
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

FWM308

What's new for frontend web and mobile developers with AWS Amplify

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Amazon Web Services

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Product Manager, AWS Amplify
Amazon Web Services

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Agenda

The state of the web and mobile development industry

What’s AWS Amplify

Building fullstack web and cross-platform app

How customers are using Amplify

Underlying architecture

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POLL:
What type of developer do you identify as?



- Frontend
- Backend
- Fullstack
  (frontend and backend)
- Not a developer

prod-livepolling.awseventservices.com **549411**

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Frontend developers have broad responsibility



Agility
Time to market
Rapid innovation
No one-way doors



Great experience
Multidevice
Modern look/feel
Differentiated features



Production-ready
Low latency
Secure
Reliable and scalable

Technical needs



Fullstack development
Features that use device + cloud
Integrated development
Less boilerplate
Best practices built in



Web
Native-like experience
Support for hybrid client/server rendering (e.g., Next.js)



Cross-platform
One codebase
Support for Flutter, React Native, Apple cross-platform

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POLL: What types of applications are you typically building?



- Web application
- Native mobile app
- Cross-platform application
- None

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We built Amplify to make it easy for frontend developers to build fullstack apps

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AWS Amplify

USE THE PIECES TOGETHER OR ON THEIR OWN

FULLSTACK DEVELOPMENT



Build AWS backend
Amplify Studio
Amplify CLI

WEB

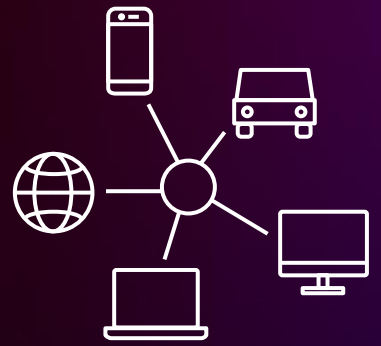


Build app UI (web)
Amplify Studio



Host an app (web)
Amplify Hosting

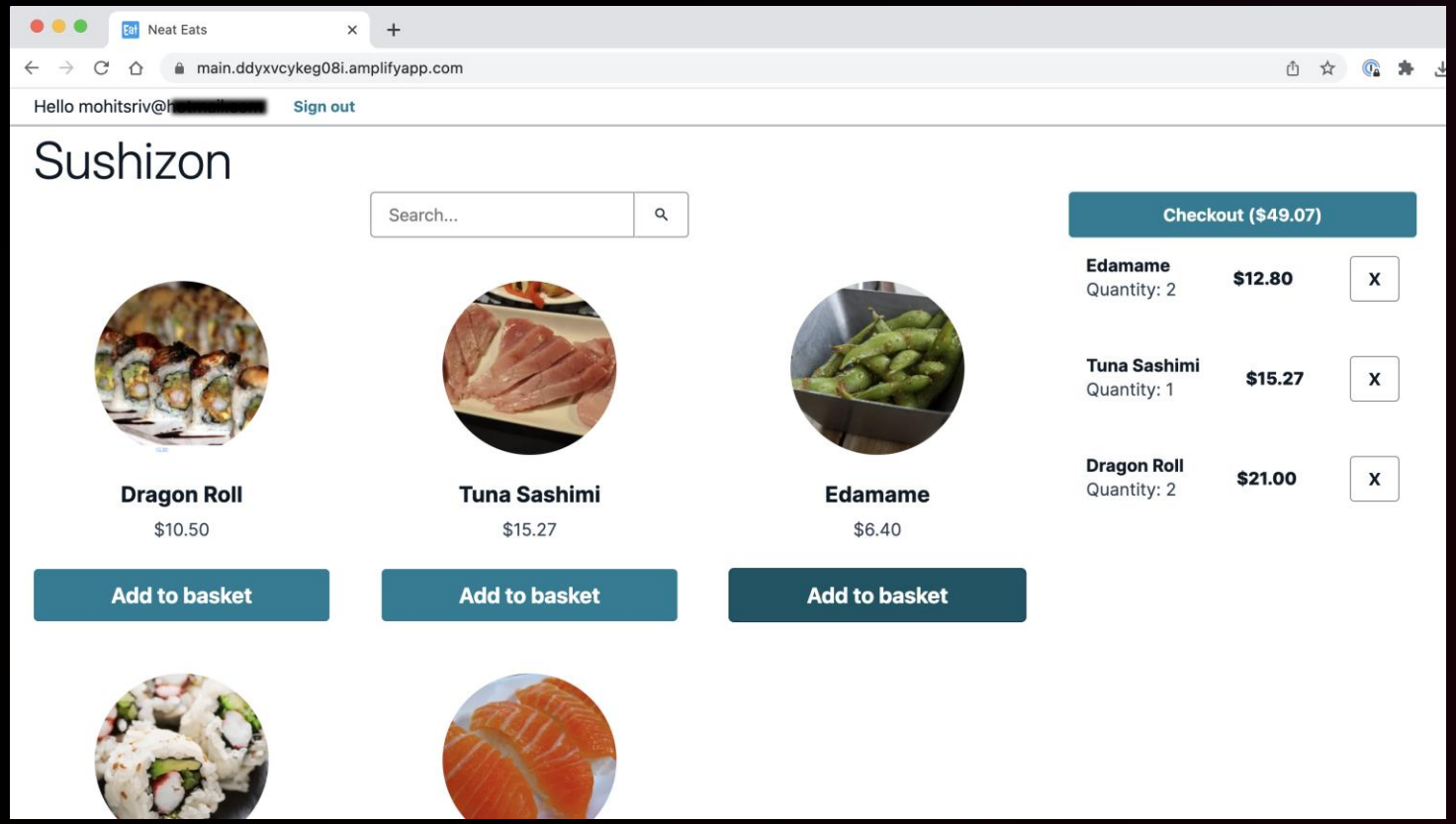
CROSS-PLATFORM & WEB



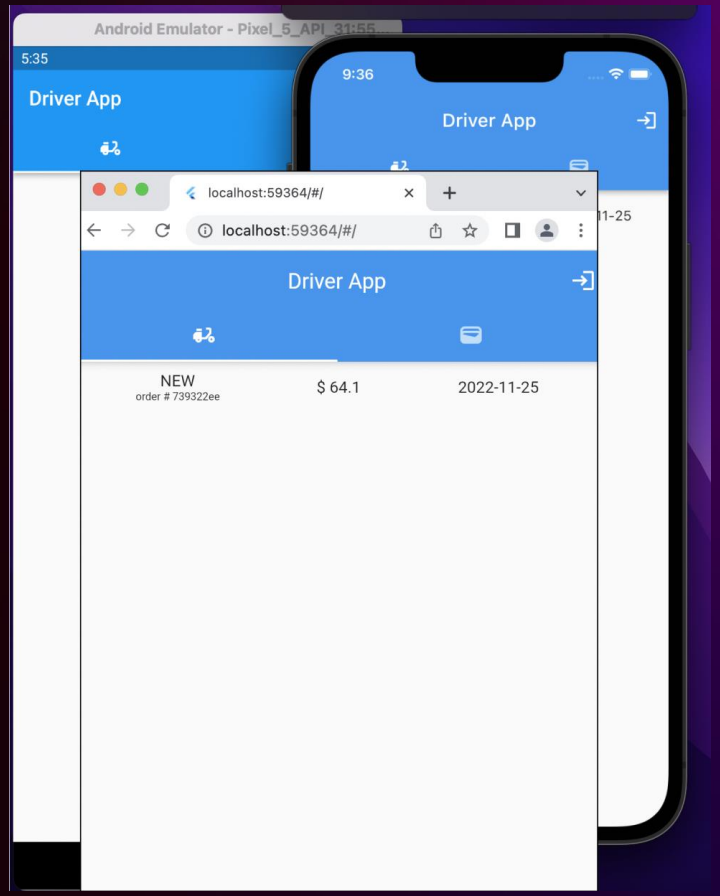
Connect to backend
Amplify Libraries
UI Components

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Let’s build a fullstack food delivery platform



Next.js web app for customers to place orders



Flutter app for drivers to receive and deliver orders

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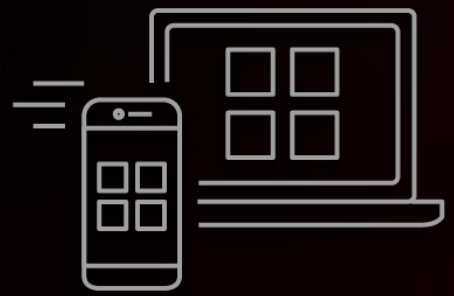
Build an AWS backend



