

## **The CI/CD benefits proposal contains essential benefits of CI/CD:**

There are many tools that can help enable a smoother transition to a CI/CD process. Testing is a large part of that process because even if you are able to make your integrations and delivery faster, it would mean nothing if was done so without quality in mind. Also, the more steps of the CI/CD pipeline that can be automated, the faster quality releases can be accomplished.

To enhance your CI/CD pipeline, take this **free** self-assessment to learn where your team is at in the continuous testing maturity roadmap and get expert tips for percentage of automated tests, test reports, and more.

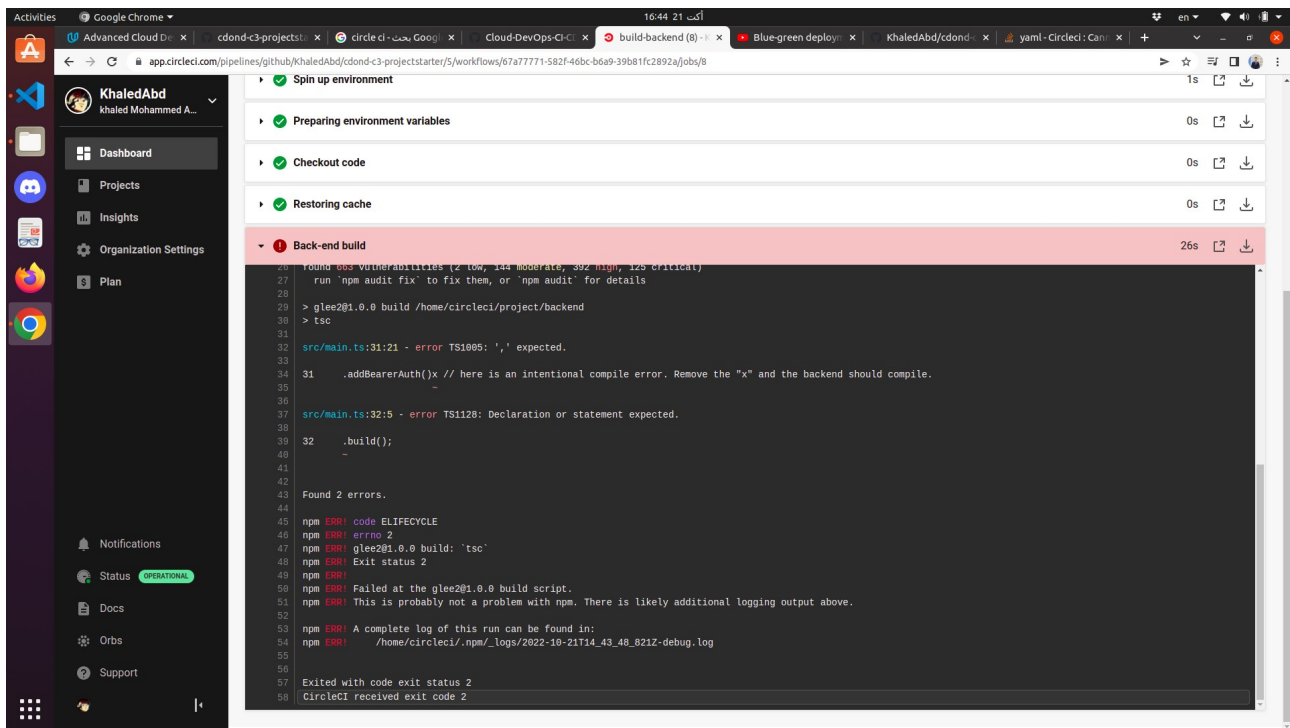
## **The business context that will benefit from the automation tools:**

From management's perspective, reliability, availability, productivity, performance, and cost reduction are powerful arguments for adopting an operations automation solution. However, achieving these benefits requires discipline to overcome the obstacles. As long as you understand, anticipate, and balance these obstacles against the potential benefits of automation, they should not interrupt your plans.

The [Automate suite](#) of products is a top-rated suite of automated operations software. Learn more by clicking on one of the products below, or start your [free trial](#) today.

- [Automate Desktop](#): Robotic desktop automation software provides easily configurable robots desktop automation.
- [Automate Plus](#): A scalable [robotic process automation](#) software for comprehensive enterprise automation.
- [Automate Ultimate](#): All the functionality of Automate Plus, but with unlimited bots and studios.
- Save Time and low Cost

