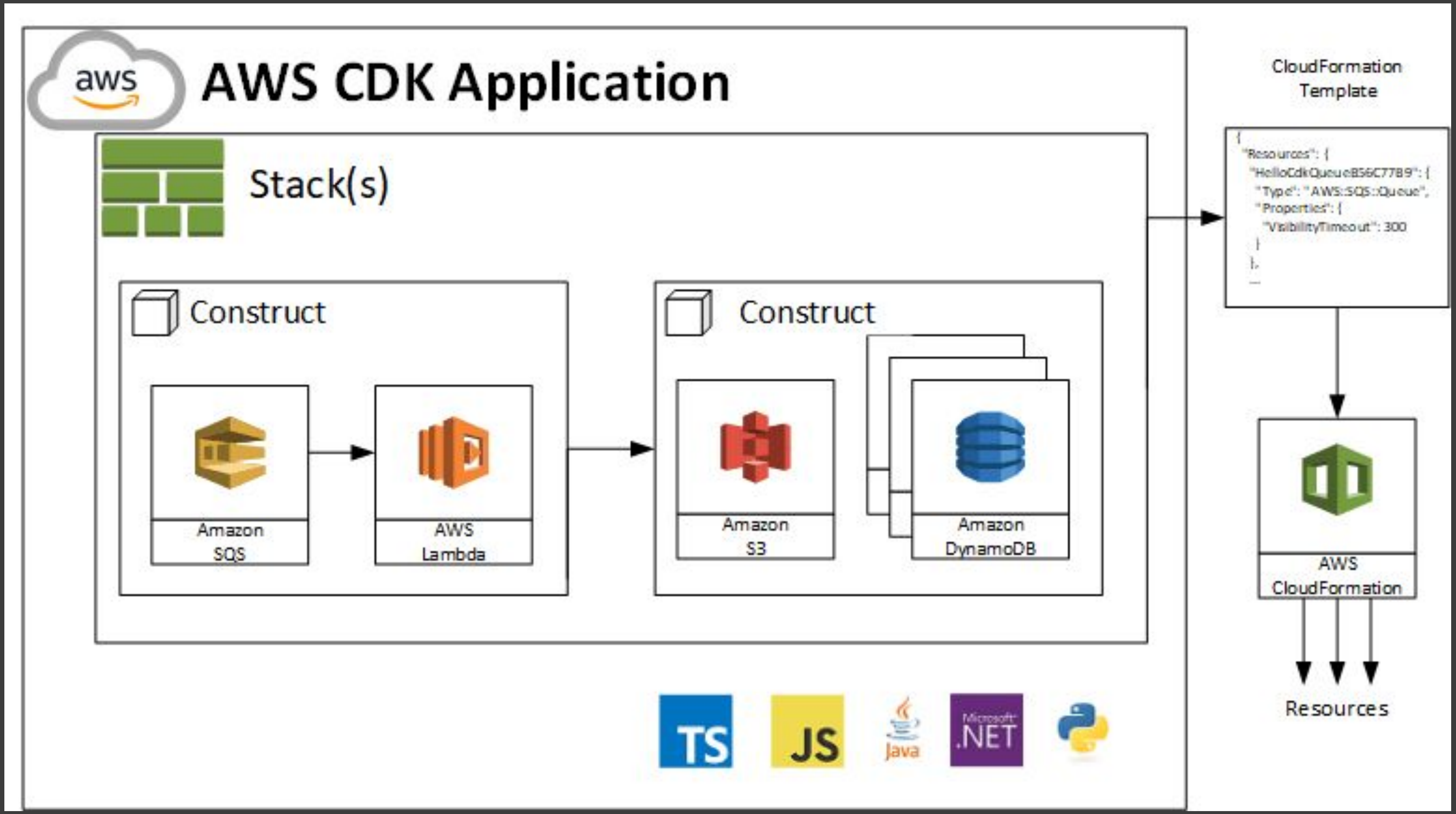


In developer preview

Microsoft®
.NET

Structure of a CDK App

- CDK Application
- Multiple Stacks
- Multiple Constructs



```
{
  "Resources": {
    "HelloCdkQueueB56C7789": {
      "Type": "AWS::SQS::Queue",
      "Properties": {
        "VisibilityTimeout": 300
      }
    },
    ...
```

