

The background of the image features a dark blue gradient on the left, transitioning into a large, vibrant, abstract shape on the right. This shape is composed of overlapping curved segments in shades of orange, pink, and purple, creating a dynamic, modern aesthetic.

AWS re:Invent

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D O P 2 0 4

Tips and tricks for coding with Amazon CodeWhisperer

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Agenda

Customer challenges

Service overview, benefits, and features

Use cases

Demos

Getting started

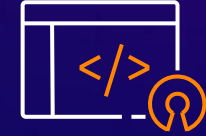
Building reliable, secure code is challenging



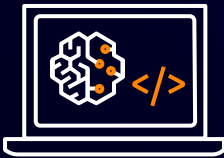
Shortage of developers¹



Time spent on undifferentiated code



Appropriate use of open source



Data privacy



Time spent learning technologies, APIs, and best practices

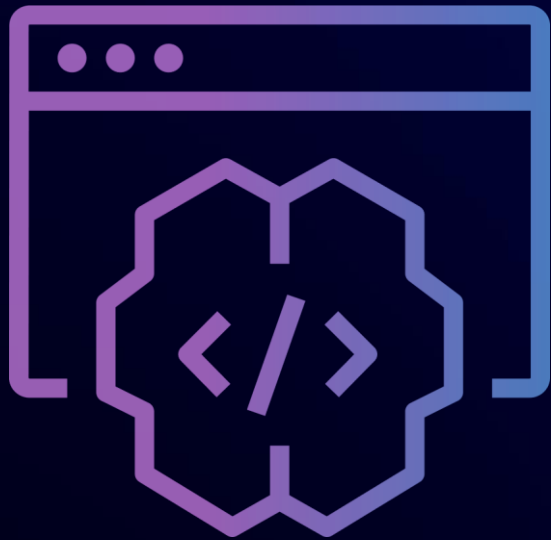


Write secure code

¹Gartner: [2023 Planning Guide for Application Development](#)