## 1-Job failed because of compile errors. [SCREENSHOT01]:



The screenshot shows a CircleCI pipeline run for a project named 'cdond-c3-project'. The pipeline consists of several jobs: 'Spin up environment', 'Preparing environment variables', 'Checkout code', 'Restoring cache', and 'Back-end build'. The 'Back-end build' job has failed, indicated by a red status icon and a duration of 26s. The error message is as follows:

```
Found 2 vulnerabilities (2 low, 144 moderate, 392 high, 125 critical)
run 'npm audit fix' to fix them, or 'npm audit' for details

> glee2@1.0.0 build /home/circleci/project/backend
> tsc

src/main.ts:31:21 - error TS1005: ',' expected.
31 |     .addBearerAuth(x) // here is an intentional compile error. Remove the "x" and the backend should compile.
    |                      ^

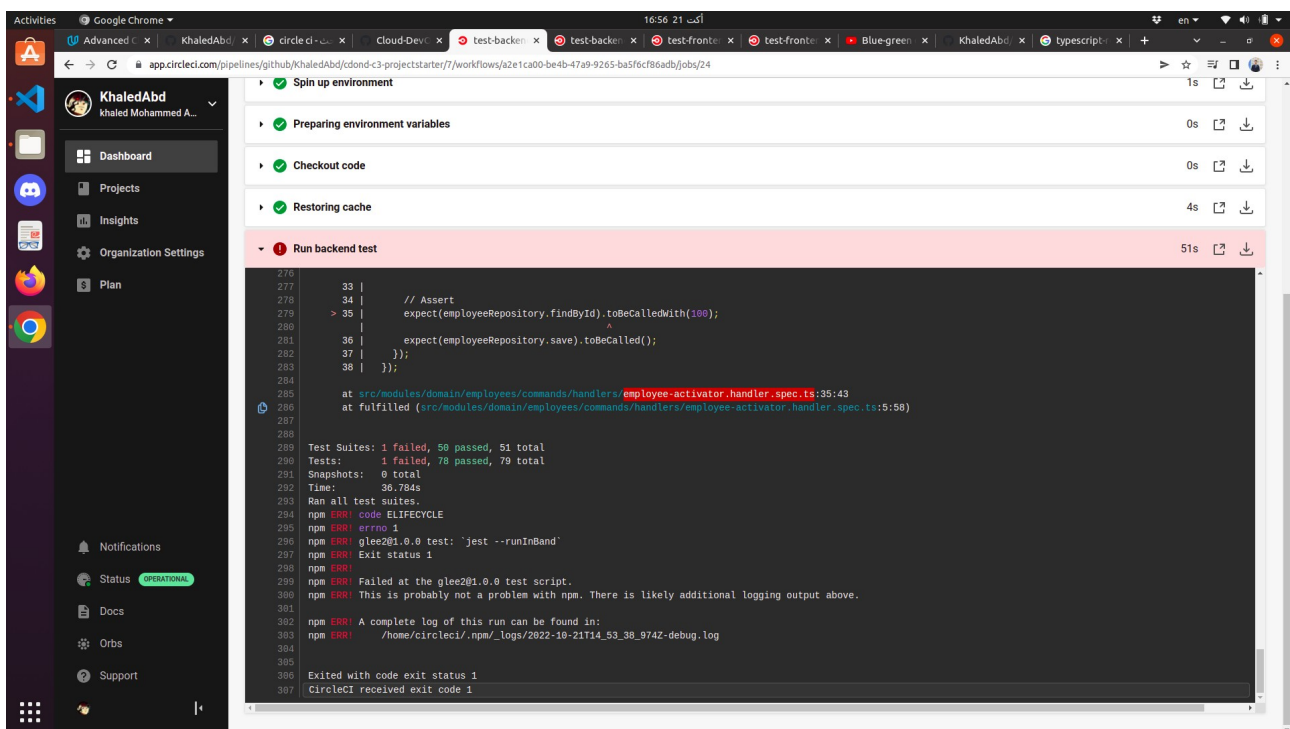
src/main.ts:32:5 - error TS1128: Declaration or statement expected.
32 |     .build();
    |     ^

Found 2 errors.

npm ERR! code ELIFECYCLE
npm ERR! errno 2
npm ERR! glee2@1.0.0 build: `tsc`
npm ERR! Exit status 2
npm ERR!
npm ERR! Failed at the glee2@1.0.0 build script.
npm ERR! This is probably not a problem with npm. There is likely additional logging output above.
npm ERR! A complete log of this run can be found in:
npm ERR! /home/circleci/.npm/_logs/2022-10-21T14.43.48.821Z-debug.log

Exited with code exit status 2
CircleCI received exit code 2
```

## 2- Job failed because of unit tests. [SCREENSHOT02]:



The screenshot shows a CircleCI pipeline run for a project named 'cdond-c3-project'. The pipeline consists of several jobs: 'Spin up environment', 'Preparing environment variables', 'Checkout code', 'Restoring cache', and 'Run backend test'. The 'Run backend test' job has failed, indicated by a red status icon and a duration of 51s. The error message is as follows:

```
Test Suites: 1 failed, 50 passed, 51 total
Tests: 1 failed, 70 passed, 71 total
Snapshots: 0 total
Time: 36.784s
Ran all test suites.
npm ERR! code ELIFECYCLE
npm ERR! errno 1
npm ERR! glee2@1.0.0 test: `jest --runInBand`
npm ERR! Exit status 1
npm ERR!
npm ERR! Failed at the glee2@1.0.0 test script.
npm ERR! This is probably not a problem with npm. There is likely additional logging output above.
npm ERR! A complete log of this run can be found in:
npm ERR! /home/circleci/.npm/_logs/2022-10-21T14.53.38.974Z-debug.log

Exited with code exit status 1
CircleCI received exit code 1
```

### 3- Job that failed because of vulnerable packages. [SCREENSHOT03]:

Scan backend dependencies1m 56s

Your output is too large to display in the browser.  
Only the last 400000 characters are displayed.

Download the full output as a file

Manual Review

Some vulnerabilities require your attention to resolve

Visit <https://go.npm.me/audit-guide> for additional guidance

Low	Prototype Pollution
Package	yargs-parser
Patched in	>=13.1.2 <14.0.0    >=15.0.1 <16.0.0    >=18.1.2
Dependency of	standard-version [dev]
Path	standard-version > yargs > yargs-parser
More info	<a href="https://npmjs.com/advisories/1500">https://npmjs.com/advisories/1500</a>

found 47189 vulnerabilities (34383 low, 2 moderate, 12803 high, 1 critical) in 892246 scanned packages

run 'npm audit fix' to fix 47186 of them.

2 vulnerabilities require semver-major dependency updates.

1 vulnerability requires manual review. See the full report for details.

Exited with code exit status 1

CircleCI received exit code 1

### 4- An alert from one of your failed builds. [SCREENSHOT04]:

ActivitiesGoogle Chrome09:53 29 أكتوبر

Pipelines - KhaledAbdAdvanced Cloud DeHow to check if porDigitalOcean BlogKhaledAbd (khaled)Google دولاInbox (509) - khaled[Workflow] Failed: KhaledAbd/cdond-c3-projectstarter on khaled / default (41f8a4e)

mail.google.com/mail/u/1/#inbox/FMfrcgCqRQWSRhZcTFTCrKkwkgzljx

Compose

Inbox

Starred

Snoozed

Sent

Drafts

More

Labels

Unwanned

[Workflow] Failed: KhaledAbd/cdond-c3-projectstarter on khaled / default (41f8a4e)

CircleCI Builds

Fri, Oct 21, 6:05 PM (8 days ago)

Uh-oh, this workflow did not succeed.