DEVELOPER EXPERIENCE IS FOCUSED ON USE CASES INSTEAD OF INDIVIDUAL SERVICES



Command line and visual resource provisioning



Enable use cases such as Authentication, File storage



Model your data schema and add powerful authorization rules

aws

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Modeling our data

CREATES A BACKEND WITH A GRAPHQL API (AWS APPSYNC) AND DYNAMODB



Public read access

Only admins can make changes to restaurants and menu items

```
type Restaurant
  @model
  @auth(
    rules: [
      #allow public to read menu items
      { allow: public, operations: [read]
}     #allow only admins full CRUD
      { allow: groups, groups: ["Admin"] }
    ]
  ) {
  id: ID!
  name: String!
  description: String
  menu: [MenuItem] @hasMany
  order: [Order] @hasMany
}
```

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Control access to creating new orders

```
type Order
  @model
  @auth(
    rules: [
      # allow only customers to create/read/update orders
      {
        allow: owner
        ownerField: "customerID"
        operations: [create, read, update]
      }
      { allow: owner, ownerField: "driver", operations: [read] }
    ]
  ) {
  orderstatus: OrderStatus
    @default(value: "NEW")
    @auth(
      rules: [
        { allow: owner, ownerField: "driver", operations: [update, read] }
        { allow: owner, ownerField: "customerID", operations: [create, read]
}
      ]
    )
  customer: Customer @belongsTo
  restaurant: Restaurant @belongsTo
  orderitems: [OrderItem] @hasMany
}
```

Allow only drivers to change order status

Set up relationships between orders, restaurants, and customer models

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backend

Build an AWS backend: What's new



NEW

- GraphQL in Studio: Query auto-generated GraphQL APIs
- Real-time data: Service-side filtering to 1/ send updates only to specific users or groups (collaboration apps) and 2/ selectively sync data (optimize network traffic and local storage)
- In-app messages: Send targeted messages to defined user segments or trigger contextual messages based on user behavior

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“As a development team for a recognizable brand name, it’s essential that we set ourselves up to swiftly support the business when its needs change, and by building our Connect app using AWS Amplify and AWS AppSync as quickly as we did, we were able to prove that we are in a position to do just that.”

