Amazon CodeWhisperer

Build applications faster and more securely with your AI-powered productivity tool

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AWS Chile

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Agenda

Customer challenges

Service overview, benefits, and features

Customers

Getting started

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Quickly building reliable, secure code is challenging

Shortage of developers[1]

Time spent on undifferentiated code

Appropriate use of open source

Data privacy

Time spent learning technologies, APIs, and best practices

Write secure code

[1]Gartner: 2023 Planning Guide for Application Development

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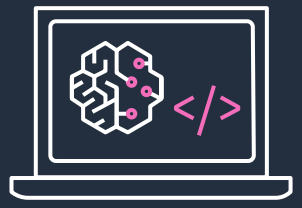
CodeWhisperer

BUILD APPLICATIONS FASTER AND MORE SECURELY WITH YOUR AI-POWERED PRODUCTIVITY TOOL



Generate code suggestions in real time

Scan code for hard-to-find vulnerabilities

Flag code that resembles open-source training data or filter by default

Amazon ran a productivity challenge, and participants who used CodeWhisperer were **27% more likely to complete tasks successfully and did so an average of 57% faster** than those who did not use CodeWhisperer

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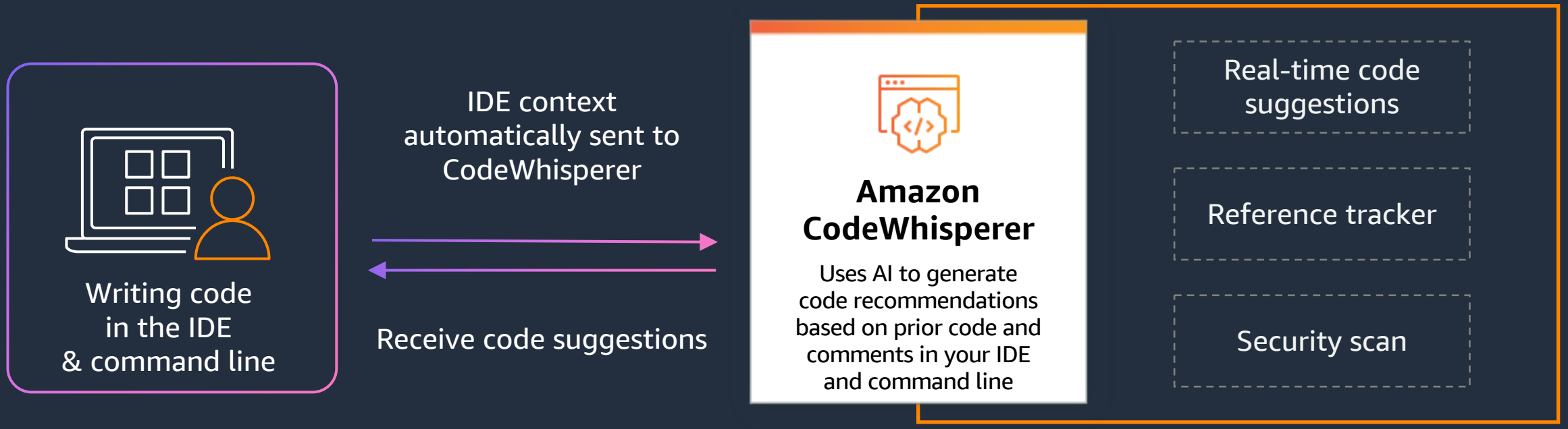
How it works



Content processed by CodeWhisperer Professional is not stored or used for service improvement

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Use with your tools

BUILD APPLICATIONS FASTER AND MORE SECURELY WITH YOUR AI-POWERED PRODUCTIVITY TOOL

Supported ecosystem

programming languages

Python

Java

JavaScript

TypeScript

Rust

PHP

Kotlin

SQL

C#

Go

NEW

CloudFormation

CDK

Terraform

AND

Ruby, C, C++, Shell scripting, and Scala

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Use with your tools

BUILD APPLICATIONS FASTER AND MORE SECURELY WITH YOUR AI-POWERED PRODUCTIVITY TOOL

Supported ecosystem

IDE's

JetBrains *(incl. PyCharm, IntelliJ IDEA, WebStorm, CLion, PhpStorm, GoLand)*

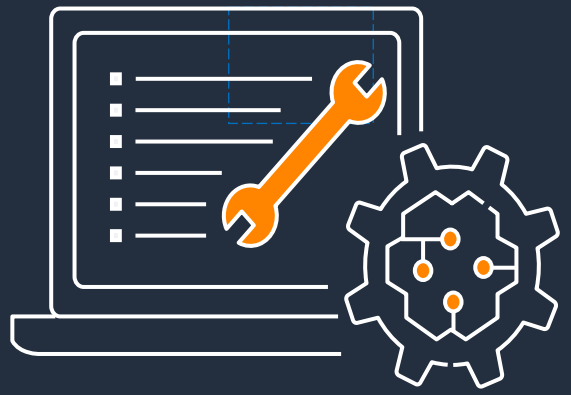
VS Code

Visual Studio 2022

AWS Cloud9

AWS Lambda console

Amazon SageMaker Studio, AWS Glue Studio



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Benefits

Quickly accomplish basic coding tasks

More easily use unfamiliar APIs and frameworks

Get high-quality suggestions for AWS services

Use AI responsibly

Improve application security

Use your favorite tools

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Code generation

- Get multiple code suggestions in seconds based on natural language (English) description of coding task and surrounding code
- Provides high-quality suggestions for popular AWS services
- Generated code matches developer style and patterns