Authorahmed

ProjectKhaledAbd/cdond-c3-projectstarter

Workflowdefault

Branchkhaled

Commitadd changes 41f8a4e

Jobs

build-frontendSuccess

test-frontendSuccess

scan-frontendSuccess

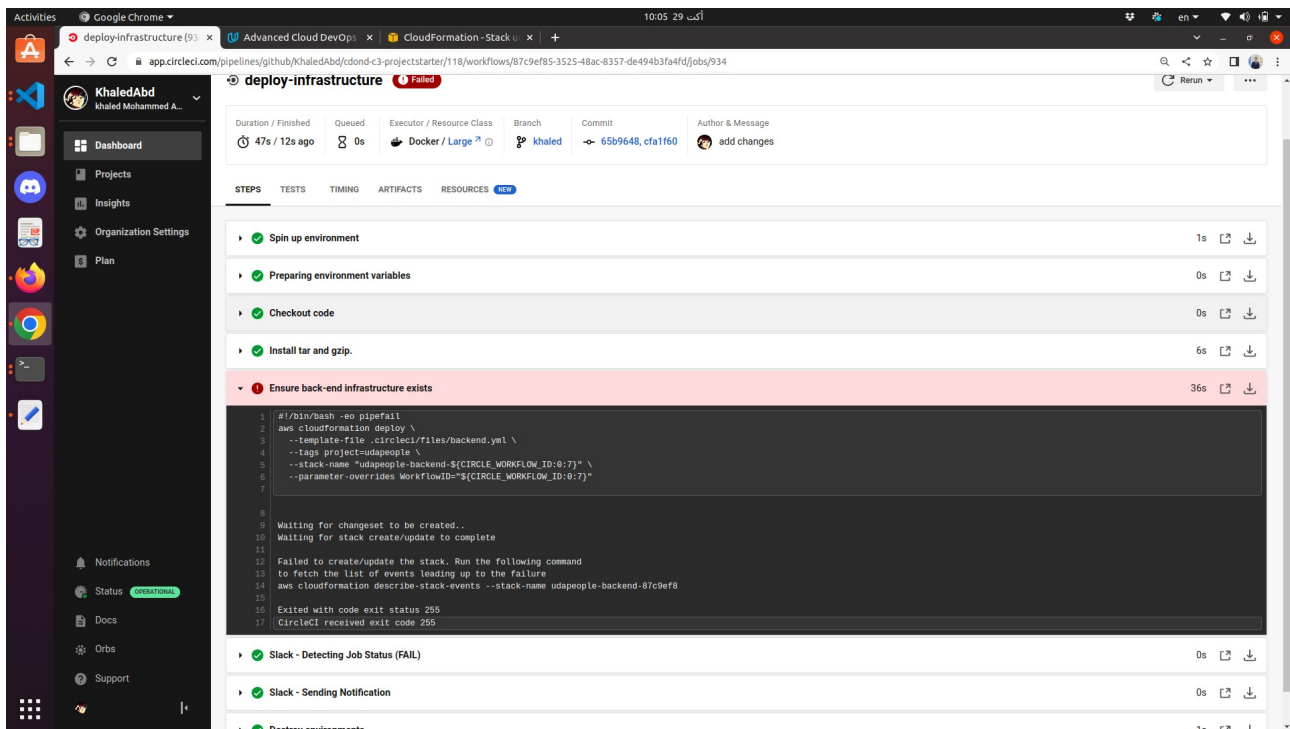
build-backendFailed

You're receiving this email because you follow KhaledAbd/cdond-c3-projectstarter on CircleCI.

Unsubscribe by [unfollowing KhaledAbd/cdond-c3-projectstarter](#) or [changing your email notification settings](#).

CircleCI - 201 Spear Street - 12th Floor - San Francisco, CA, 94105

## 5 -Appropriate job failure for infrastructure creation. [SCREENSHOT05]:



The screenshot displays a CircleCI pipeline job named 'deploy-infrastructure' in a failed state. The job is associated with the user 'KhaledAbd' and the commit '65b9648, cfa1160'. The job's duration is 47s, and it was finished 12s ago. The job is running on a Docker executor with a 'Large' resource class. The job's status is 'Failed', and the error message is 'add changes'.