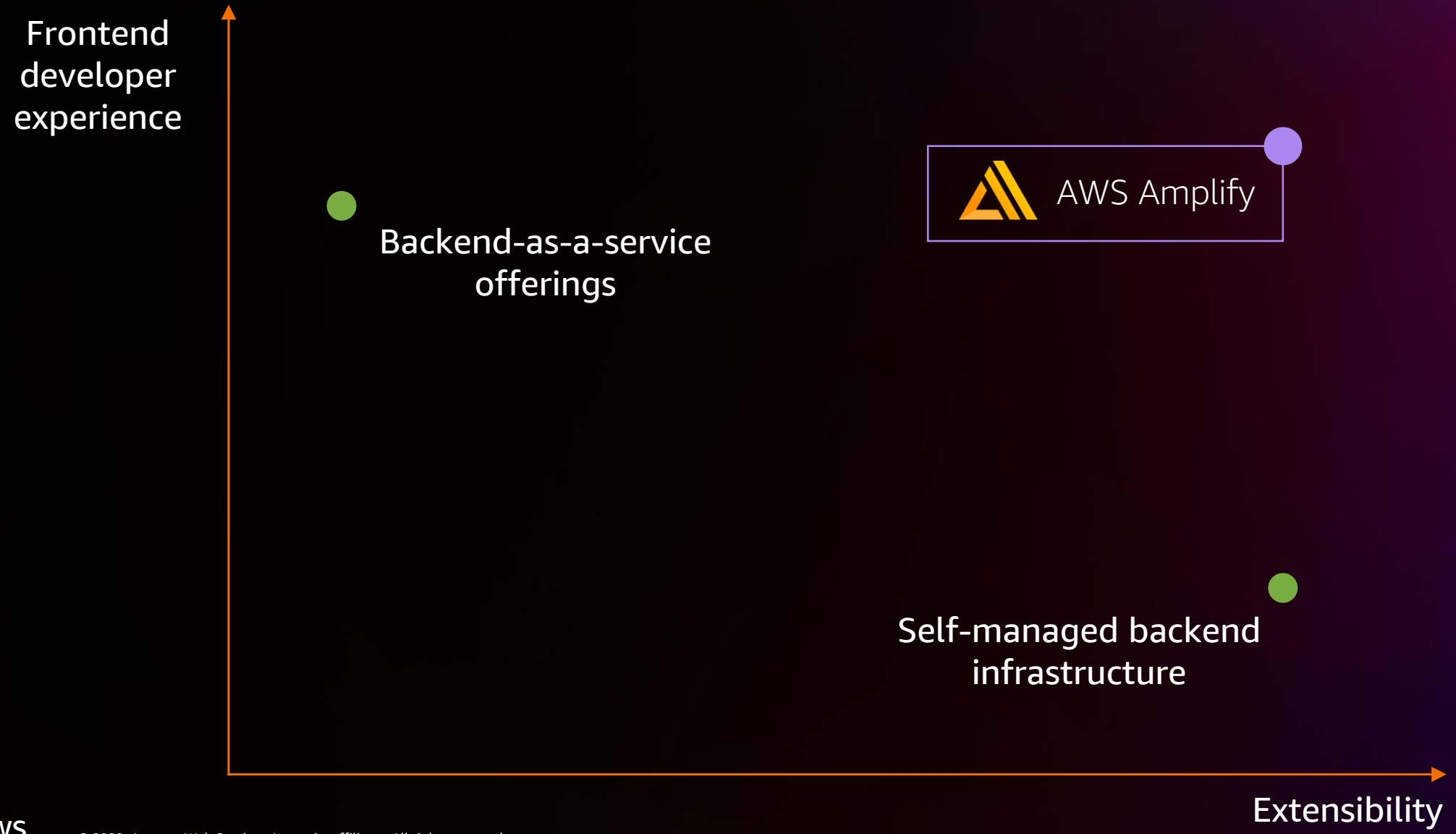
Sriram Vaidyanathan

VP Product Development and Engineering – Neiman Marcus

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But is the backend production-ready?





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But is the backend production-ready?



Modify Amplify-generated infrastructure	Add any AWS resources using AWS CDK or AWS CloudFormation	Export Amplify backends as CDK
`amplify override ...`	`amplify add custom`	`amplify export`

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“By providing the ability to generate and export the CFN configuration and also providing a CDK construct to import it directly into our existing stacks, we can confidently bridge the gap between Amplify and strongly-owned configuration within our team, have them deploy together, and greatly simplify our build/deployment stack.”