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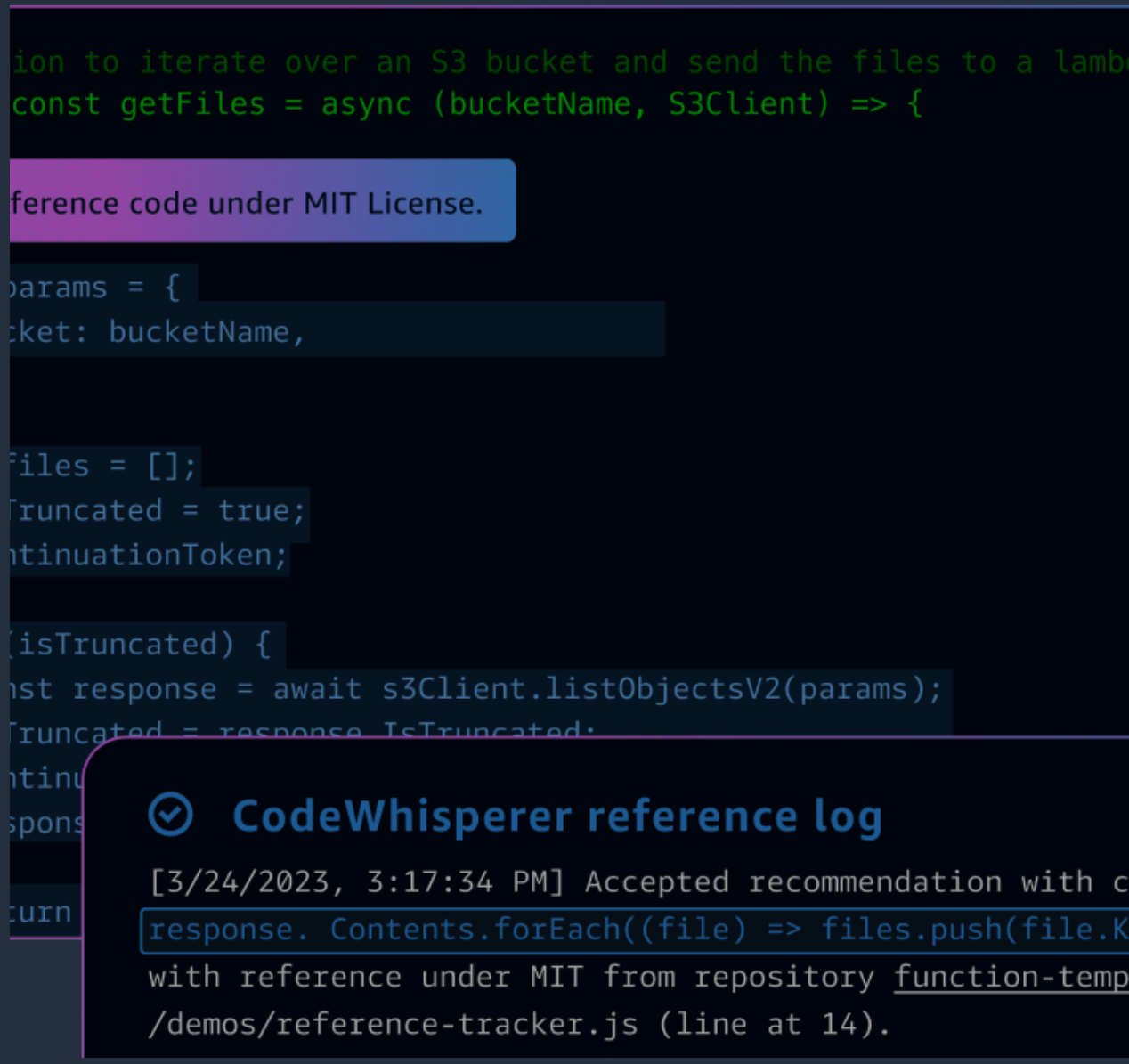
Reference tracking

- Trained on billions of lines of code
- Flags code similar to open-source training data
- Tracks accepted suggestions so that you can provide appropriate attribution
- Enterprise controls to more easily deactivate/filter code suggestions similar to open-source training data



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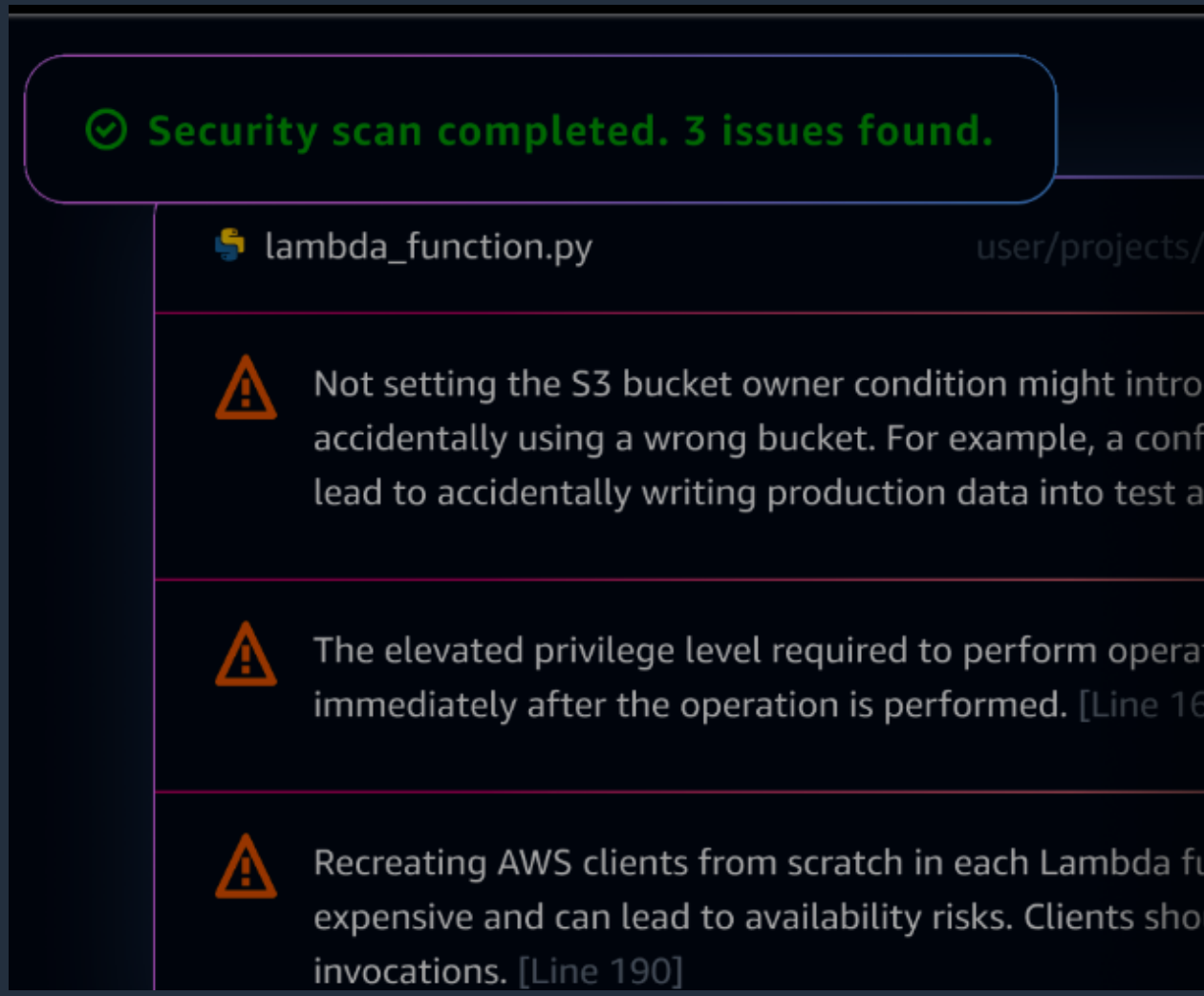
Security scanning

