Step-by-Step Guide: Deploying a Meme Matching Game using AWS CodePipeline and S3

Link:- AWS Project: Build a Game with a Continuous Deployment Pipeline from GitHub to S3 | AWS Tutorial - YouTube

1. Set Up Your Meme Matching Game Begin by creating the game locally using fundamental web development tools (HTML, CSS, JavaScript).
   - **HTML (index.html):** Develop a straightforward HTML file that acts as the main framework of your game, including buttons and text.
   - **JavaScript (script.js):** This file will hold the game logic, which includes:
     - o An array containing image paths for the cards.
     - o Functions to shuffle, flip, and verify matching cards.
     - o Logic to remove matched cards from the board.
   - **CSS (styles.css):** Use simple CSS to style your game, defining the appearance of the cards, buttons, and game board.

   At this point, your game is operational locally, but we will now proceed to host and deploy it.

2. Host Your Code on GitHub

1. Create a GitHub Repository:- Visit GitHub and set up a new repository for your game. You might | | name it something like meme-matching-game.

2. Push Your Code to GitHub:

- If you haven't set up Git yet, go ahead and install it, then configure it.

- Commit your local game files (index.html, script.js, styles.css) and push them to your repository.

Example Git command:

```
git init

git add .

git commit -m "Initial commit for meme matching game"

git remote add origin https://github.com/yourusername/meme-matching-game.git

git push -u origin main
```

3.If you want to use an existing repository, you can fork it to your own GitHub account.

3. Create and Configure an S3 Bucket to Host the Game

1. **Navigate to S3 in AWS Console**:
   - o Open the AWS Management Console and select the S3 service..
2. **Create a New S3 Bucket**:
   - o Click on **Create Bucket**.
   - o Choose a unique name for your bucket, such as my-meme-game-<your-unique-id>. Keep in mind that S3 bucket names must be globally unique..
   - o Select your preferred region.

- Make sure to uncheck the option that restricts all public access, as you want this to be accessible to everyone (since it’s a website).
- Please confirm that you are making the bucket public.