Caleb Gross

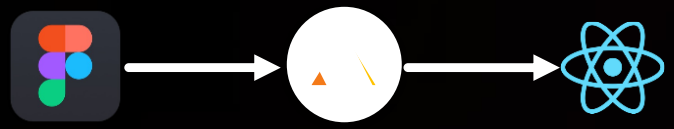
Senior Engineer – Amazon Music Cloud Queue team

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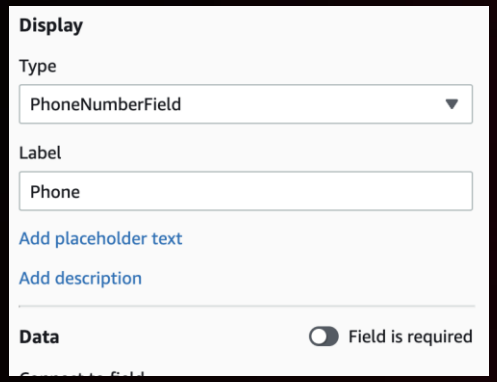
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Build web app UI

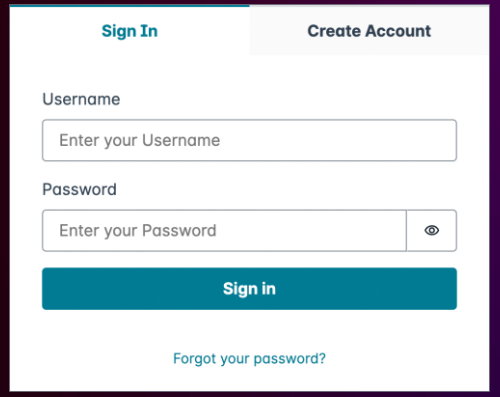
BUILD CLOUD-CONNECTED UI COMPONENTS IN MINUTES



Generate React components from Figma designs

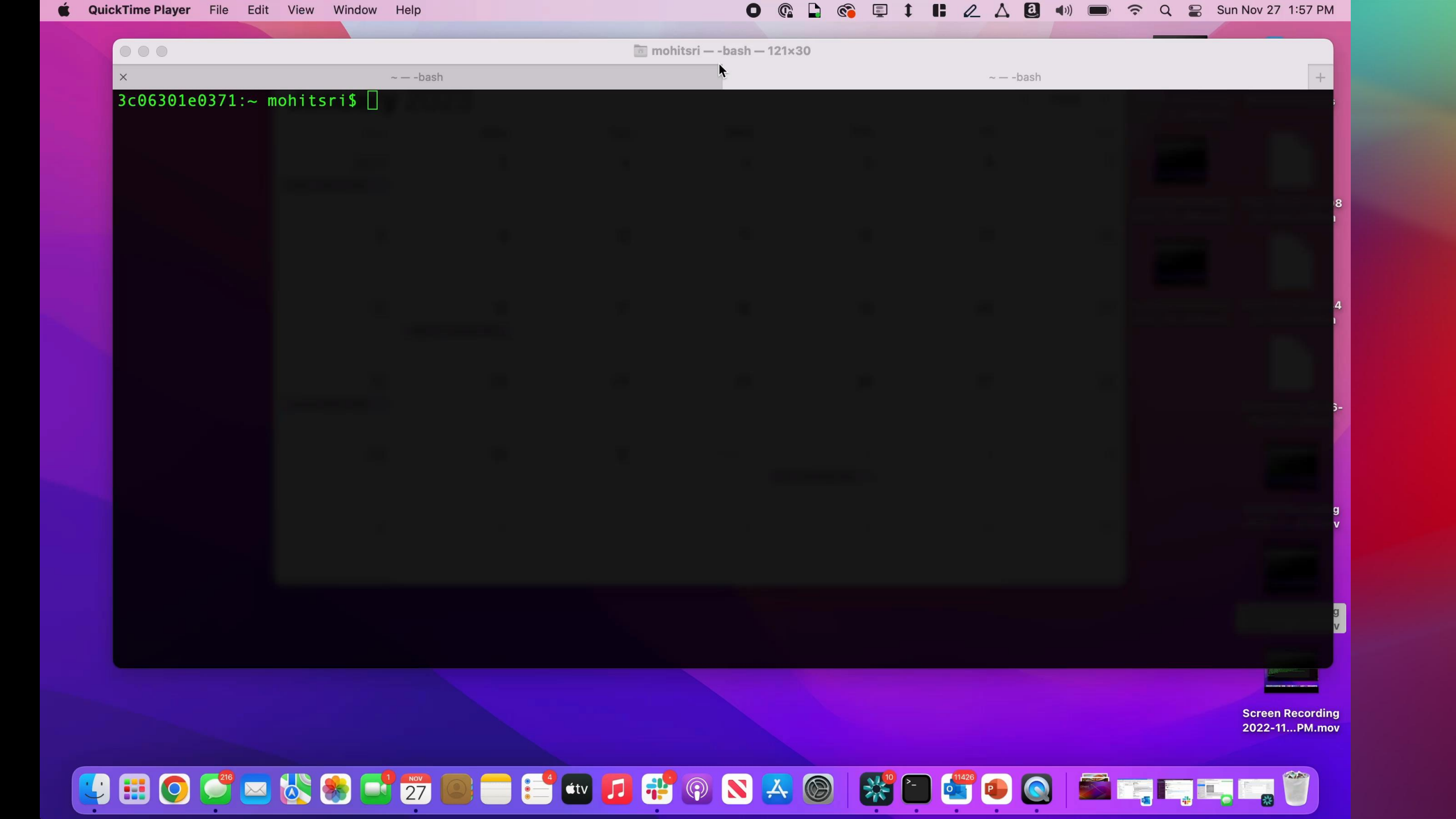


Studio Form Builder – New!