- Scan generated and developer-written code to detect security vulnerabilities
- Receive vulnerability remediation suggestions
- Scan for hard-to-find security vulnerabilities
- Supports VS Code and JetBrains IDEs for Python, Java, and JavaScript



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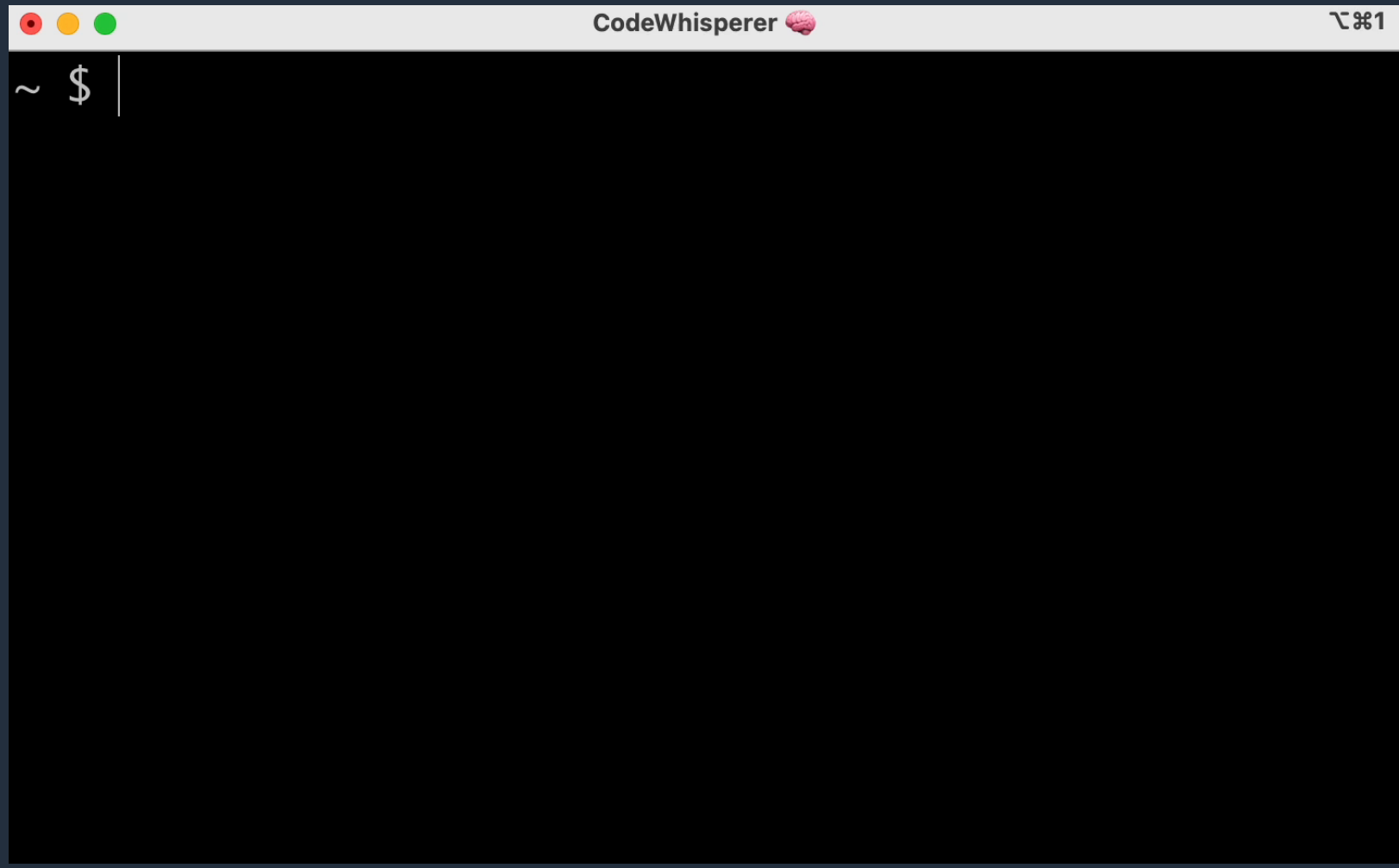
NEW Code generation for the command line

- Contextual CLI completions and AI natural-language-to-bash translation
  - ➢ IDE-style completions for 500+ CLIs
  - ➢ Natural language-to-bash translation (Enter ‘q!’)



