

Building React-Quiz-App Using Amazon Amplify, Cognito and GitHub CI/CD pipelines

Prerequisites to do this task:

- AWS Account
- GITHUB
- VSCODE or any IDE
- NodeJS (from <https://nodejs.org/en>)

Amplify:

Amplify is a solution for building and deploying front-end and mobile applications which are secure and scalable full-stack applications by AWS. can connect new environments by connecting branches from Git and perform CI/CD pipelines.

- Used for Server-side Web applications
- Single page Web apps / Static Websites
- Build native mobile applications
- Cross-platform applications

Example for Amplify is: amazon music

Cognito:

Amazon Cognito is used for adding user sign-up, sign-in, access control to your web and mobile applications with few minutes.

This verification process serves several important purposes:

- It confirms that you have access to the email or phone number you provided.
 - It helps prevent unauthorized account creation.
 - It adds a layer of security to the sign-up process.
-
- Cognito provides effective service
 - Provide secure identity stores that allows to scale up to millions of users.
 - Used for Secure and Scalable **customer identity and access management** (CIAM)
 - Secures machine-to-machine authorization
 - Get role-based access to AWS services and resources.

Steps to build react-quiz application

1) install Amplify command line interface(cli) at your localhost

```
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito> npm install -g @aws-amplify/cli
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to coalesce async requests by a key value, which is much
comprehensive and powerful.
ed
changed 47 packages in 37s
12 packages are looking for funding
  run 'npm fund' for details
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito> amplify configure
Follow these steps to set up access to your AWS account:

Sign in to your AWS administrator account:
https://console.aws.amazon.com/
Press Enter to continue

Specify the AWS Region
? region: ap-south-1
Follow the instructions at
https://docs.amplify.aws/cli/start/install/#configure-the-amplify-cli

to complete the user creation in the AWS console
https://console.aws.amazon.com/iamv2/home#/users/create
```

2) Configuring Amplify it will redirect to amazon console sign-in with **IAM user** rather than **Root user**

```
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito> amplify configure
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to complete the user creation in the AWS console
https://console.aws.amazon.com/iamv2/home#/users/create
Press Enter to continue

Enter the access key of the newly created user:
? accessKeyId: *****
? secretAccessKey: *****
This would update/create the AWS Profile in your local machine
? Profile Name: amplify-dev-local
```

Here it will automatically redirect to amazon console sign in with IAM USER Not with Root user

3) To obtain the necessary AccessKeyId and SecretAccessKey, please follow the CLI setup instructions provided in the official documentation.

SearchCTRL XK

Set up Amplify CLI

Install the Amplify CLI

The Amplify Command Line Interface (CLI) is a unified toolchain to create AWS cloud services for your app. Let's go ahead and install the Amplify CLI.

npmcURL (Mac and Linux)cURL (Windows)

Copy

```
npm install -g @aws-amplify/cli
```

⚠️

Resolve `EACCES` permissions when installing packages globally with npm

Pre-requisites for installation

- Install Node.js® and npm if they are not already on your machine.
- Verify that you are running at least Node.js version 12.x and npm version 6.x or greater by running `node -v` and `npm -v` in a terminal/console window
- [Create AWS Account](#). If you don't already have an AWS account, you'll need to create one in order to follow the steps outlined in this tutorial.
- For Apple Silicon Macs, if you don't already have Rosetta installed, install using `softwareupdate --install-rosetta`.

4) Create app name of `npx create-react-app <name of your app>` here my app is **quiz**

```
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito> npx create-react-app quiz
Need to install the following packages:
create-react-app@5.1.0
Ok to proceed? (y) y

The directory quiz contains files that could conflict:

amplify/
node_modules/
package-lock.json
package.json
public/
src/
```

5) Need to change directory location of your path location `cd <name of your app>`