Built-in UI components

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QuickTime Player
File
Edit
View
Window
Help
Sun Nov 27 1:57 PM
mohitsri — -bash — 121×30
~ — -bash
~ — -bash
3c06301e0371:~ mohitsri$
Screen Recording
2022-11...PM.mov

Built-in UI components

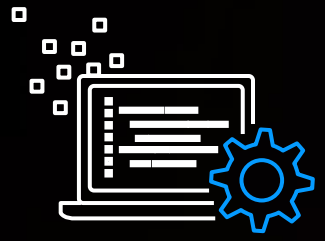
Figma-imported UI components

Form Builder

Amplify Studio Form Builder

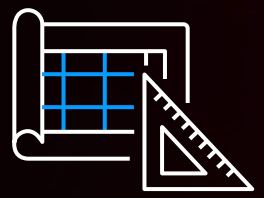
CREATE CLOUD CONNECTED FORMS FOR ANY API WITH NEW REACT FORM BUILDER

NEW



Forms for any API

Generate forms from an API definition or create new forms from scratch



Design visually

Save time by visually configuring common validation rules



Extend via code

Customize validation rules and form styling in code

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> “We can quickly and collaboratively create a prototype for our clients and rapidly iterate from their feedback. We develop with less refactoring because Amplify Studio automatically converts Figma designs to JavaScript and TypeScript code.”

Chris Miller

CEO – Cloud Brigade

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Host a web app

DEPLOY WEB APPS IN MINUTES, SIMPLY BY CONNECTING YOUR SOURCE CONTROL REPOSITORY

- Fully managed hosting service for shipping static/single page (SPA) web apps and now hybrid server-side rendered (SSR) apps, too

- Powerful Git-based CI/CD capabilities, tied to branches
  - Deploy Amplify-created backends, too

Supports modern web frameworks such as React, Next.js, Angular, Vue, Gatsby, Hugo, Jekyll, and more

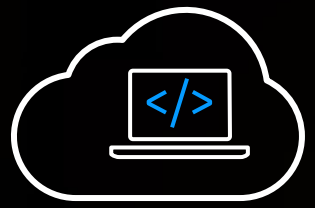
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Fully managed hosting for server side rendered apps built with Next.js 13

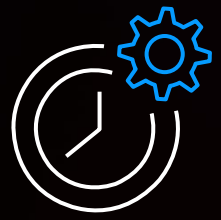
NEXT.JS BENEFITS AND DEVELOPER EXPERIENCE MEET THE POWER OF AWS

NEW



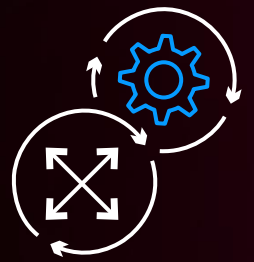
Next.js benefits

Hybrid static & server rendering to support both interactivity and faster initial load times



Zero config deployment

Just connect your repo. Single developer experience across browser and server code



Integrate with backends

Works seamlessly with Amplify backends, such as Auth and Data



Amazon CloudWatch integration

Observe, monitor, and troubleshoot SSR apps

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AWS Amplify

All apps

reinvent-delivery-customer

App settings

General

Amplify Studio settings

Documentation

Support

Learn how to get the most out of Amplify Studio

Hosting environments | Backend environments

This tab lists all backend environments. Each backend environment is a container for all of the cloud capabilities added to your app such as API, auth, and storage.

staging

Continuous deploys not set up.

Actions



Launch Studio

A visual interface for managing your backend outside the AWS console.

Deployment status

Deployment completed 11/27/2022, 9:51:29 PM

Categories added

API

Authentication

File storage

Local setup instructions

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AWS Amplify

All apps

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App settings

General

Amplify Studio settings

Domain management

Build settings

Previews

Notifications

Environment variables

Access control

Monitoring

Rewrites and redirects

Custom headers

Documentation

Support

Learn how to get the most out of Amplify Hosting

1 of 5 steps complete

Hosting environments | Backend environments

This tab lists all connected branches, select a branch to view build details.