AVAILABLE IN PREVIEW

aws

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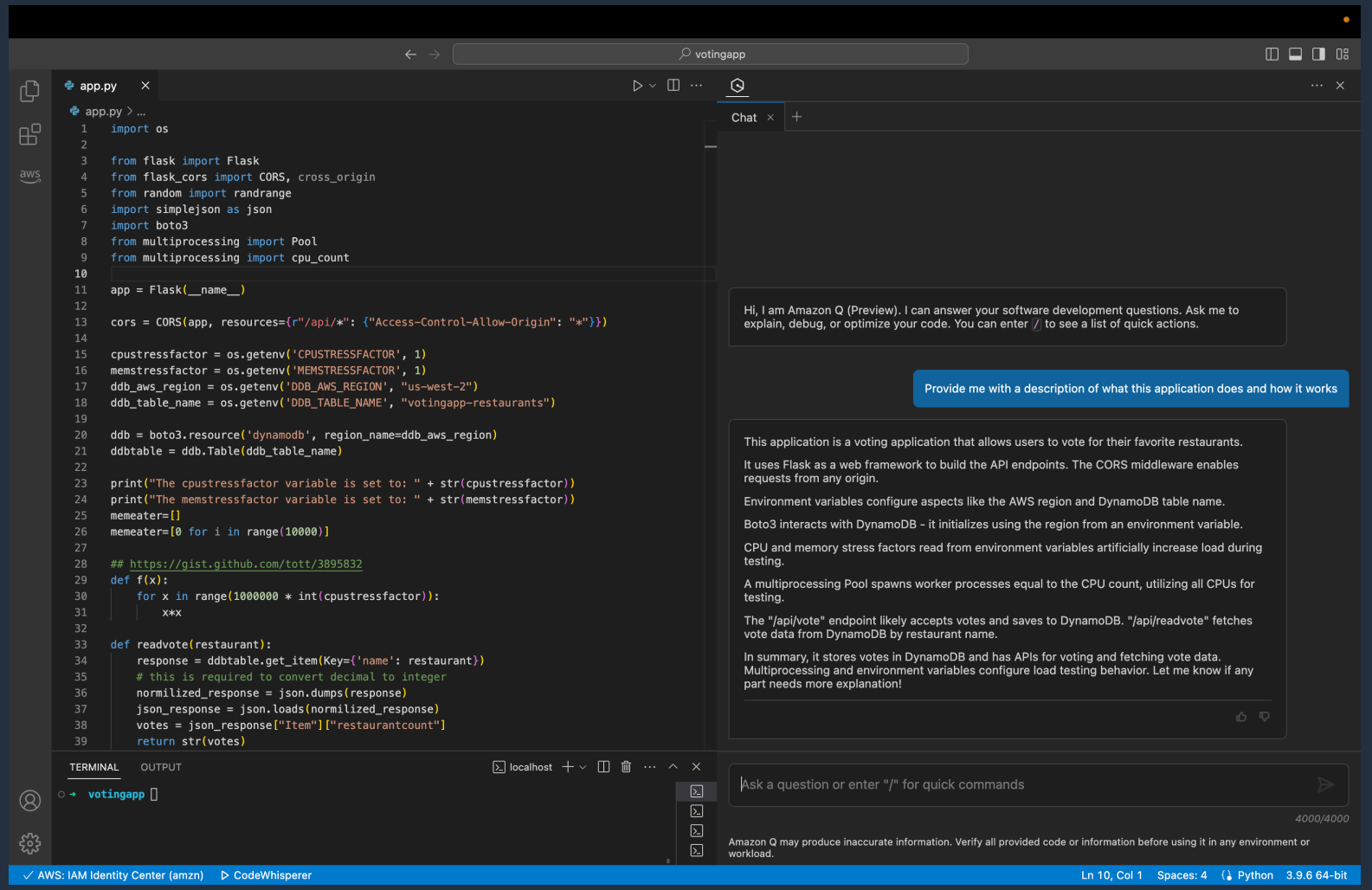
NEW

Amazon Q in IDE with CodeWhisperer

Explain program logic in an unfamiliar codebase, identify and fix bugs quickly, or generate functional tests



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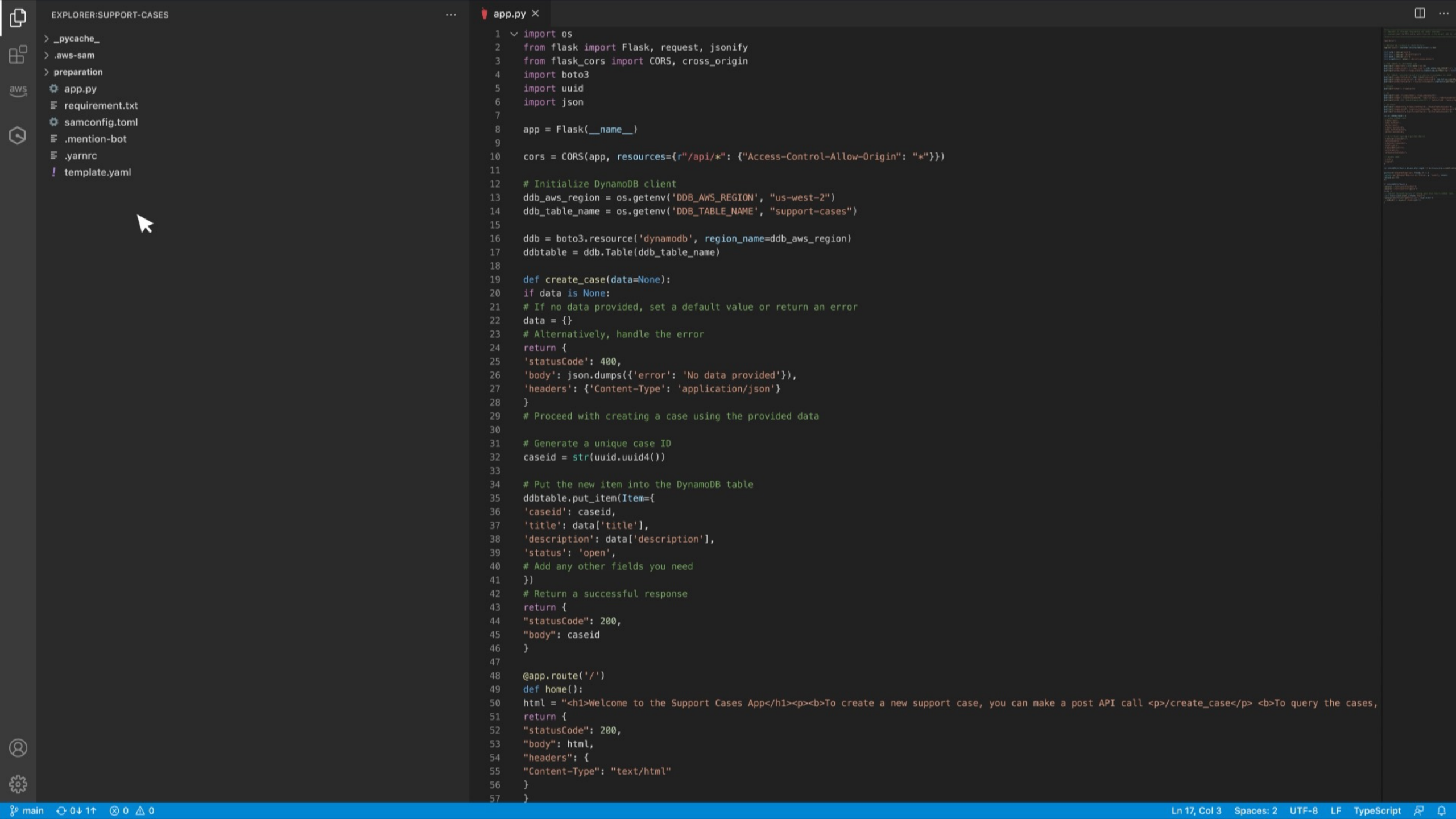
EXPLORER:SUPPORT-CASES
pycache
.aws-sam
preparation
app.py
requirement.txt
samconfig.toml
.mention-bot
.yarnrc
template.yaml
app.py
import os
from flask import Flask, request, jsonify
from flask_cors import CORS, cross_origin
import boto3
import uuid
import json
app = Flask(__name__)
cors = CORS(app, resources={r"/api/*": {"Access-Control-Allow-Origin": "*"}})
# Initialize DynamoDB client
ddb_aws_region = os.getenv('DDB_AWS_REGION', "us-west-2")
ddb_table_name = os.getenv('DDB_TABLE_NAME', "support-cases")
ddb = boto3.resource('dynamodb', region_name=ddb_aws_region)
ddbtable = ddb.Table(ddb_table_name)
def create_case(data=None):
if data is None:
# If no data provided, set a default value or return an error
data = {}
# Alternatively, handle the error
return {
'statusCode': 400,
'body': json.dumps({'error': 'No data provided'}),
'headers': {'Content-Type': 'application/json'}
}
# Proceed with creating a case using the provided data
# Generate a unique case ID
caseid = str(uuid.uuid4())
# Put the new item into the DynamoDB table
ddbtable.put_item(Item={
'caseid': caseid,
'title': data['title'],
'description': data['description'],
'status': 'open',
Add any other fields you need
})
# Return a successful response
return {
"statusCode": 200,
"body": caseid
}
@app.route('/')
def home():
html = "<h1>Welcome to the Support Cases App</h1> <b>To create a new support case, you can make a post API call /create_case <b>To query the cases,
return {
"statusCode": 200,
"body": html,
"headers": {
"Content-Type": "text/html"
}
}
main
Ln 17, Col 3
Spaces: 2
UTF-8
LF
TypeScript