Amazon CodeWhisperer

YOUR AI-POWERED PRODUCTIVITY TOOL FOR THE IDE AND COMMAND LINE



Generate code suggestions in real time

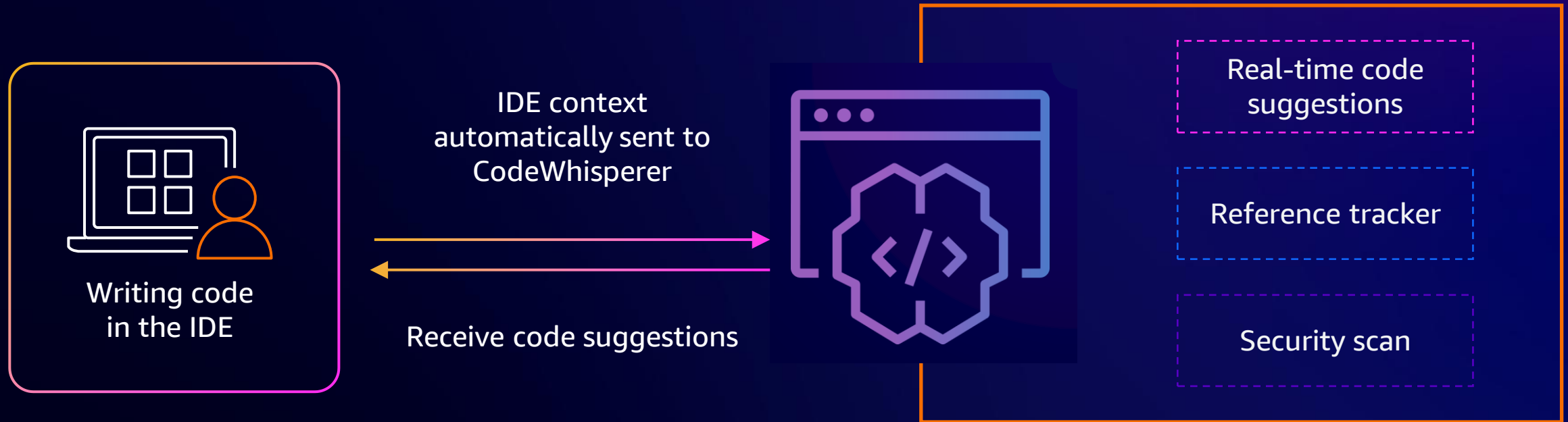


Scan code for hard-to-find vulnerabilities



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

How it works



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



Use with your tools

New IaC Support

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



Use with your tools

Supported ecosystem IDEs

New IDE Visual Studio Support

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

VS Code

NEW

Visual Studio 2022

AWS Cloud9

AWS Lambda console

Amazon SageMaker Studio, AWS Glue Studio





AI-Powered Code Remediation

- Built-in security scanning identifies hard-to-find security vulnerabilities (**already existed**)
- AI-powered code remediation capability now provides code suggestions to remediate identified vulnerabilities with just a few clicks (**New**)
- How does it work?
 - When a security scan is run in CodeWhisperer, any detected vulnerabilities will have an associated code fix suggestion. Developers can simply review and apply the fix with a few clicks/keystrokes to resolve the issue
- AI-powered code remediation capability currently supports Java, Python and JavaScript
- **New Language Support for security scanning** - TypeScript, C#, CloudFormation and Terraform

```
2
3 # Run the security scan to find security vulnerabilities in your code.
4 # Apply the suggested remediation with just 1-click.
5
6 def read_file(filename):
7     file = open(filename, 'r')
8     return file.readlines()
9
10
11
```

Resource leak

Medium

Resource leaks happen when resources like files, network handles, database handles, etc. are allocated but not properly released after use. [Learn more](#)

Common Weakness Enumeration (CWE)

[CWE-400](#) [CWE-664](#)

Detector library

[Resource leak](#)

Suggested code fix preview

```
def read_file(filename):
```

```
-     file = open(filename, 'r')
```

```
-     return file.readlines()
```

```
+     with open(filename, 'r') as f:
```

```
+         return file.readlines()
```

Why are we recommending this?

The 'with' statement in Python can be used to allocate resources and have them automatically closed after use. Python will close the resources after use.

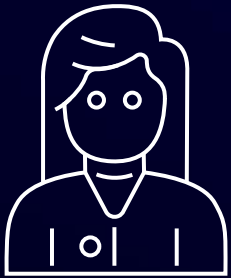
Best practices – how to get better suggestions

- Context window
- Prompt specific and concise
- Give an example
- Multi-line comments
- Keeping relevant tabs open
- How context matters
- How to successfully prompt

Demos



Common roles/personas



Software engineer

I work with many languages, frameworks, front-end semantics, APIs, databases, and event and message mappings



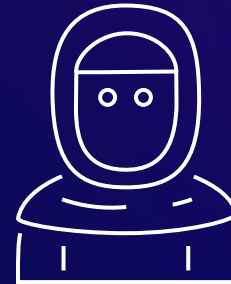
Site reliability engineer (SRE)

I write complex SQL queries and ELT/ETL against our enterprises databases, lakes, and data warehouses



Data scientist

I am a data scientist first and foremost, but I spend much of my time wrangling code and framework plumbing



Cloud engineer

I am in charge of our Infrastructure as Code (IaC) and integrating our software with the capabilities provided by cloud services such as AWS



Data analyst

I help implement observability and automation for our processes that add toil to our day-to-day operations

Customize CodeWhisperer for your org

In Preview

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

```
1 // Process a list of unassigned food deliveries around the driver's current location
2 package anycompany.fooddelivery.fulfillment;
3 import anycompany.delivery.Delivery;
4 import anycompany.delivery.DeliveryService;
5 import anycompany.driver.Driver;
6 import anycompany.driver.DriverLocationService;
7
8 public class FoodDeliveryFulfillment {
9     private DeliveryService deliveryService;
10    private DriverLocationService driverLocationService;
11
12    //Process all the unassigned deliveries
13    public void processUnassignedDeliveries() {
14        List<Delivery> unassignedDeliveries = deliveryService.getUnassignedDeliveries();
15        //Iterate over all the unassigned deliveries and assign them to a driver
16        for (Delivery delivery : unassignedDeliveries) {
17            //Get the nearest drivers for delivery location
18            List<Driver> drivers = driverLocationService.getDriver(delivery.getLocation());
19            for (Driver driver : drivers) {
20                //Assign delivery to driver and send notification
21                boolean isAssigned = deliveryService.assignDeliveryToDriver(delivery, driver);
22                if (isAssigned) {
23                    deliveryService.notifyDelivery(delivery);
24                    driverLocationService.notifyDriver(driver);
25                    break;
26                }
27            }
28        }
29    }
30    ...
31 }
```

Wrap up

- High-quality AWS suggestions
- Code generation matching developer style and patterns
- Cross-file context
- Regex generation
- Unit tests
- Sample data generation
- Documentation
- Code scanning
- Reference log



Getting started



Get started



**Learn how to
Customize**



**Dive deep with
a workshop**

Thank you!



Please complete the session survey in the mobile app

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