Connect branch

staging

Continuous deploys set up with staging backend (Edit)



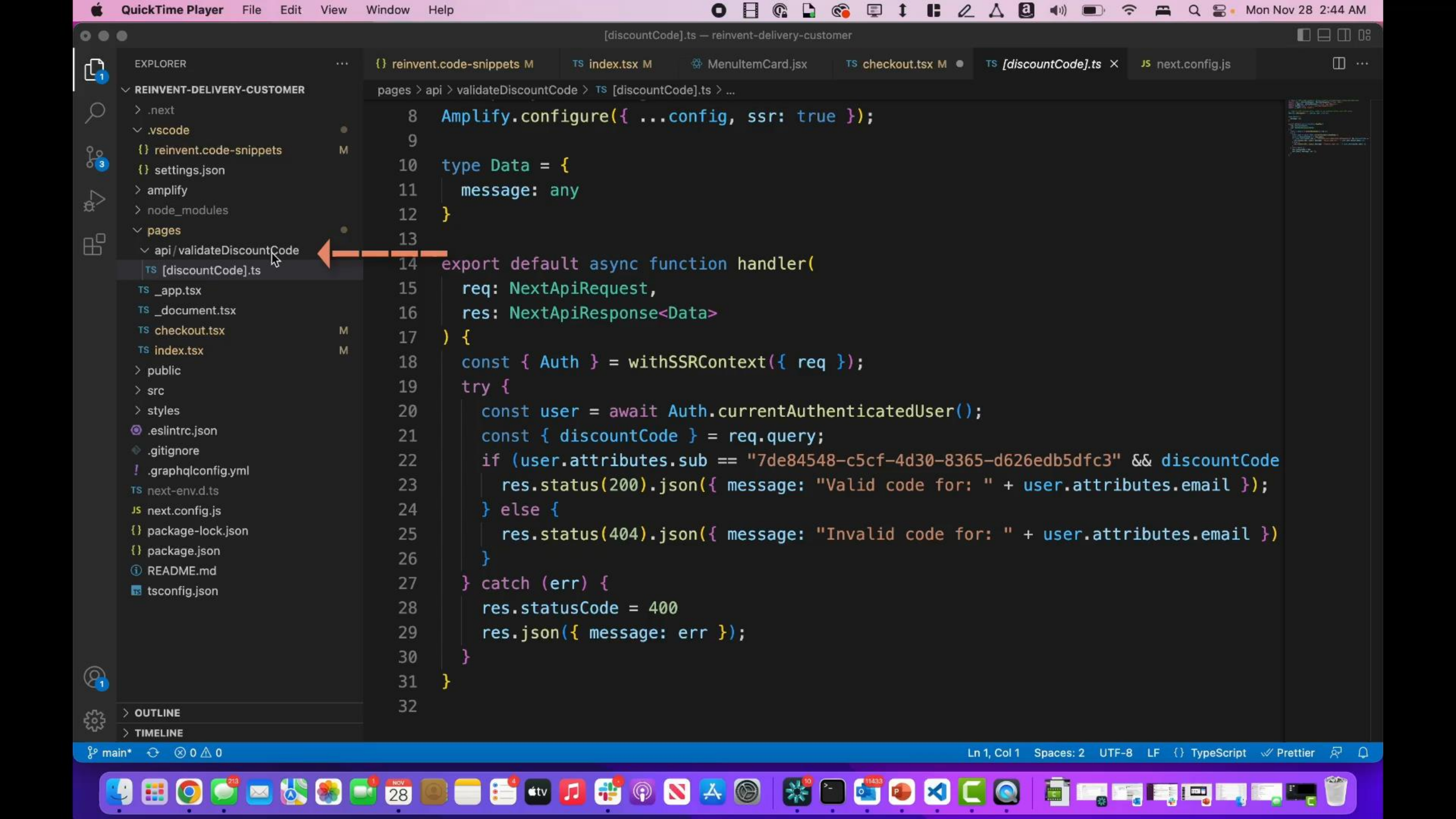
https://staging...amplifyapp.com

Provision — Build — Deploy

Last deployment	Last commit	Previews
11/27/2022, 10:43:23 PM	This is an autogenerated message | Auto-build | GitHub - staging	Disabled

main

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QuickTime Player File Edit View Window Help
Mon Nov 28 2:44 AM
[discountCode].ts — reinvent-delivery-customer
EXPLORER
REINVENT-DELIVERY-CUSTOMER
.next
.vscode
reinvent.code-snippets M
settings.json
amplify
node_modules
pages
api / validateDiscountCode
[discountCode].ts
_app.tsx
_document.tsx
checkout.tsx M
index.tsx M
public
src
styles
.eslintrc.json
.gitignore
.graphqlconfig.yml
next-env.d.ts
next.config.js
package-lock.json
package.json
README.md
tsconfig.json
OUTLINE
TIMELINE
reinvent.code-snippets M
index.tsx M
MenuItemCard.jsx
checkout.tsx M
[discountCode].ts
next.config.js
pages > api > validateDiscountCode > [discountCode].ts > ...
8 Amplify.configure({ ...config, ssr: true });
9
10 type Data = {
11 message: any
12 }
13
14 export default async function handler(
15 req: NextApiRequest,
16 res: NextApiResponse<Data>
17) {
18 const { Auth } = withSSRContext({ req });
19 try {
20 const user = await Auth.currentAuthenticatedUser();
21 const { discountCode } = req.query;
22 if (user.attributes.sub == "7de84548-c5cf-4d30-8365-d626edb5dfc3" && discountCode
23 res.status(200).json({ message: "Valid code for: " + user.attributes.email });
24 } else {
25 res.status(404).json({ message: "Invalid code for: " + user.attributes.email })
26 }
27 } catch (err) {
28 res.statusCode = 400
29 res.json({ message: err });
30 }
31 }
32
main*
Ln 1, Col 1 Spaces: 2 UTF-8 LF TypeScript Prettier

> “Amplify Hosting provides many features we want without having to build them from scratch which dramatically improves our development speed. The ability to use webhooks to trigger deployments from our custom build management system, coupled with Cypress end-to-end testing to ensure a stable experience for users enables us to iterate at a blindingly fast pace.”