NEW

Amazon Q Code Transformation

Upgrade and transform apps in a fraction of the time

Complete language upgrades in a fraction of the time

Reduce security vulnerabilities

Accelerate migration to Linux to save costs (coming soon)

AVAILABLE IN PREVIEW

aws

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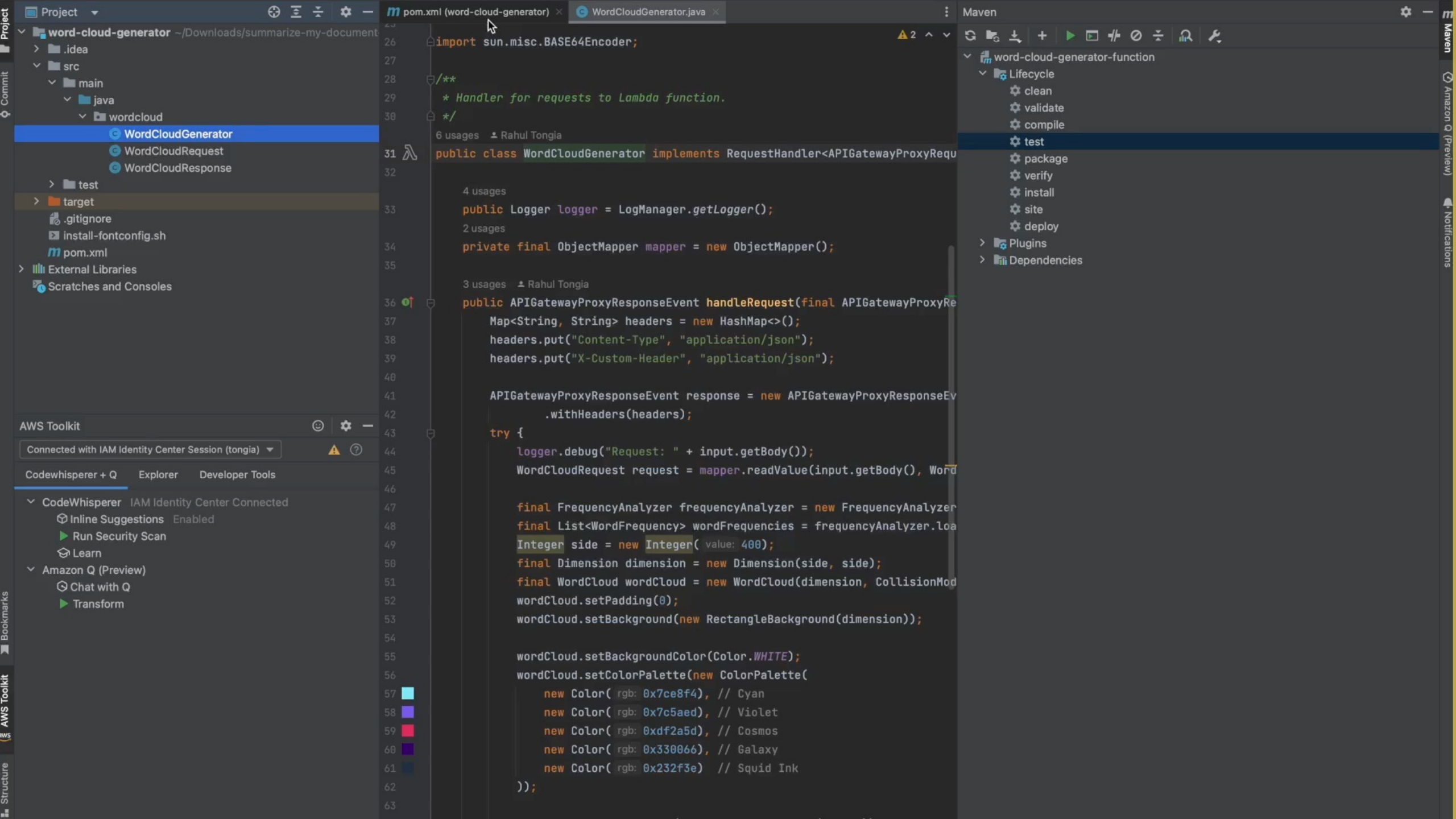
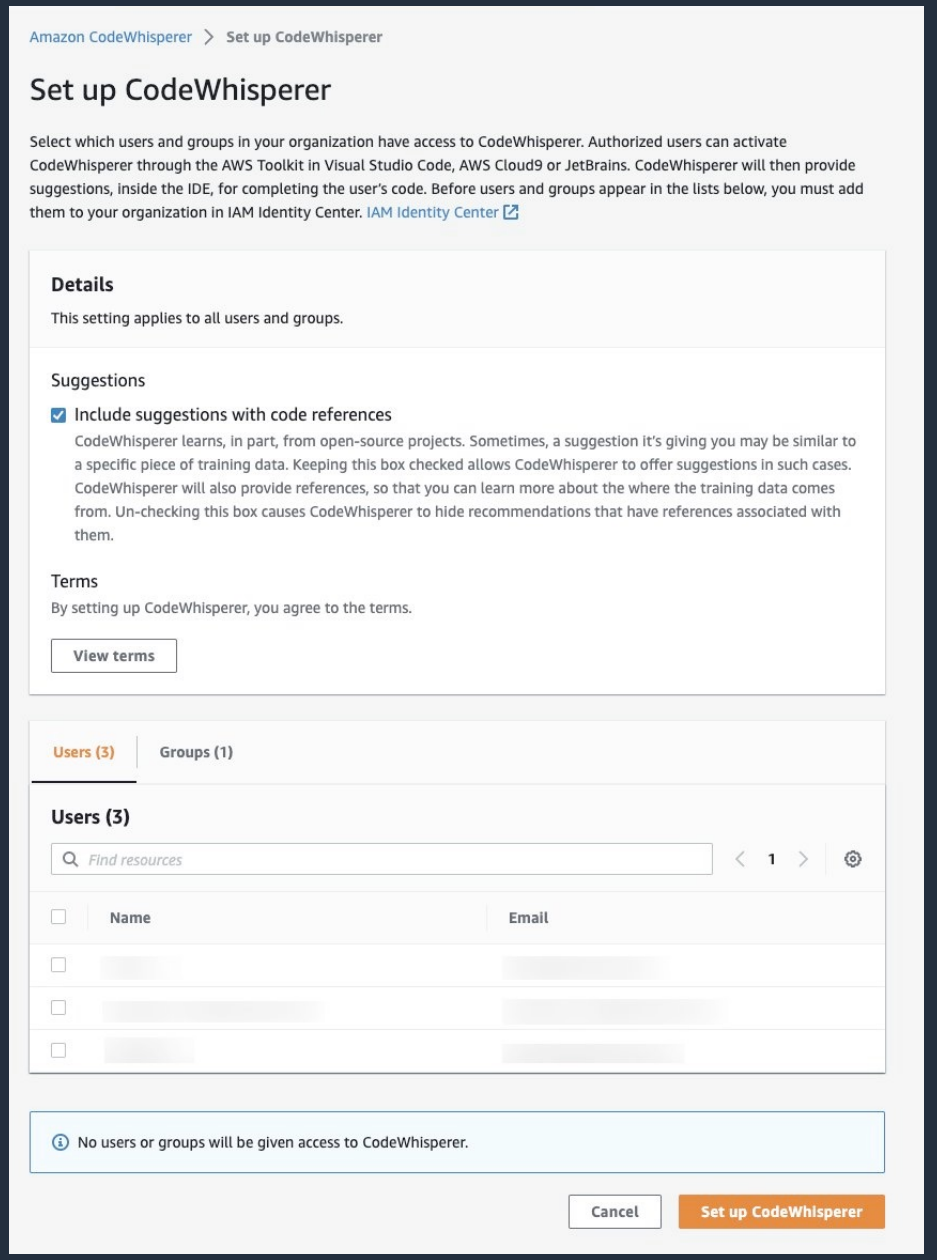