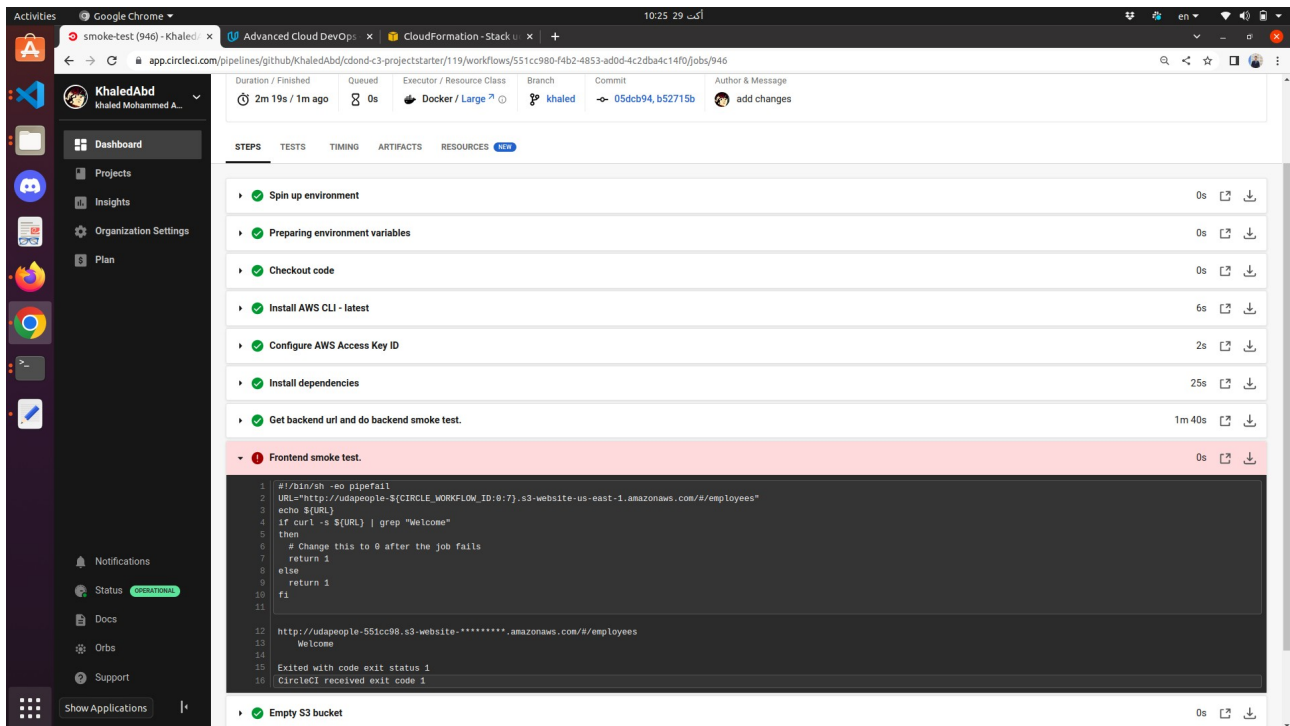
The job steps are listed below:

- Spin up environment (1s)
- Preparing environment variables (0s)
- Checkout code (0s)
- Install tar and gzip. (6s)
- Ensure back-end infrastructure exists (36s) - **Failed**
- Slack - Detecting Job Status (FAIL) (0s)
- Slack - Sending Notification (0s)
- Destroy environments (1s)

The failure message for the 'Ensure back-end infrastructure exists' step is as follows:

```
1 #!/bin/bash -eo pipefail
2 aws cloudformation deploy \
3   --template-file .circleci/files/backend.yml \
4   --tags project:udapeople \
5   --stack-name "udapeople-backend-${CIRCLE_WORKFLOW_ID:0:7}" \
6   --parameter-overrides WorkflowID="${CIRCLE_WORKFLOW_ID:0:7}"
7
8
9 Waiting for changeset to be created..
10 Waiting for stack create/update to complete
11
12 Failed to create/update the stack. Run the following command
13 to fetch the list of events leading up to the failure
14 aws cloudformation describe-stack-events --stack-name udapeople-backend-87c9ef8
15
16 Exited with code exit status 255
17 CircleCI received exit code 255
```

## 6- Appropriate job failure for the smoke test job. [SCREENSHOT06]:



The screenshot displays a CircleCI pipeline job named 'smoke-test' in a failed state. The job is associated with the user 'KhaledAbd' and the commit '05dc94, b52715b'. The job's duration is 2m 19s, and it was finished 1m ago. The job is running on a Docker executor with a 'Large' resource class. The job's status is 'Failed', and the error message is 'add changes'.

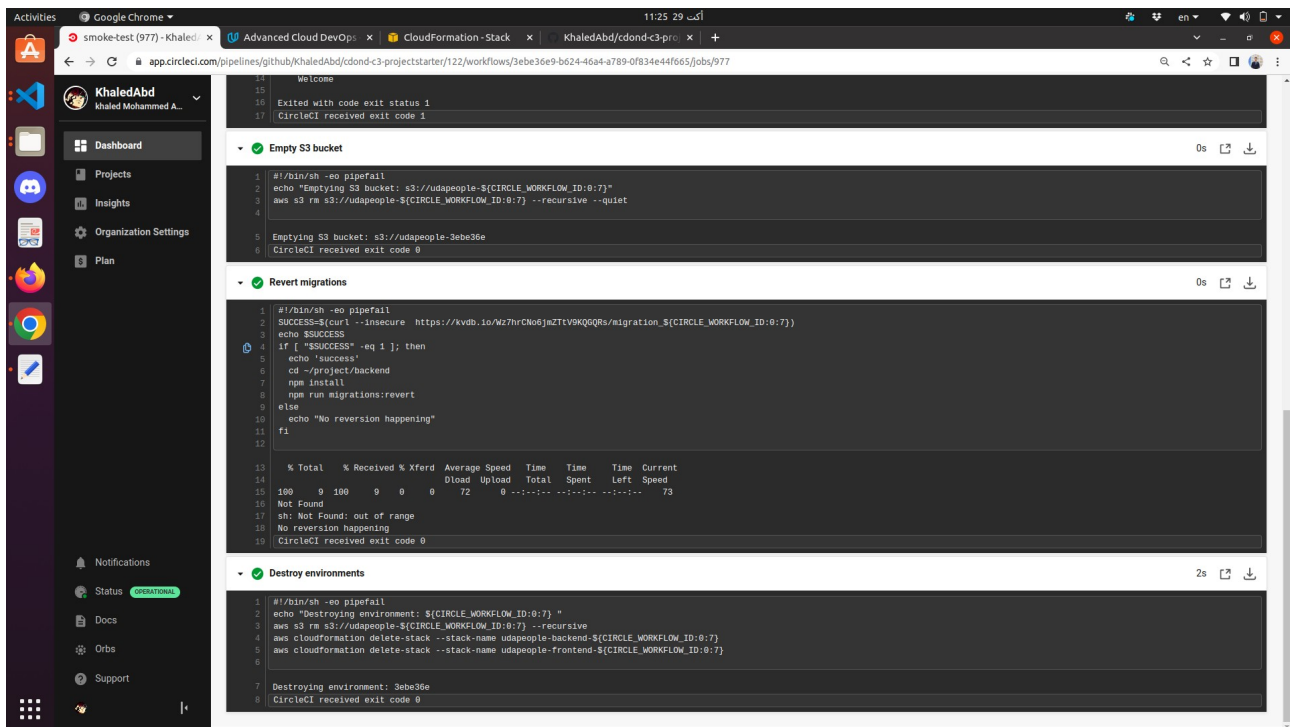
The job steps are listed below:

- Spin up environment (0s)
- Preparing environment variables (0s)
- Checkout code (0s)
- Install AWS CLI - latest (6s)
- Configure AWS Access Key ID (2s)
- Install dependencies (25s)
- Get backend url and do backend smoke test. (1m 40s)
- Frontend smoke test. (0s) - **Failed**
- Empty S3 bucket (0s)

The failure message for the 'Frontend smoke test' step is as follows:

```
1 #!/bin/sh -eo pipefail
2 URL="http://udapeople-${CIRCLE_WORKFLOW_ID:0:7}.s3-website-us-east-1.amazonaws.com/#/employees"
3 echo $URL
4 if curl -s $URL | grep "Welcome"
5 then
6   # Change this to 0 after the job fails
7   return 1
8 else
9   return 1
10 fi
11
12 http://udapeople-551cc98.s3-website-*****.amazonaws.com/#/employees
13 Welcome
14
15 Exited with code exit status 1
16 CircleCI received exit code 1
```

## 7- Successful rollback after a failed smoke test. [SCREENSHOT07]:



The screenshot shows a CircleCI pipeline run for a project named 'KhaledAbd/cdond-c3-pro'. The pipeline consists of several steps, all of which are marked as successful (green checkmarks). The steps are:

- Welcome**: A simple step that exits with code 1.
- Empty S3 bucket**: A step that runs a shell script to empty an S3 bucket. The script output shows the bucket was successfully emptied.
- Revert migrations**: A step that runs a shell script to revert migrations. The script output shows that no reversion was happening.
- Destroy environments**: A step that runs a shell script to destroy environments. The script output shows that the environments were successfully destroyed.

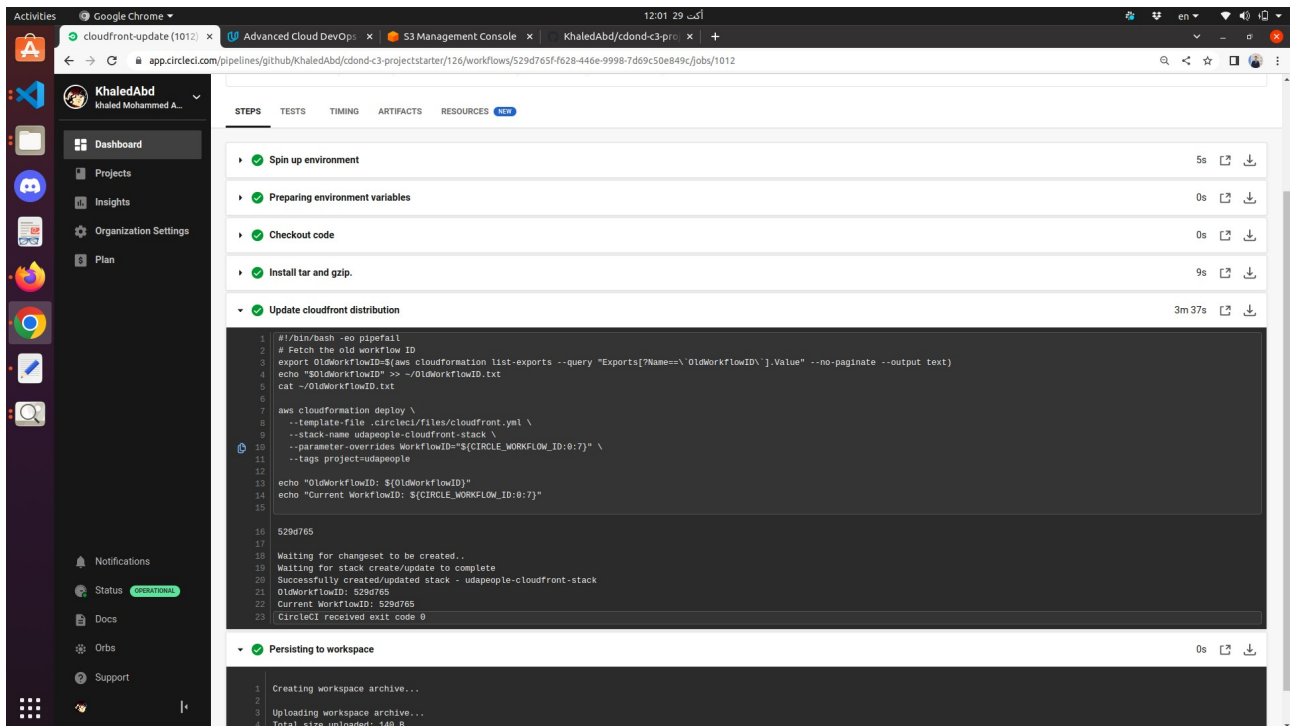
```
13 Welcome
14 Exited with code exit status 1
15 CircleCI received exit code 1

16 Empty S3 bucket 0s
17
18 #!/bin/sh -eo pipefail
19 echo "Emptying S3 bucket: s3://udapeople-${CIRCLE_WORKFLOW_ID:0:7}"
20 aws s3 rm s3://udapeople-${CIRCLE_WORKFLOW_ID:0:7} --recursive --quiet
21
22 Emptying S3 bucket: s3://udapeople-3ebe36e
23 CircleCI received exit code 0

24 Revert migrations 0s
25
26 #!/bin/sh -eo pipefail
27 SUCCESS=$(curl --insecure https://kvdh.1o/m27hrCn06jzTtV9KQ0Rs/migration_${CIRCLE_WORKFLOW_ID:0:7})
28 echo $SUCCESS
29 if [ "$SUCCESS" -eq 1 ]; then
30   echo "success"
31   cd ~/project/backend
32   npm install
33   npm run migrations:revert
34 else
35   echo "No reversion happening"
36   fi
37
38 % Total % Received % Xferd Average Speed Time Time Time Current
39 100 0 100 9 0 0 72 0 ----- --:--:-- --:--:-- 73
40 Not Found
41 sh: Not Found: out of range
42 No reversion happening
43 CircleCI received exit code 0

44 Destroy environments 2s
45
46 #!/bin/sh -eo pipefail
47 echo "Destroying environment: ${CIRCLE_WORKFLOW_ID:0:7}"
48 aws s3 rm s3://udapeople-${CIRCLE_WORKFLOW_ID:0:7} --recursive
49 aws cloudformation delete-stack --stack-name udapeople-backend-${CIRCLE_WORKFLOW_ID:0:7}
50 aws cloudformation delete-stack --stack-name udapeople-frontend-${CIRCLE_WORKFLOW_ID:0:7}
51
52 Destroying environment: 3ebe36e
53 CircleCI received exit code 0
```