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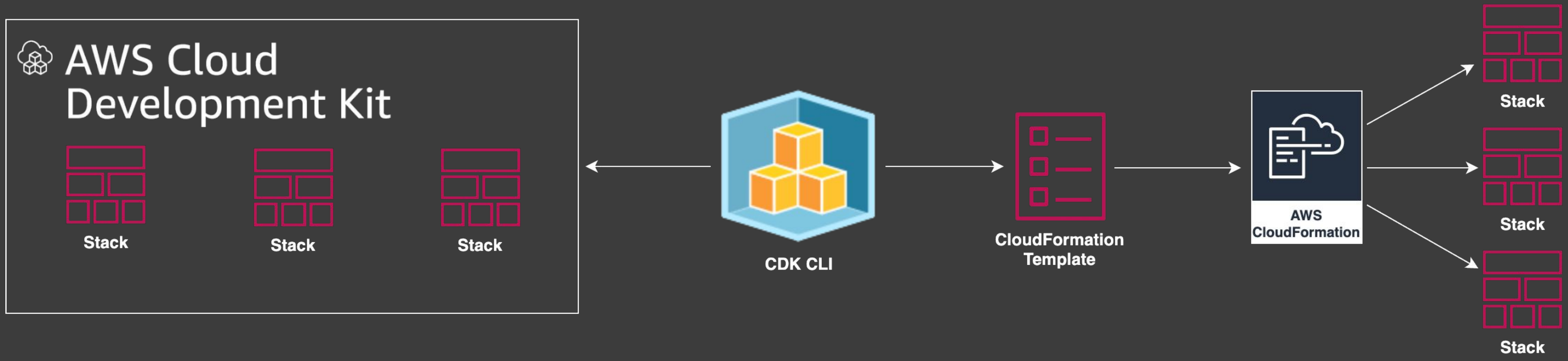
Code → CloudFormation ?

Cloud Development Kit CLI



Cloud Development Kit CLI

- cdk bootstrap
- cdk doc(s)
- cdk init
- cdk synth
- cdk diff
- cdk deploy
- cdk destroy

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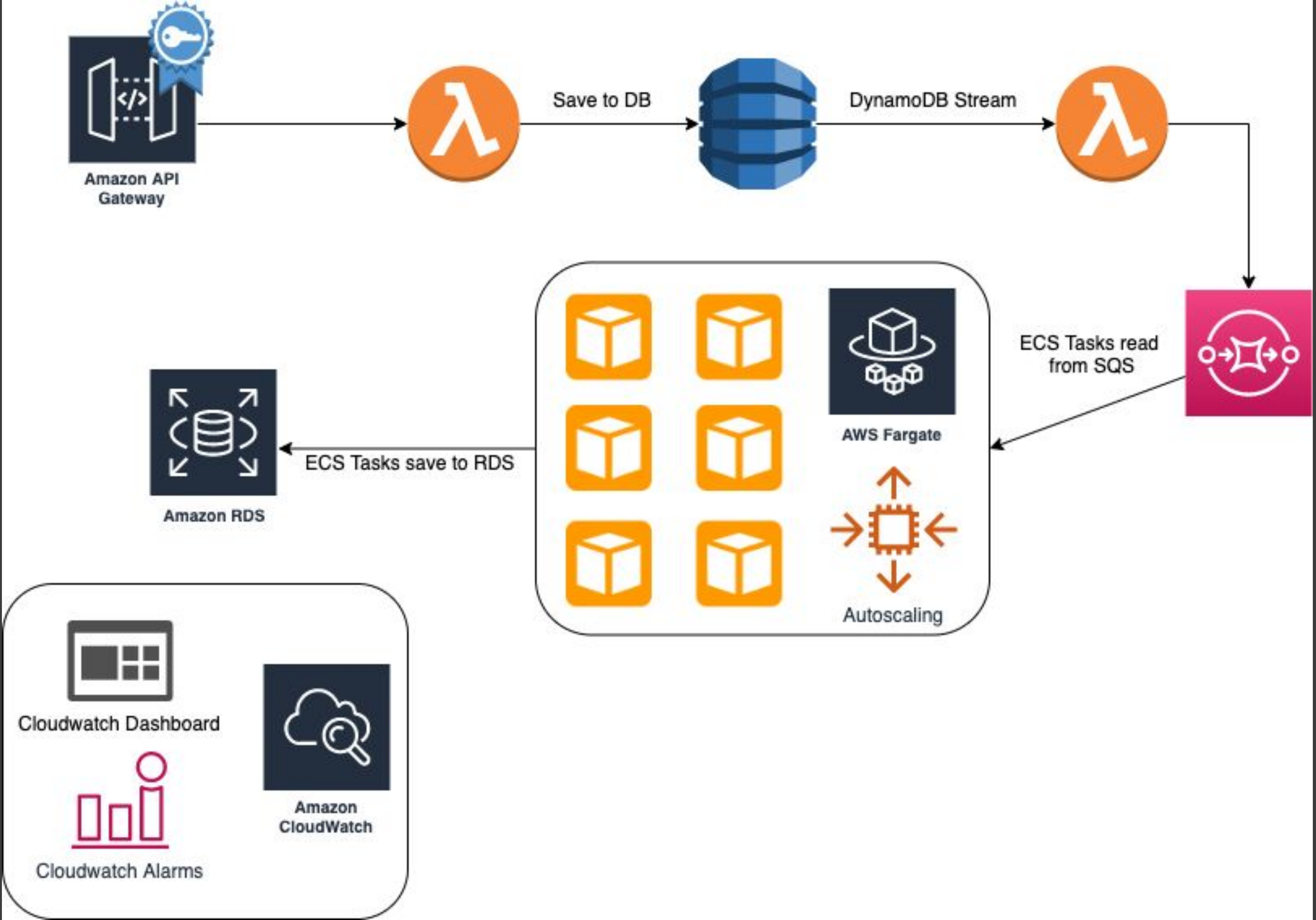
Demonstration