`Cd quiz`

6) Initialize amplify `amplify init`

```
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> amplify init
Note: It is recommended to run this command from the root of your app directory
? Do you want to use an existing environment? No
? Enter a name for the environment quizapp
Using default provider awscloudformation
? Select the authentication method you want to use: AWS profile

For more information on AWS Profiles, see:
https://docs.aws.amazon.com/cli/latest/userguide/cli-configure-profiles.html

? Please choose the profile you want to use amplify-dev-local
Adding backend environment quizapp to AWS Amplify app: d207ff8yyt1eks

Deployment completed.
Deploying root stack quizapp [ ===== ] 1/4
  amplify-quizapp-quizapp-189ab  AWS::CloudFormation::Stack  CREATE_IN_PROGRESS  Tue Mar 04 2025 11:24
  DeploymentBucket               AWS::S3::Bucket      CREATE_COMPLETE      Tue Mar 04 2025 11:24
  AuthRole                      AWS::IAM::Role        CREATE_IN_PROGRESS    Tue Mar 04 2025 11:24
  UnauthRole                    AWS::IAM::Role        CREATE_IN_PROGRESS    Tue Mar 04 2025 11:24

Deployment state saved successfully.
✓ Initialized provider successfully.
Browserslist: caniuse-lite is outdated. Please run:
  npx update-browserslist-db@latest
  Why you should do it regularly: https://github.com/browserslist/update-db#readme
✓ Initialized your environment successfully.
```

7) amplify add auth and amplify push choose default configuration

```
⚠Auth has already been added to this project. To update run amplify update auth.
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> amplify update auth