Patrick Lee

Senior Engineer Growth Team – Noom

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Connect to an AWS backend



AMPLIFY LIBRARIES & UI COMPONENTS MAKE IT EASY TO CONNECT TO AWS BACKENDS



Connect to Amplify provisioned or existing AWS resources



Use case centered API surface



Supports web, mobile, and cross-platform frameworks

aws

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Connect to an AWS backend: What's new



NEW

Flutter: Rewritten using Dart to create mobile and now desktop and web apps from a single Dart-based codebase

iOS: Rewritten using Swift to create iOS and now macOS apps from a single codebase. Now supports idiomatic Swift features like async/await for implementing structured concurrency.

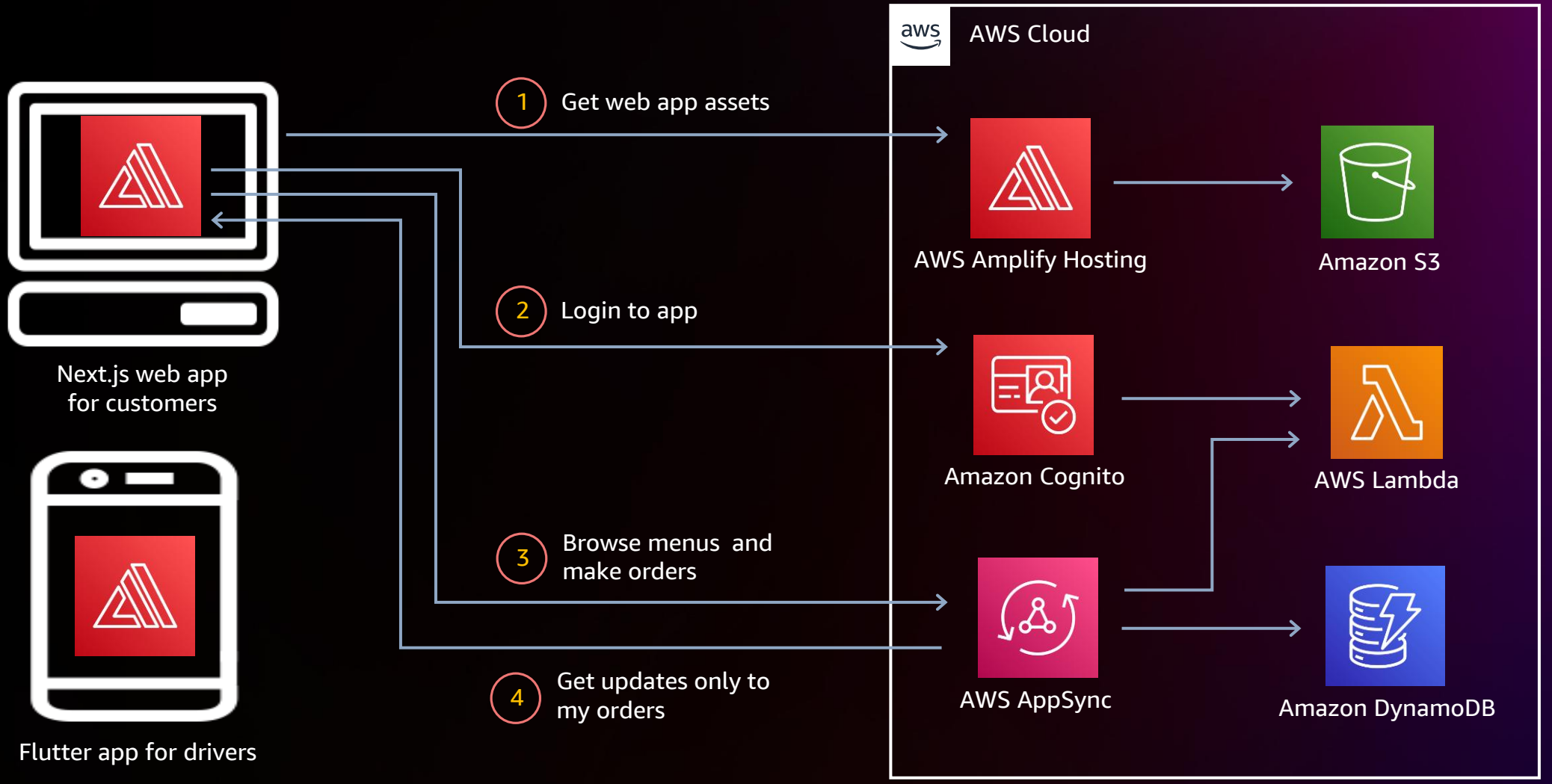
Android: Rewritten using Kotlin with Storage and Auth improvements