3. **Enable Static Website Hosting**:
    - Once you've created the bucket, go to the Properties tab.
    - Scroll down to find the Static Website Hosting section and turn it on.
    - Specify the index document as **index.html** (this will serve as your homepage).
    - Click **Save Changes**.
4. **Set Permissions for Public Access**:
    - Navigate to the Permissions tab and scroll down to the Bucket Policy section.
    - Insert the following bucket policy to enable public access to all objects within your bucket:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::my-meme-game-<your-unique-id>/*"
    }
  ]
}
```

- Replace my-meme-game-<your-unique-id> with your actual bucket name, then save the policy.

4. Set Up the AWS CodePipeline

1. **Go to AWS CodePipeline**:
    - In the AWS console, open **CodePipeline**.
2. **Create a New Pipeline**:
    - Click **Create Pipeline** and give it a name, like meme-matching-pipeline.
    - Choose New Service Role for permissions (this allows AWS to manage the pipeline's permissions automatically).
    - Click **Next**.
3. **Connect GitHub as the Source**:

- Choose **GitHub** as the source provider.
- Choose **Version 2** of the integration.
- Connect to your GitHub account and select the repository you created earlier (e.g., meme-matching-game).
- For the branch, select main.
- Choose to trigger the pipeline on **Push to a branch** (this will update the game when you push changes to GitHub).

4. **Skip the Build Stage (Optional)**:
   - For this project, you don't need a build stage, so select **Skip build**.
5. **Set S3 as the Deployment Target**:
   - In the deployment provider stage, select **S3**.