Please note that certain attributes may not be overwritten if you choose to use defaults settings.
Using service: Cognito, provided by: awscloudformation
What do you want to do?
> Apply default configuration with Social Provider (Federation)
Walkthrough all the auth configurations
Create or update Cognito user pool groups
Create or update Admin queries API
PS C:\Users\jagap\Desktop\AWS_Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> amplify push
✓ Successfully pulled backend environment quizapp from the cloud.

Current Environment: quizapp



| Category | Resource name   | Operation | Provider plugin   |
|----------|-----------------|-----------|-------------------|
| Auth     | quizappf2905d1d | Create    | awscloudformation |


✓ Are you sure you want to continue? (Y/n) - yes

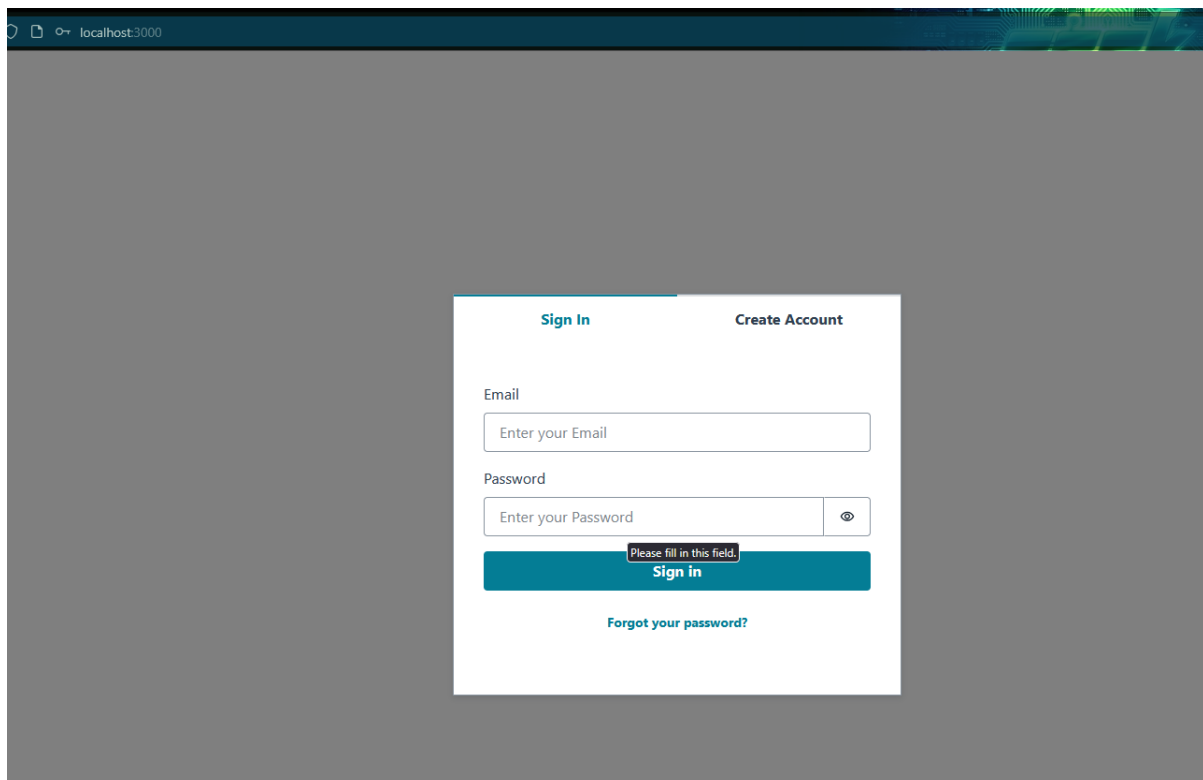
Deployment completed.
amplify-quizapp-quizapp-189ab AWS::CloudFormation::Stack UPDATE_IN_PROGRESS Tue Mar 04 2025 11:27
authquizappf2905d1d AWS::CloudFormation::Stack CREATE_COMPLETE Tue Mar 04 2025 11:28
Deployed auth quizappf2905d1d [ ----- ] 6/6
UserPool AWS::Cognito::UserPool CREATE_COMPLETE Tue Mar 04 2025 11:28
UserPoolClientRole AWS::IAM::Role CREATE_IN_PROGRESS Tue Mar 04 2025 11:28
UserPoolClientWeb AWS::Cognito::UserPoolClient CREATE_COMPLETE Tue Mar 04 2025 11:28
UserPoolClient AWS::Cognito::UserPoolClient CREATE_COMPLETE Tue Mar 04 2025 11:28
IdentityPool AWS::Cognito::IdentityPool CREATE_COMPLETE Tue Mar 04 2025 11:28
IdentityPoolRoleMap AWS::Cognito::IdentityPoolRoleMap CREATE_COMPLETE Tue Mar 04 2025 11:28

Deployment state saved successfully.
```