## 1- Successful promotion job. [SCREENSHOT08]:



The screenshot shows a CircleCI pipeline run for a project named 'KhaledAbd/cdond-c3-pro'. The pipeline consists of several steps, all of which are marked as successful (green checkmarks). The steps are:

- Spin up environment**: A step that runs a shell script to spin up an environment. The script output shows that the environment was successfully created.
- Preparing environment variables**: A step that runs a shell script to prepare environment variables. The script output shows that the variables were successfully prepared.
- Checkout code**: A step that runs a shell script to checkout the code. The script output shows that the code was successfully checked out.
- Install tar and gzip**: A step that runs a shell script to install tar and gzip. The script output shows that the tools were successfully installed.
- Update cloudfront distribution**: A step that runs a shell script to update the CloudFront distribution. The script output shows that the distribution was successfully updated.
- Persisting to workspace**: A step that runs a shell script to persist the workspace. The script output shows that the workspace was successfully persisted.

```
1 #!/bin/bash -eo pipefail
2 # Fetch the old workflow ID
3 export OldWorkflowID=$(aws cloudformation list-exports --query "Exports[?Name==\`OldWorkflowID\`].Value" --no-paginate --output text)
4 echo "OldWorkflowID: $OldWorkflowID" >> ~/OldWorkflowID.txt
5 cat ~/OldWorkflowID.txt
6
7 aws cloudformation deploy \
8   --template-file .circleci/files/cloudfront.yml \
9   --stack-name udapeople-cloudfront-stack \
10  --parameter-overrides WorkflowID="${CIRCLE_WORKFLOW_ID:0:7}" \
11  --tags project:udapeople
12
13 echo "OldWorkflowID: $OldWorkflowID"
14 echo "Current WorkflowID: ${CIRCLE_WORKFLOW_ID:0:7}"
15
16 529d765
17
18 Waiting for changeset to be created..
19 Waiting for stack create/update to complete
20 Successfully created/updated stack - udapeople-cloudfront-stack
21 OldWorkflowID: 529d765
22 Current WorkflowID: 529d765
23 CircleCI received exit code 0

24 Persisting to workspace 0s
25
26 Creating workspace archive...
27 Uploading workspace archive...
28 Total size uploaded: 149 B
```

## 9- Successful cleanup job. [SCREENSHOT09]:

The screenshot shows a CircleCI pipeline run for a project named 'cdond-c3-projectstarter'. The pipeline is currently in the 'Fetch Oldstack Workflow ID and Remove' step, which has a duration of 4s. The previous steps, 'Spin up environment', 'Preparing environment variables', 'Checkout code', 'Install tar and gzip', and 'Attaching workspace', all completed successfully. The terminal output for the current step shows the following commands and their results:

```
11 --stack-status-filter CREATE_COMPLETE --no-paginate --output text))
12
13 echo "Stack names: ${STACKS[@]}"
14
15 # Ensure OldWorkflowID is not null
16 if [ "${CIRCLE_WORKFLOW_ID:-}" != "${OldWorkflowID}" ]
17 then
18 echo "-----Removing old workflow-----"
19 aws s3 rm "s3://udapeople-${OldWorkflowID}" --recursive
20 aws s3 rm "s3://udapeople-${OldWorkflowID}" --force
21 aws cloudformation delete-stack --stack-name "udapeople-backend-${OldWorkflowID}"
22 aws cloudformation delete-stack --stack-name "udapeople-frontend-${OldWorkflowID}"
23 else
24 echo "-----No cleanup necessary-----"
25 fi
26
27 94bc776
28 OldWorkflowID: 94bc776
29 CIRCLE_WORKFLOW_ID: Bebeb2e
30 Stack names: udapeople-cloudfront-stack-Beb2e udapeople-frontend-Beb2e udapeople-backend-Beb2e udapeople-cloudfront-stack-94bc776 udapeople-frontend-573915b udapeople-backend-573915b udapeople-cloudfront-stack-573915b
31 -----Removing old workflow-----
32 delete: s3://udapeople-94bc776/118aeb59f322984ee98c.js
33 delete: s3://udapeople-94bc776/118aeb59f322984ee98c.js
34 delete: s3://udapeople-94bc776/bundle.js
35 delete: s3://udapeople-94bc776/1ceff91236080b7d9c5b0221106855.eot
36 delete: s3://udapeople-94bc776/7d234c755f55c47d2c5a.js
37 delete: s3://udapeople-94bc776/224b6d9d16679ab0282a2a7ea709eb.ttf
38 delete: s3://udapeople-94bc776/images/6ab15f4239b7d187935cf6f4ec331bf-kiwi.svg
39 delete: s3://udapeople-94bc776/index.html
40 remove_bucket: udapeople-94bc776
41 CircleCI received exit code 0
```