Project
word-cloud-generator ~/Downloads/summarize-my-document
.idea
src
main
java
wordcloud
WordCloudGenerator
WordCloudRequest
WordCloudResponse
test
target
.gitignore
install-fontconfig.sh
pom.xml
External Libraries
Scratches and Consoles
AWS Toolkit
Connected with IAM Identity Center Session (tongia)
Codewhisperer + Q
Explorer
Developer Tools
CodeWhisperer IAM Identity Center Connected
Inline Suggestions Enabled
Run Security Scan
Learn
Amazon Q (Preview)
Chat with Q
Transform
pom.xml (word-cloud-generator)
WordCloudGenerator.java
import sun.misc.BASE64Encoder;
/**
* Handler for requests to Lambda function.
*/
6 usages Rahul Tongia
public class WordCloudGenerator implements RequestHandler<APIGatewayProxyRequ
4 usages
public Logger logger = LogManager.getLogger();
2 usages
private final ObjectMapper mapper = new ObjectMapper();
3 usages Rahul Tongia
public APIGatewayProxyResponseEvent handleRequest(final APIGatewayProxyRe
Map<String, String> headers = new HashMap<>();
headers.put("Content-Type", "application/json");
headers.put("X-Custom-Header", "application/json");
APIGatewayProxyResponseEvent response = new APIGatewayProxyResponseEv
.withHeaders(headers);
try {
logger.debug("Request: " + input.getBody());
WordCloudRequest request = mapper.readValue(input.getBody(), Word
final FrequencyAnalyzer frequencyAnalyzer = new FrequencyAnalyzer
final List<WordFrequency> wordFrequencies = frequencyAnalyzer.loa
Integer side = new Integer(value: 400);
final Dimension dimension = new Dimension(side, side);
final WordCloud wordCloud = new WordCloud(dimension, CollisionMod
wordCloud.setPadding(0);
wordCloud.setBackground(new RectangleBackground(dimension));
wordCloud.setBackgroundColor(Color.WHITE);
wordCloud.setColorPalette(new ColorPalette(
new Color(rgb: 0x7ce8f4), // Cyan
new Color(rgb: 0x7c5aed), // Violet
new Color(rgb: 0xdf2a5d), // Cosmos
new Color(rgb: 0x330066), // Galaxy
new Color(rgb: 0x232f3e) // Squid Ink
));
Maven
word-cloud-generator-function
Lifecycle
clean
validate
compile
test
package
verify
install
site
deploy
Plugins
Dependencies

Enterprise controls

- Provision and manage team access through AWS IAM Identity Center and single sign-on
- Set organizational policies, such as automatic filtering of code suggestions similar to open-source code