   - Choose the region where your S3 bucket is located (e.g., US West 2).
   - Select the bucket you created earlier (my-meme-game-<your-unique-id>).
   - Make sure to check the box for **Extract file before deploy** (this ensures that the files are properly deployed).
6. **Review and Create the Pipeline**:
   - Review your choices and create the pipeline.
   - The pipeline will automatically pull the code from GitHub and deploy it to your S3 bucket whenever there's a new push.

5. Test Your Game

1. **Access the Game**:
   - After the pipeline deploys, go to your S3 bucket.
   - In the **Properties** tab, scroll down to **Static Website Hosting**.
   - You'll see the **Bucket Website Endpoint** URL. Click it to open your live meme matching game!
2. **Verify Everything Works**:
   - Test the game to make sure all functions work as expected.

6. Update the Game and Trigger the Pipeline

1. **Make Changes in GitHub**:
   - For example, open your index.html file in GitHub, make any changes (like updating the title or text), and commit them.
2. **Observe the Pipeline**:
   - Go to AWS CodePipeline, and you'll see that the pipeline automatically starts when it detects a new commit.
   - It will fetch the latest code, deploy it to the S3 bucket, and update your live game.

3. **Test the Updated Game**:
    - Refresh the game URL to see the changes reflected immediately

7. Clean Up (Optional)

If you want to avoid charges, clean up the AWS resources once you're done.

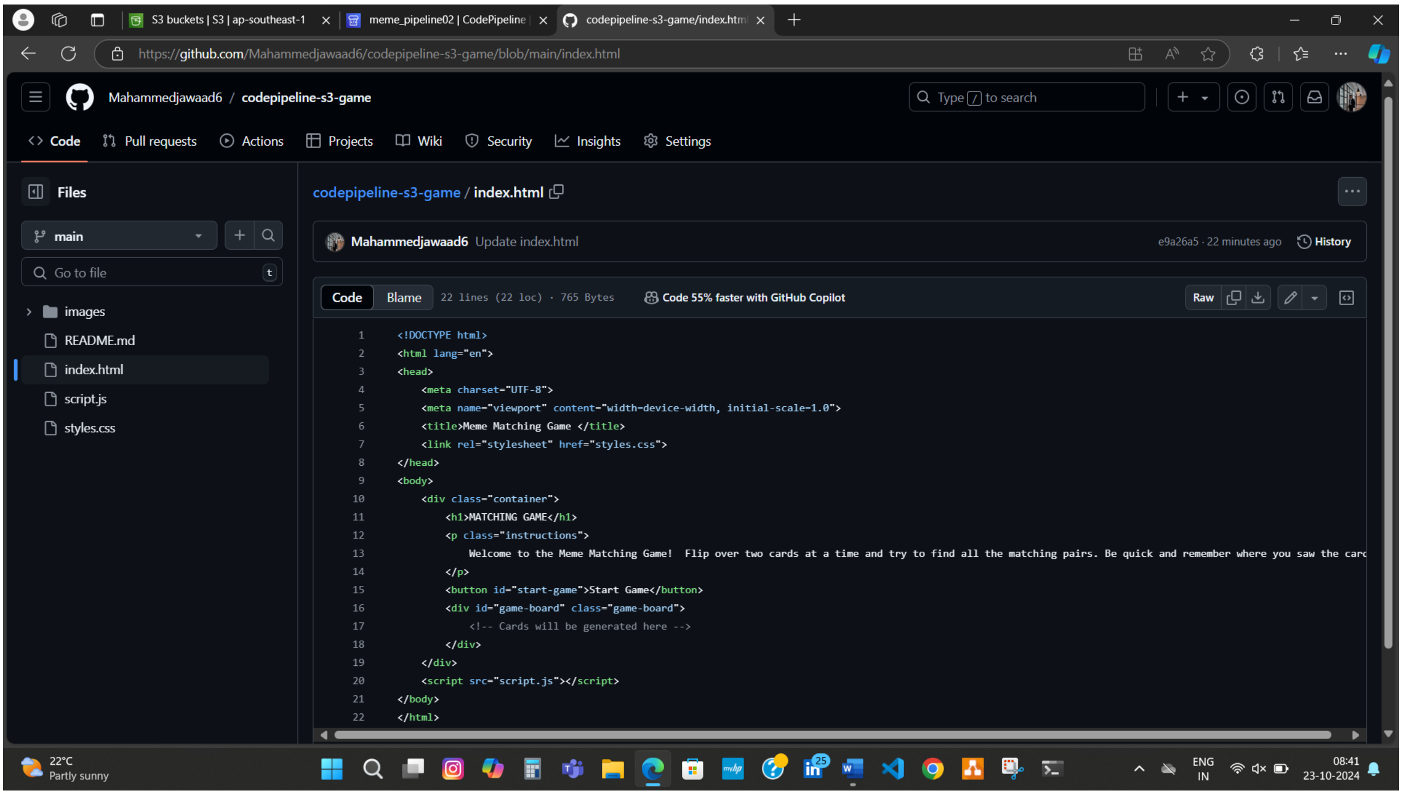
1. **Delete the CodePipeline**:
    - Go to AWS CodePipeline, select your pipeline, and delete it.
2. **Delete the S3 Bucket**:
    - Go to S3, select your bucket, and delete all objects inside it first. Then, delete the bucket itself.

Conclusion

By following these steps, you’ve created and deployed a meme matching game on AWS using S3 and CodePipeline. You’ve also set up an automated deployment pipeline that allows you to make changes in GitHub and deploy them with minimal effort. This project demonstrates your skills in both web development and cloud infrastructure

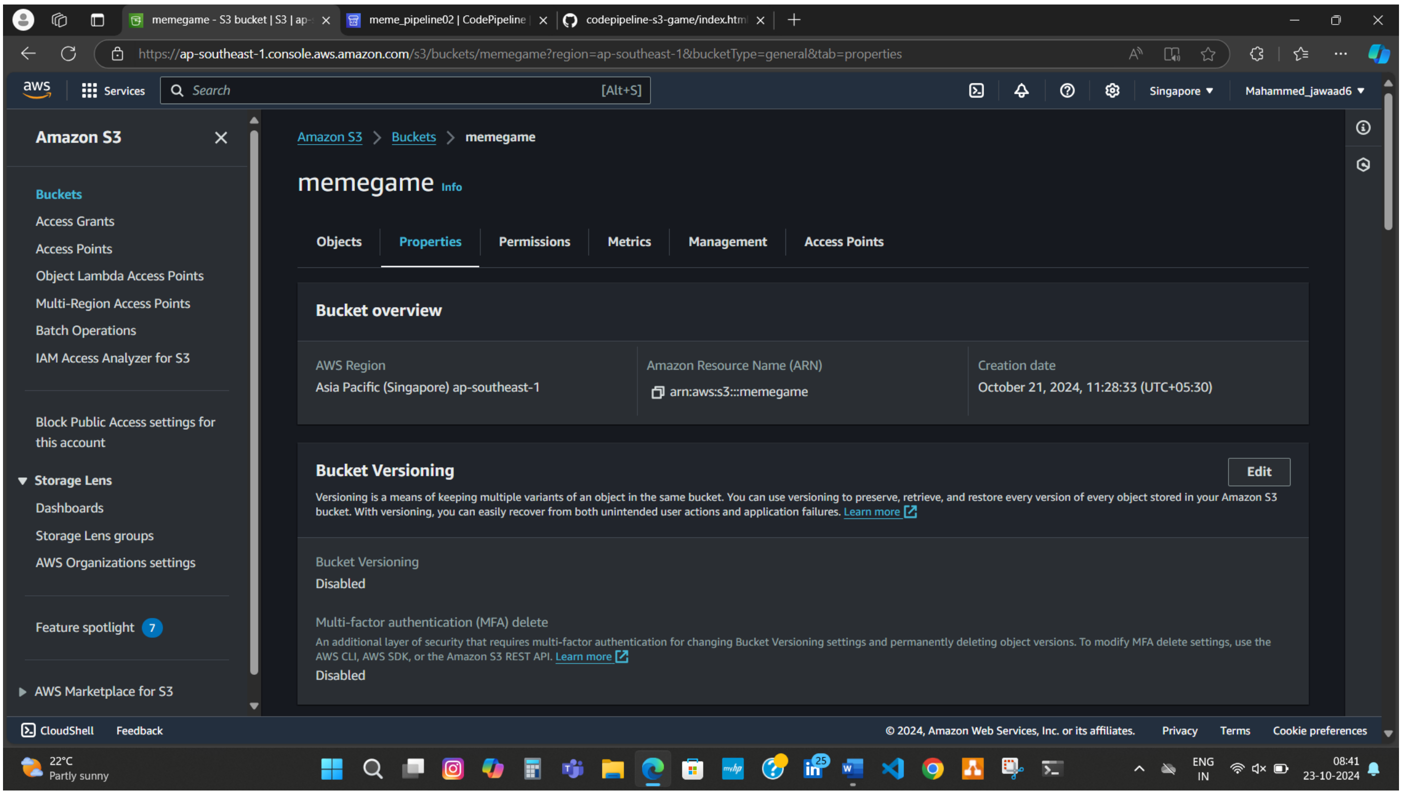
ScreenShots

1)


S3 buckets | S3 | ap-southeast-1
meme_pipeline02 | CodePipeline
codepipeline-s3-game/index.html
https://github.com/Mahammedjawaad6/codepipeline-s3-game/blob/main/index.html
Mahammedjawaad6 / codepipeline-s3-game
Type / to search
Code
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Files
main
Go to file
images
README.md
index.html
script.js
styles.css
codepipeline-s3-game / index.html
Mahammedjawaad6 Update index.html
e9a26a5 · 22 minutes ago
History
Code
Blame
22 lines (22 loc) · 765 Bytes
Code 55% faster with GitHub Copilot
Raw
22°C
Partly sunny
ENG
IN
08:41
23-10-2024

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Meme Matching Game </title>
    <link rel="stylesheet" href="styles.css">
</head>
<body>
    <div class="container">
        <h1>MATCHING GAME</h1>
        <p class="instructions">
            Welcome to the Meme Matching Game!  Flip over two cards at a time and try to find all the matching pairs. Be quick and remember where you saw the carc
        </p>
        <button id="start-game">Start Game</button>
        <div id="game-board" class="game-board">
            <!-- Cards will be generated here -->
        </div>
    </div>
    <script src="script.js"></script>
</body>
</html>
```