npm install aws-amplify @aws-amplify/ui-react these commands provides services and enable to react with React app and User Interface of your app(Login Page)

8) Run npm start to launch react app at your localhost Create Account with working email account as it will send a Verification code to your email and sig in

To open quiz-app



9) Perform CI/CD operations and commit changes and push the app files to GITHUB

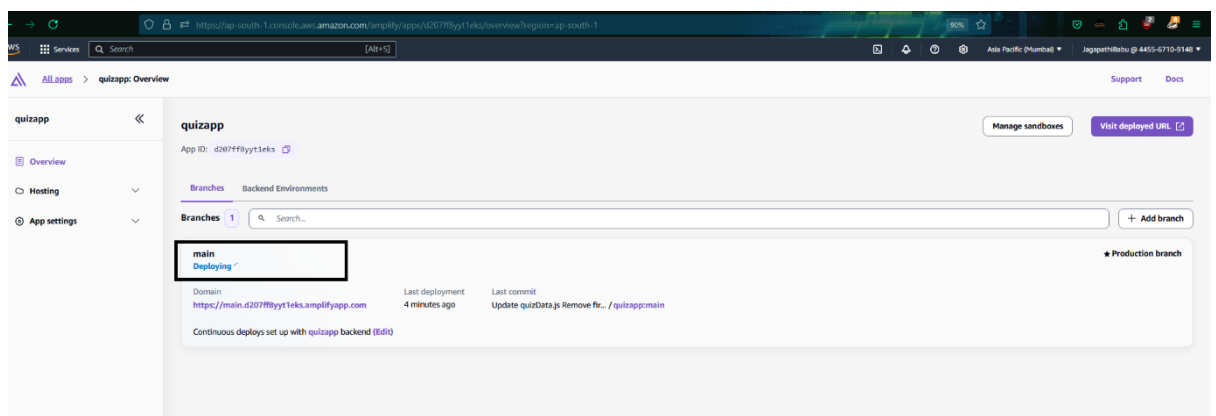
- `git init` (initialize Git repository)
- `git add .` (this will represents current directory files and all sub directory files will added to git)
- `git commit -m "your message"` (to make changes to the Git history)
- `git branch -M main` (renames your master branch to main)
- `git remote add origin <repository URL>` (enables connection between local and remote repositories(github))
- `git push -u origin main` (upload files to github which can used version control and backup and for sharing projects.)

```
npm warn   @xstate/react@"^3.2.2" from @aws-amplify/ui-react@6.9.2
Compiled successfully!

You can now view quiz-app in the browser.
warning: in the working copy of 'amplify/README.md', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'amplify/backend/backend-config.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'amplify/types/amplify-dependent-resources-ref.d.ts', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'amplify/team-provider-info.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'package-lock.json', LF will be replaced by CRLF the next time Git touches it
PS C:\Users\jagap\Desktop\AWS Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> git commit -m "initial commit"
[main a258389] initial commit
1 file changed, 18 insertions(+)
PS C:\Users\jagap\Desktop\AWS Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> git branch -M main
PS C:\Users\jagap\Desktop\AWS Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> git remote add origin https://github.com/Jagapathi-Babu7-Chollangi/react-quiz.git
error: remote origin already exists.
PS C:\Users\jagap\Desktop\AWS Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz> git push -u origin main
remote: Repository not found.
fatal: repository 'https://github.com/Jagapathi-Babu7-Chollangi/amplify-reactjs-quiz.git/' not found
PS C:\Users\jagap\Desktop\AWS Projects\Building ReactAPP with AWS Amplify and AWS Cognito\quiz>
```

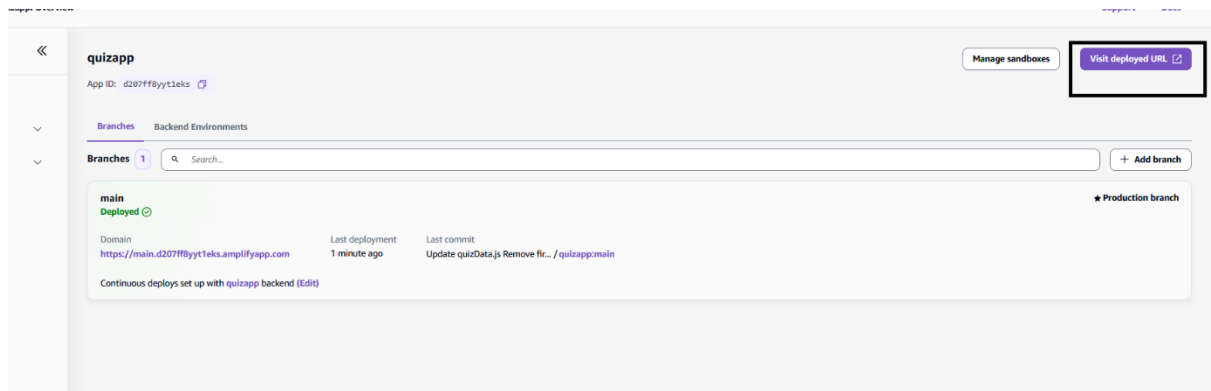
10) Configure IAM policy AmplifyFullAccess create a role on it.

- Deploy the frontend app from amplify services all-apps -> (your app) in AWS Amplify in branches from github.
- It will redirect to github, need to sign-in for first time and choose the **Repositories** the project name is given on **github** and choose frontend role(Branches) and connect branch and select repository and branch



- For backend Environments select **App-name** and choose **environment** (dev)
- For role we need to create a new role **AwsService** → use-case:Amplify and create role.
- Select the role after creating role and finally **save** and **deploy**.

- After deploying it will show like this and click on domain link to open quiz app.



11) AT last if u don't want to get additional charges or surprise bill

Go to Amplify -> all apps -> click on Actions -> delete app and type delete to confirm delete the app.