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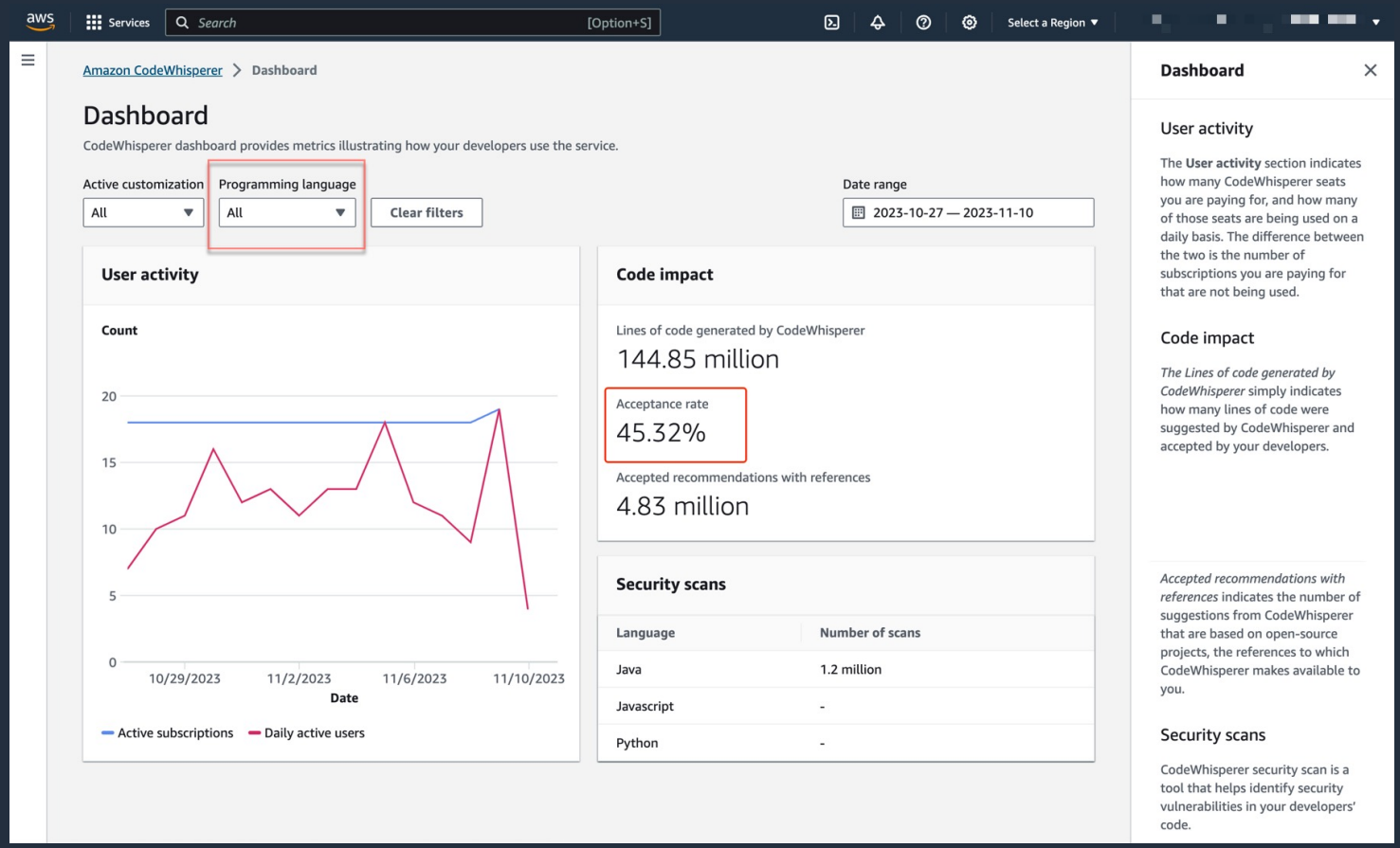
Productivity Dashboard

- Easily track usage activity trends
- Measure productivity impact using metrics such as lines of code and percentage of total code generated by CodeWhisperer.
- Available with CodeWhisperer Professional Tier



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Customize CodeWhisperer for your org

GENERATE CODE RECOMMENDATIONS BASED ON YOUR INTERNAL CODE REPOSITORIES

Generate real-time recommendations that include your **internal libraries, APIs, packages, classes, and methods**

Securely connect your internal code repositories to create customizations isolated from other customers, and from the LLM powering CodeWhisperer

Fully **control which developers have access** to customizations

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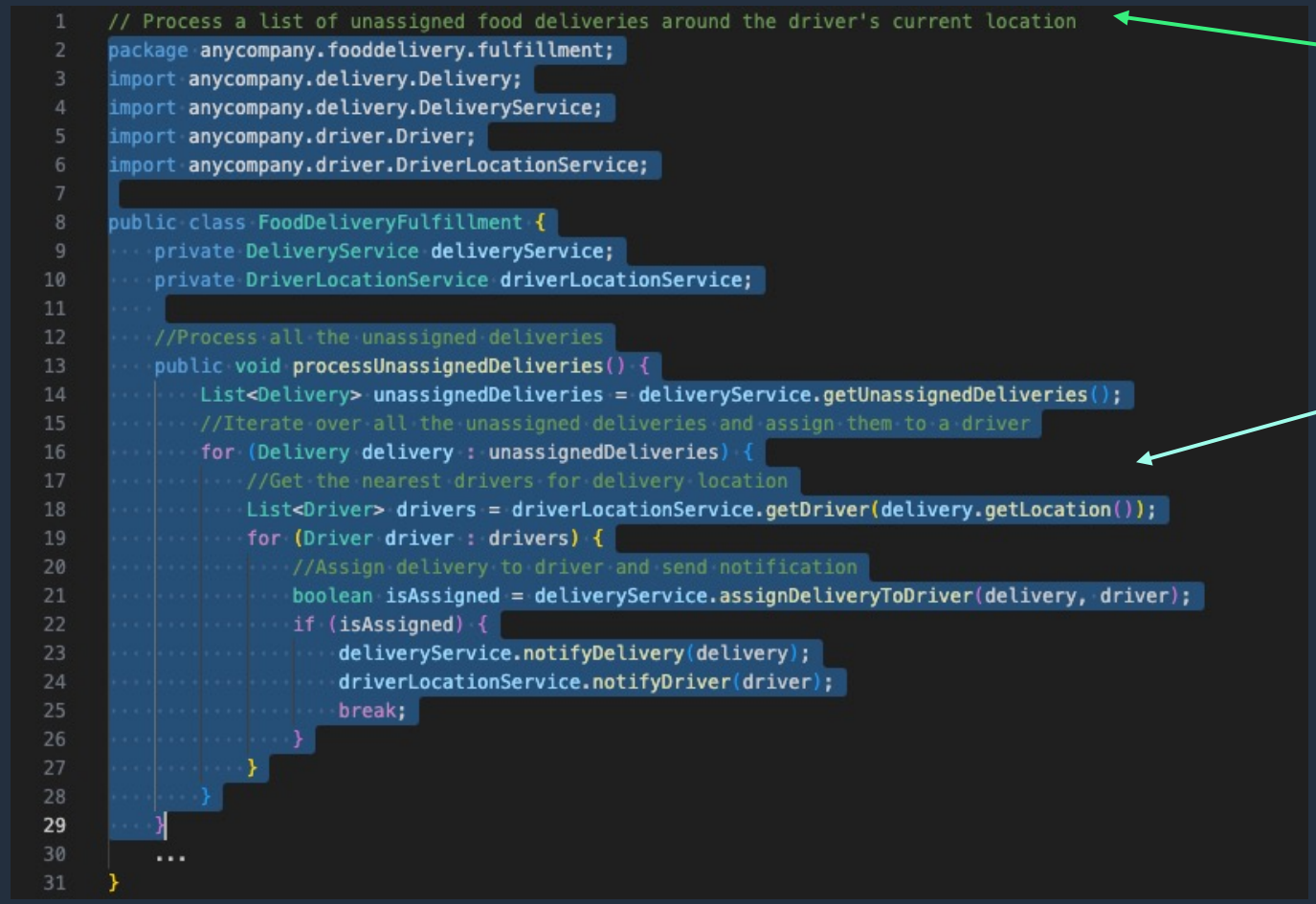

```
// Process a list of unassigned food deliveries around the driver's current location
package anycompany.fooddelivery.fulfillment;
import anycompany.delivery.Delivery;
import anycompany.delivery.DeliveryService;
import anycompany.driver.Driver;
import anycompany.driver.DriverLocationService;

public class FoodDeliveryFulfillment {
    private DeliveryService deliveryService;
    private DriverLocationService driverLocationService;

    //Process all the unassigned deliveries
    public void processUnassignedDeliveries() {
        List<Delivery> unassignedDeliveries = deliveryService.getUnassignedDeliveries();
        //Iterate over all the unassigned deliveries and assign them to a driver
        for (Delivery delivery : unassignedDeliveries) {
            //Get the nearest drivers for delivery location
            List<Driver> drivers = driverLocationService.getDriver(delivery.getLocation());
            for (Driver driver : drivers) {
                //Assign delivery to driver and send notification
                boolean isAssigned = deliveryService.assignDeliveryToDriver(delivery, driver);
                if (isAssigned) {
                    deliveryService.notifyDelivery(delivery);
                    driverLocationService.notifyDriver(driver);
                    break;
                }
            }
        }
    }
    ...
}
```