2)


memegame - S3 bucket | S3 | ap-
meme_pipeline02 | CodePipeline
codepipeline-s3-game/index.htm
https://ap-southeast-1.console.aws.amazon.com/s3/buckets/memegame?region=ap-southeast-1&bucketType=general&tab=properties
aws
Services
Search
[Alt+S]
Singapore ▼
Mahammed_jawaad6 ▼
Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
▼ Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Feature spotlight 7
▶ AWS Marketplace for S3
Amazon S3 > Buckets > memegame
Objects
Properties
Permissions
Metrics
Management
Access Points
Edit
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
22°C
Partly sunny
ENG
IN
08:41
23-10-2024

memegame Info

Bucket overview

AWS Region
Asia Pacific (Singapore) ap-southeast-1

Amazon Resource Name (ARN)
arn:aws:s3:::memegame

Creation date
October 21, 2024, 11:28:33 (UTC+05:30)

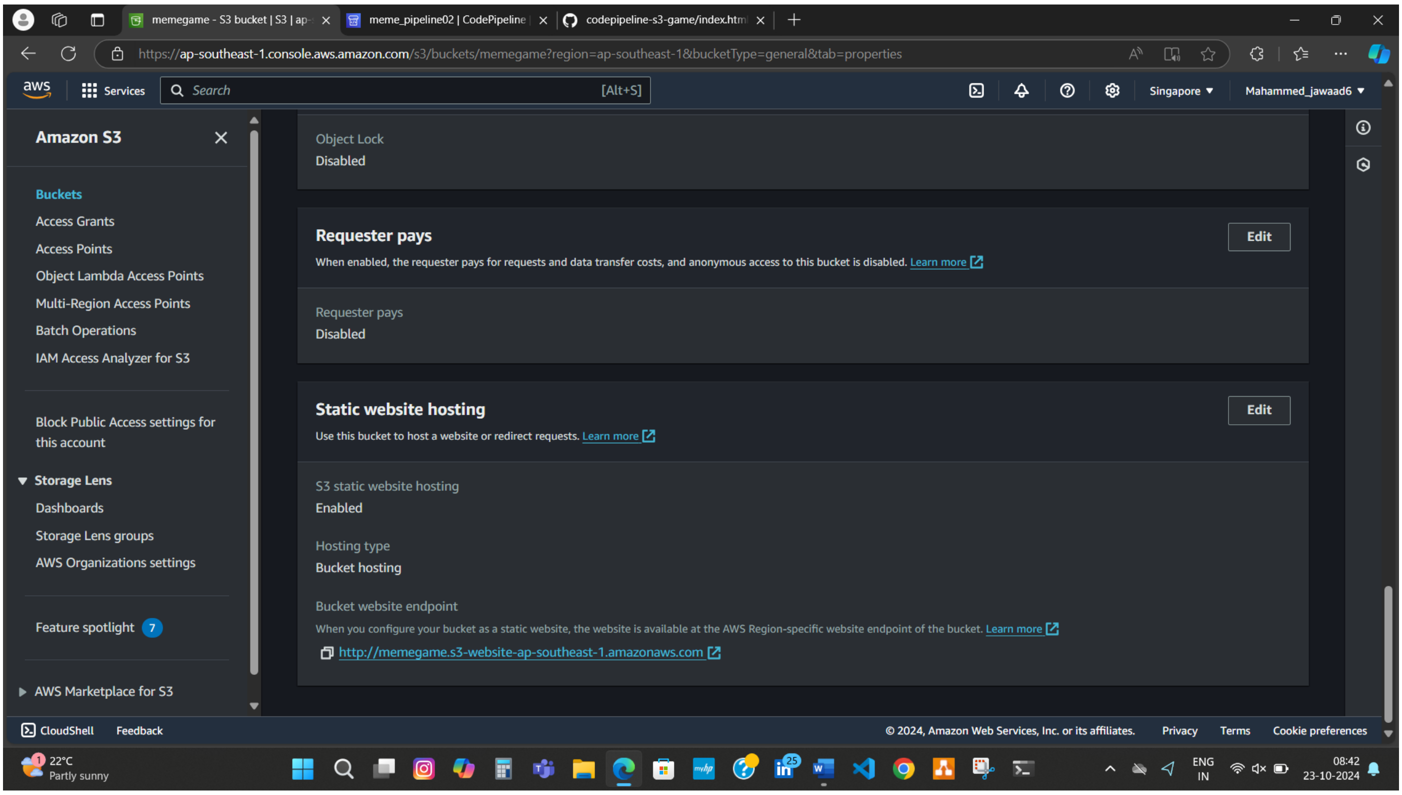
Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. Learn more

Bucket Versioning
Disabled

Multi-factor authentication (MFA) delete
An additional layer of security that requires multi-factor authentication for changing Bucket Versioning settings and permanently deleting object versions. To modify MFA delete settings, use the AWS CLI, AWS SDK, or the Amazon S3 REST API. Learn more
Disabled

3)


memegame - S3 bucket | S3 | ap-
meme_pipeline02 | CodePipeline
codepipeline-s3-game/index.htm
https://ap-southeast-1.console.aws.amazon.com/s3/buckets/memegame?region=ap-southeast-1&bucketType=general&tab=properties
aws
Services
Search
[Alt+S]
Singapore ▼
Mahammed_jawaad6 ▼
Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
▼ Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Feature spotlight 7
▶ AWS Marketplace for S3
Edit
Edit
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
22°C
Partly sunny
ENG
IN
08:42
23-10-2024

Object Lock
Disabled

Requester pays

When enabled, the requester pays for requests and data transfer costs, and anonymous access to this bucket is disabled. Learn more