Authenticator UI component: Now available for Flutter and React Native

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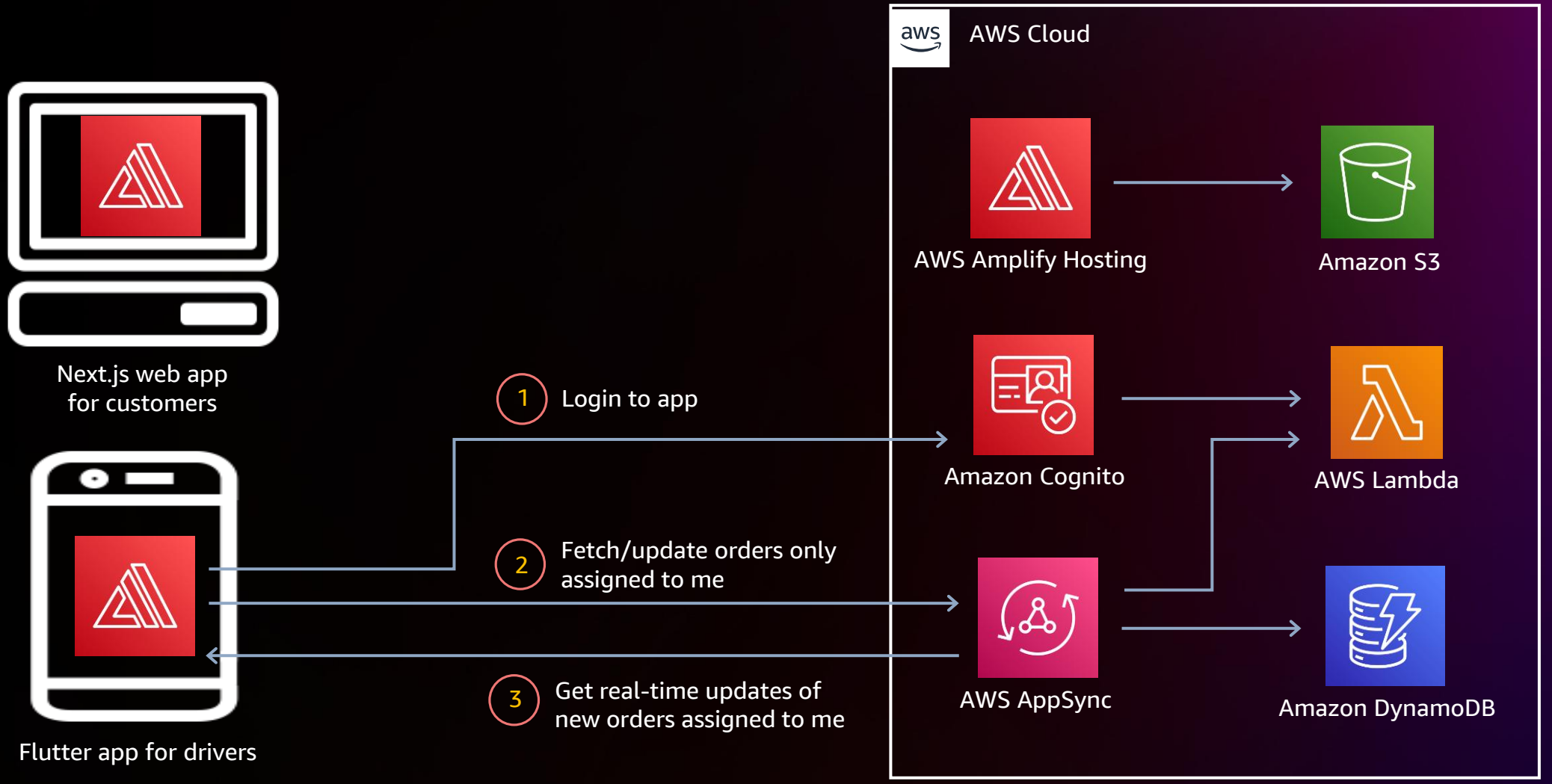
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Underlying architecture – Customer



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Underlying architecture – Driver

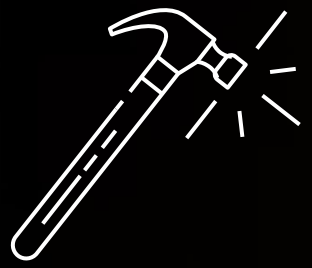


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AWS Amplify

USE THE PIECES TOGETHER OR ON THEIR OWN

FULLSTACK DEVELOPMENT



Build AWS backend
Amplify Studio
Amplify CLI

WEB

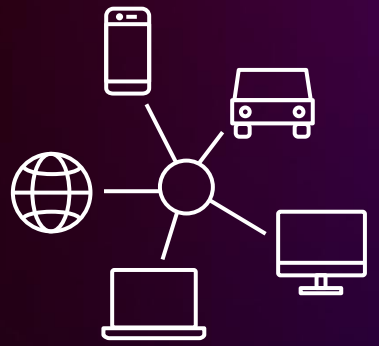


Build app UI (web)
Amplify Studio



Host an app (web)
Amplify Hosting

CROSS-PLATFORM & WEB



Connect to backend
Amplify Libraries
UI Components

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Thank you!

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@mohit

Abdallah Shaban
@AbdallahSh07



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