Natural language comment prompt

Generated code block that leverages internal libraries and APIs

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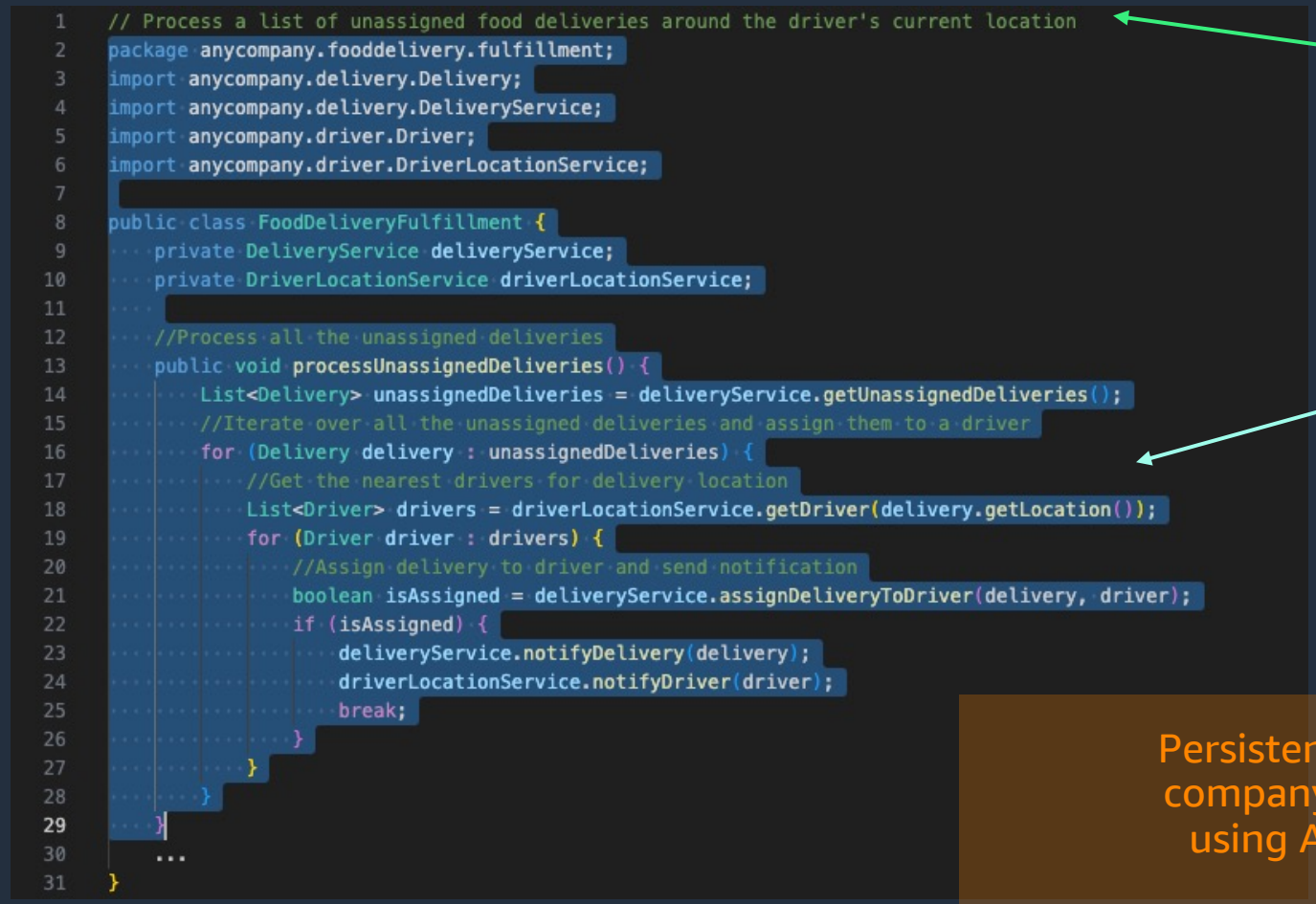

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                    break;
                }
            }
        }
    }
    ...
}
```

Natural language comment prompt

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Persistent, a global engineering and enterprise modernization company, conducted an internal study that shows developers using Amazon CodeWhisperer completed tasks 28% faster with customizations than without.

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CodeWhisperer Professional

Authentication	AWS IAM Identity Center (previously AWS SSO)
Code generation (languages supported)	Java, Python, JavaScript, TypeScript, C#, Go, Kotlin, Rust, PHP, SQL, CloudFormation, CDK, Terraform – click to see full list
Reference tracking	Yes
Code security scans	500/user/month
License management	Yes
Policy management	Yes
Data collection	No – content is not stored or used for service improvement

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Getting started

Get started

Learn how to Customize

Dive deep with a workshop

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