Requester pays
Disabled

Static website hosting

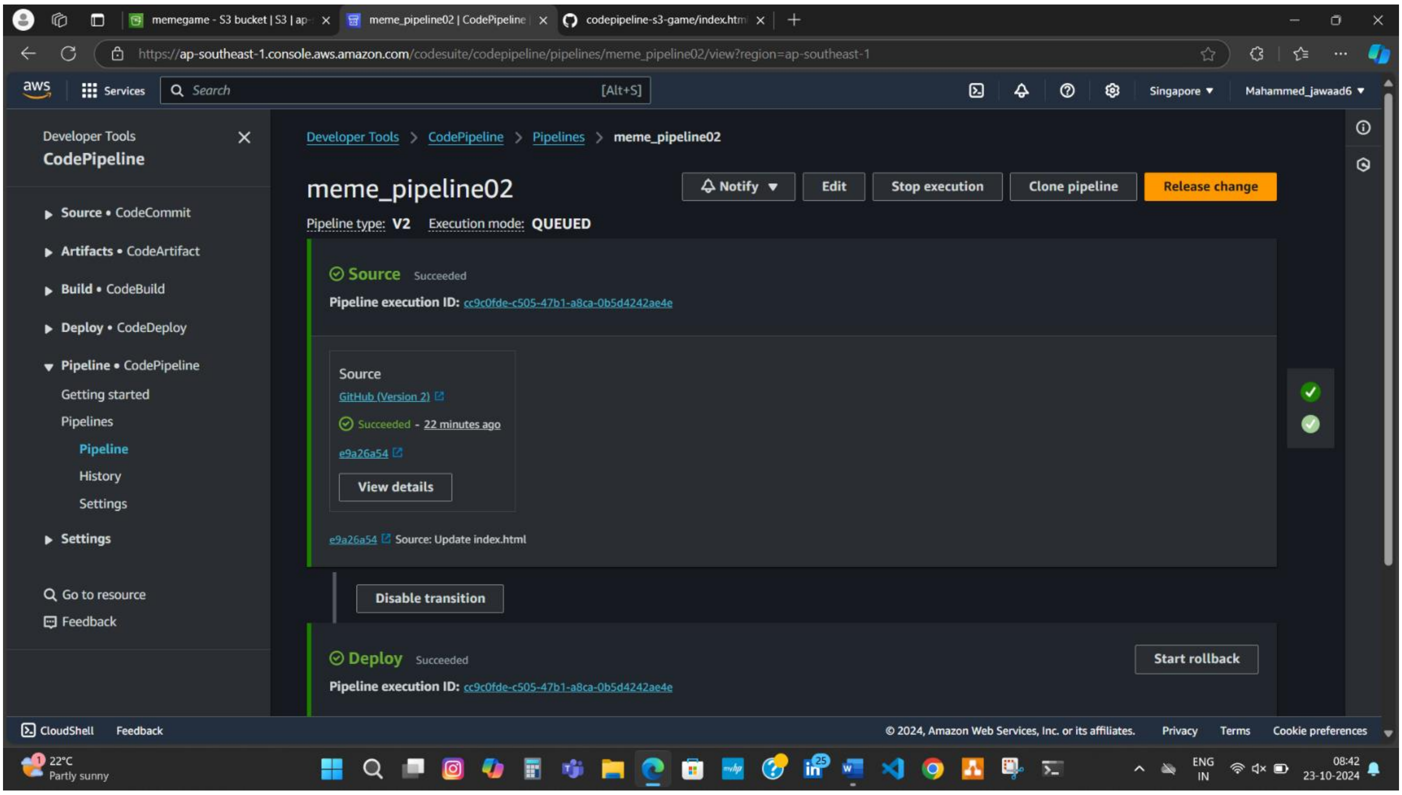
Use this bucket to host a website or redirect requests. Learn more

S3 static website hosting
Enabled

Hosting type
Bucket hosting

Bucket website endpoint
When you configure your bucket as a static website, the website is available at the AWS Region-specific website endpoint of the bucket. Learn more
http://memegame.s3-website-ap-southeast-1.amazonaws.com

4)



Developer Tools > CodePipeline > Pipelines > meme_pipeline02

meme_pipeline02

Pipeline type: V2 Execution mode: QUEUED

Source Succeeded

Pipeline execution ID: cc9c0fde-c505-47b1-a8ca-0b5d4242ae4e

Source

GitHub (Version 2)