Amazon API Gateway
Save to DB
DynamoDB Stream
ECS Tasks read from SQS
AWS Fargate
Autoscaling
ECS Tasks save to RDS
Amazon RDS
Cloudwatch Dashboard
Cloudwatch Alarms
Amazon CloudWatch

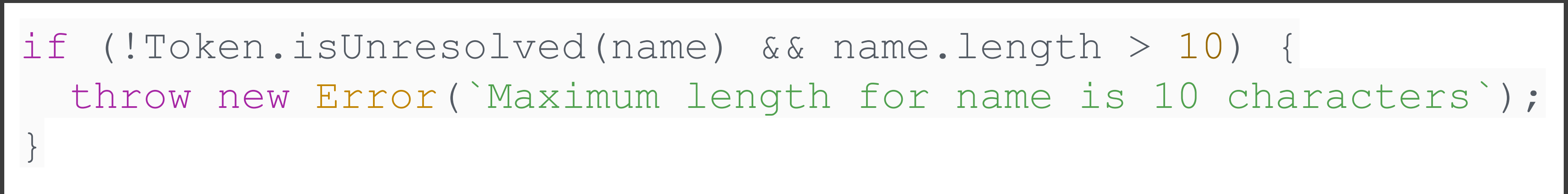
Assets

- Local files, directories or docker images
- Artifacts that the app needs to operate
- Assets are deployed before the Stack
- Supported Assets
  - Amazon S3 Assets
  - Docker Image
- Examples
  - Lambda code
  - Docker image

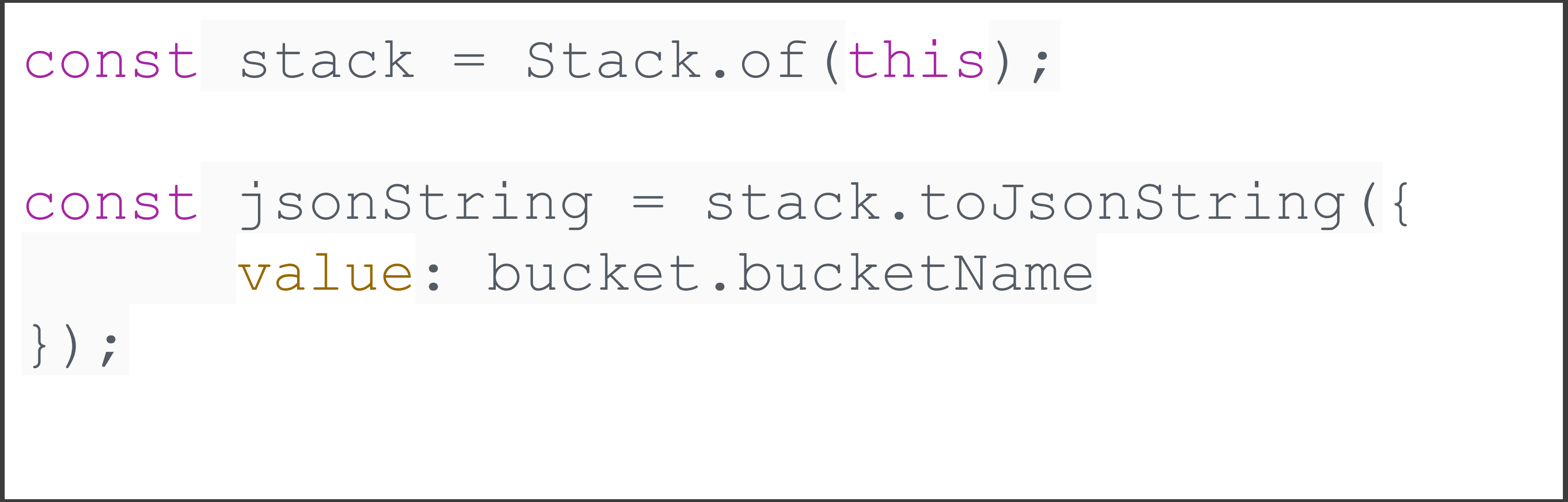
Tokens

- Represent values that can only be resolved at a later time

- Tokens are objects
  - Token.asString
  - Token.asList
  - Token.asNumber



```
if (!Token.isUnresolved(name) && name.length > 10) {
  throw new Error(`Maximum length for name is 10 characters`);
}
```