Succeeded - 22 minutes ago

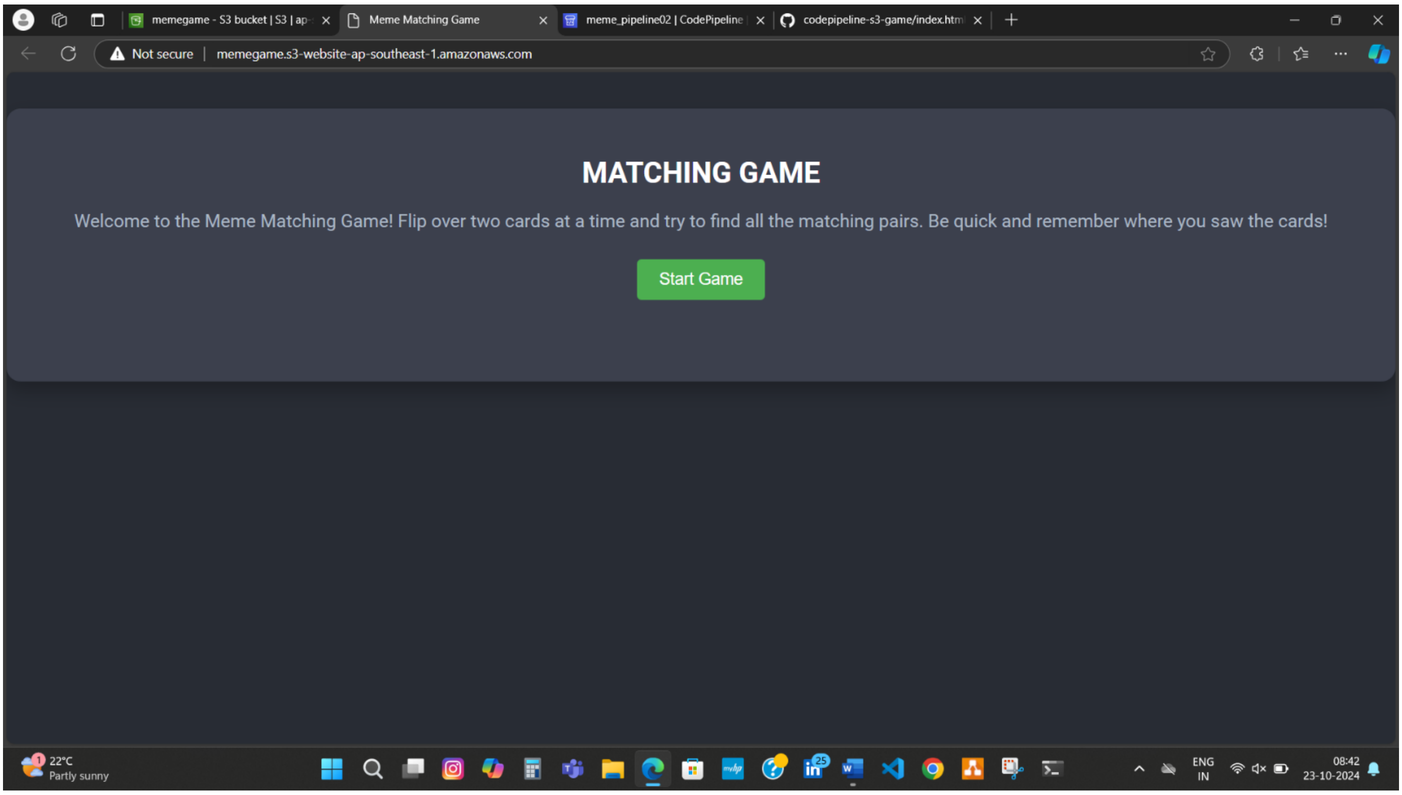
e9a26a54

e9a26a54 Source: Update index.html

Deploy Succeeded

Pipeline execution ID: cc9c0fde-c505-47b1-a8ca-0b5d4242ae4e

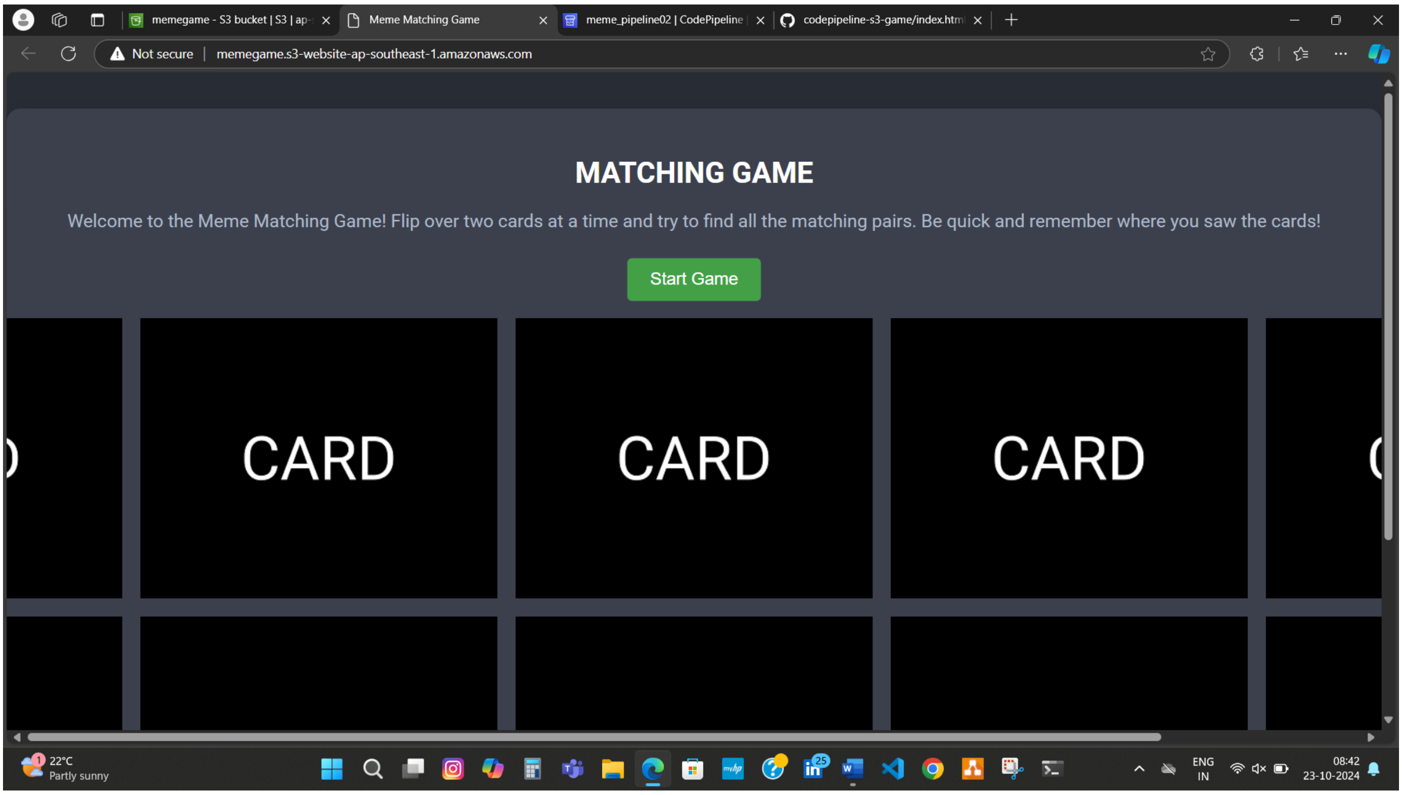
5)


memegame - S3 bucket | S3 | ap-
Meme Matching Game
meme_pipeline02 | CodePipeline
codepipeline-s3-game/index.htm
Not secure
memegame.s3-website-ap-southeast-1.amazonaws.com
Start Game
22°C
Partly sunny
ENG
IN
08:42
23-10-2024

MATCHING GAME

Welcome to the Meme Matching Game! Flip over two cards at a time and try to find all the matching pairs. Be quick and remember where you saw the cards!

6)



MATCHING GAME

Welcome to the Meme Matching Game! Flip over two cards at a time and try to find all the matching pairs. Be quick and remember where you saw the cards!

memegame - S3 bucket | S3 | ap-
Meme Matching Game
meme_pipeline02 | CodePipeline |
codepipeline-s3-game/index.htm
Not secure
memegame.s3-website-ap-southeast-1.amazonaws.com
Start Game
CARD
CARD
CARD
22°C
Partly sunny
ENG
IN
08:42
23-10-2024