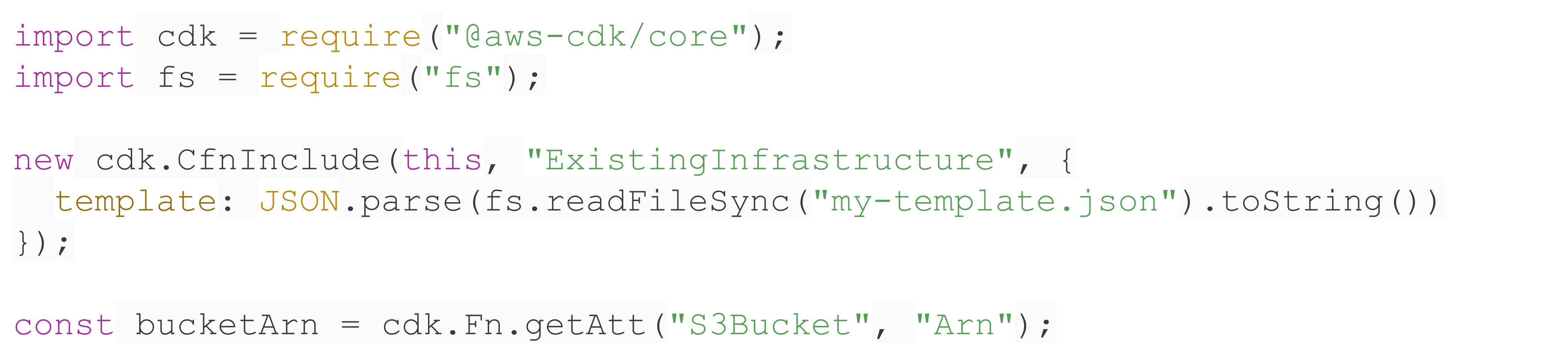


```
const stack = Stack.of(this);

const jsonString = stack.toJsonString({
      value: bucket.bucketName
});
```

CloudFormation Support

- Low Level constructs for all CloudFormation resources - Cfn…. prefix
- Support for all CloudFormation Functions (cdk.Fn)

- Include an existing CloudFormation Template

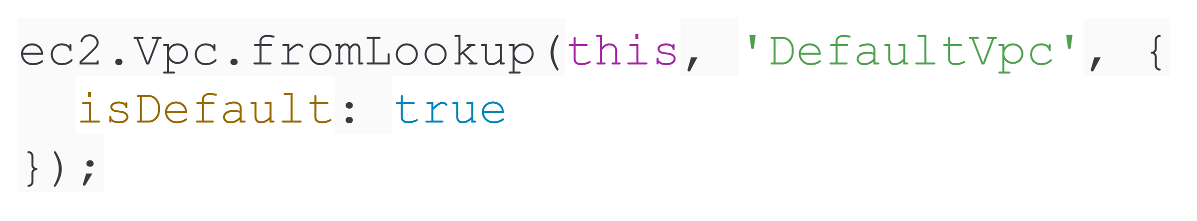


```
import cdk = require("@aws-cdk/core");
import fs = require("fs");

new cdk.CfnInclude(this, "ExistingInfrastructure", {
  template: JSON.parse(fs.readFileSync("my-template.json").toString())
});

const bucketArn = cdk.Fn.getAtt("S3Bucket", "Arn");
```

Existing Resources

- Import existing Resources as Objects
  - fromArn
  - fromName
  - fromAttributes
- Environment Agnostic

- Some Resources also have a fromLookup method
  - need to define an environment



```
ec2.Vpc.fromLookup(this, 'DefaultVpc', {
  isDefault: true
});
```

Outcome of the demonstration

- Deployed two Lambdas with an API Gateway & Certificate
- Deployed a Kotlin service in Fargate with Autoscaling
- One DynamoDB Table & One RDS Postgres instance
- DynamoDB Streams & SQS

- **74 CloudFormation Resources created**

AWS Cloud Development Kit	**CloudFormation template**
~ 135 lines of Typescript code	~ 1700 lines of yaml template

CDK @ Viesure innovation center

- Most of our infrastructure definitions are still CloudFormation templates

- Started to use the CDK for more complex setups
  - Gitlab
  - resource-cleaner

- Still no root construct

- Easier for new colleagues to get a grasp of our infrastructure

Summary

With the AWS CDK your Infrastructure ***is*** Code

Use your favourite programming language

Use powerful pre defined constructs & reusable components

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Thank you!

Slides & Code @
github.com/viesure