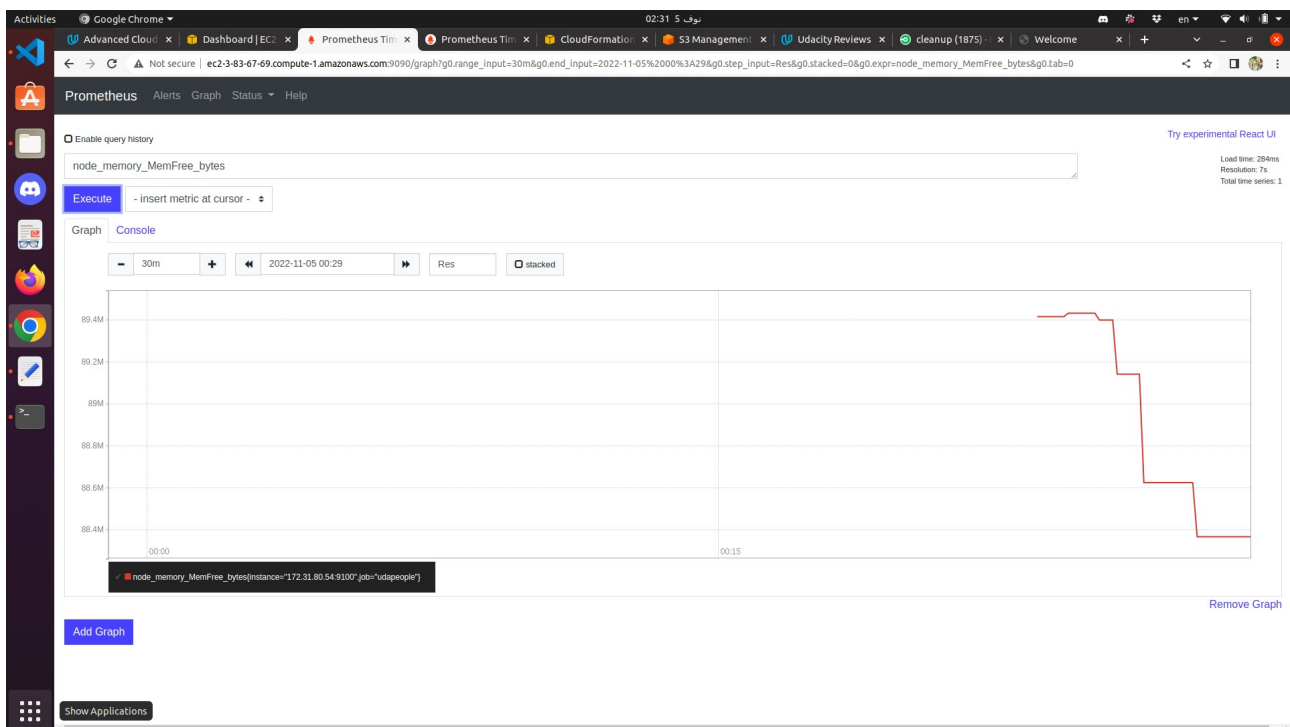
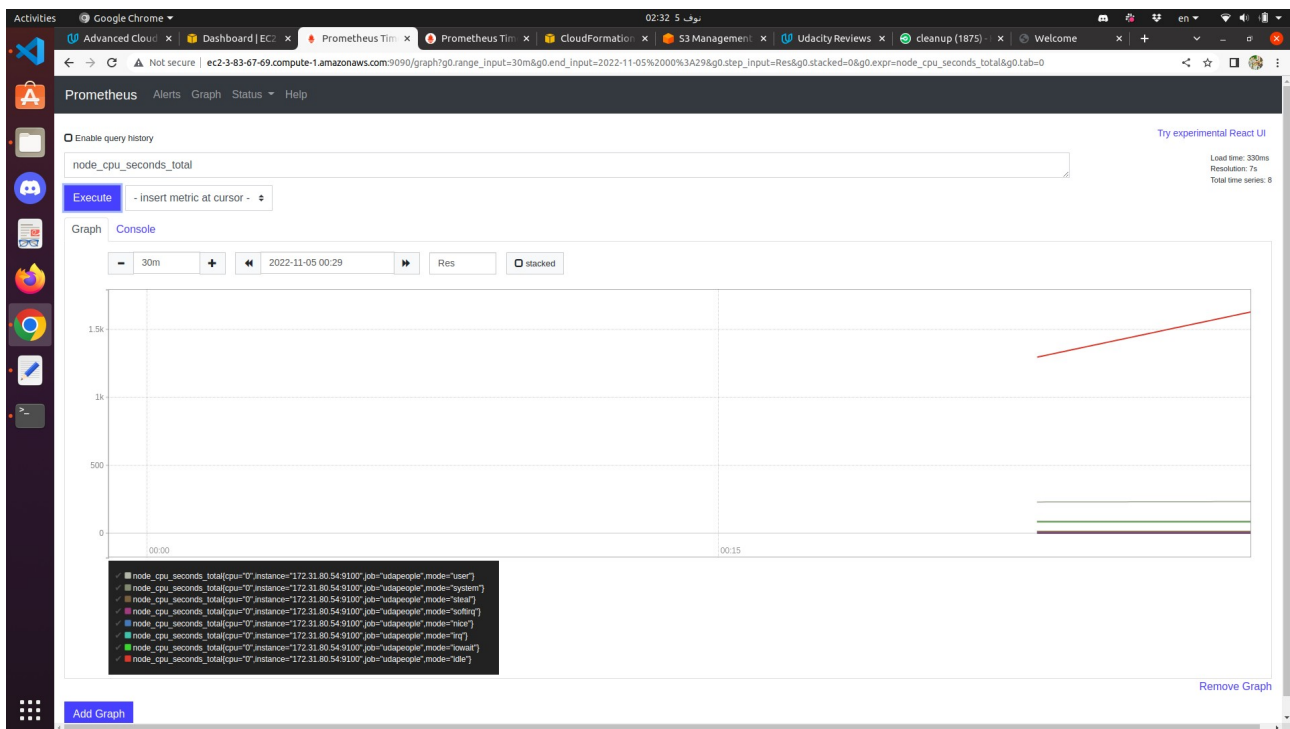
## 10- Only deploy on pushed to master branch. [SCREENSHOT10]:

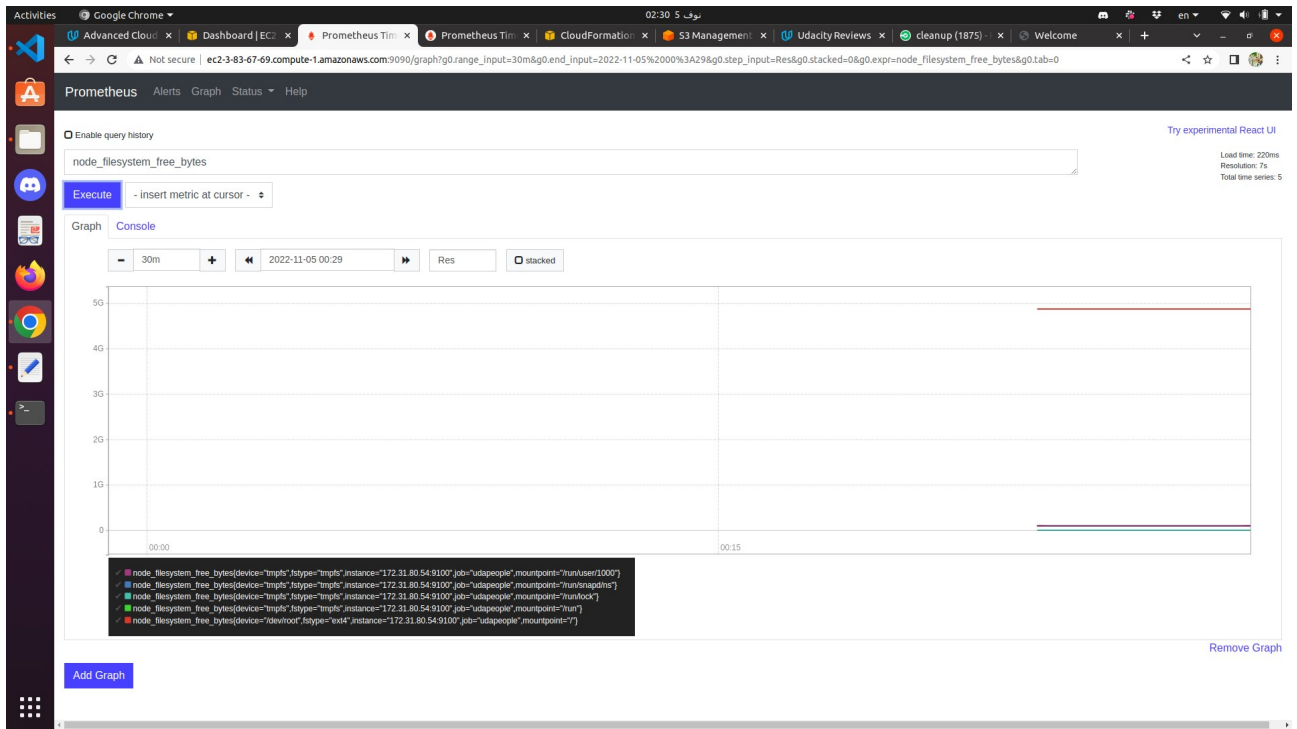
The screenshot shows a CircleCI pipeline run for a project named 'cdond-c3-projectstarter'. The pipeline is currently in the 'default' step, which has a duration of 1m 34s and is marked as 'Success'. The previous steps, 'build-frontend', 'build-backend', 'scan-frontend', 'scan-backend', 'test-frontend', 'test-backend', and 'deploy', all completed successfully. The terminal output for the current step shows the following commands and their results:

```
11 --stack-status-filter CREATE_COMPLETE --no-paginate --output text))
12
13 echo "Stack names: ${STACKS[@]}"
14
15 # Ensure OldWorkflowID is not null
16 if [ "${CIRCLE_WORKFLOW_ID:-}" != "${OldWorkflowID}" ]
17 then
18 echo "-----Removing old workflow-----"
19 aws s3 rm "s3://udapeople-${OldWorkflowID}" --recursive
20 aws s3 rm "s3://udapeople-${OldWorkflowID}" --force
21 aws cloudformation delete-stack --stack-name "udapeople-backend-${OldWorkflowID}"
22 aws cloudformation delete-stack --stack-name "udapeople-frontend-${OldWorkflowID}"
23 else
24 echo "-----No cleanup necessary-----"
25 fi
26
27 94bc776
28 OldWorkflowID: 94bc776
29 CIRCLE_WORKFLOW_ID: Bebeb2e
30 Stack names: udapeople-cloudfront-stack-Beb2e udapeople-frontend-Beb2e udapeople-backend-Beb2e udapeople-cloudfront-stack-94bc776 udapeople-frontend-573915b udapeople-backend-573915b udapeople-cloudfront-stack-573915b
31 -----Removing old workflow-----
32 delete: s3://udapeople-94bc776/118aeb59f322984ee98c.js
33 delete: s3://udapeople-94bc776/118aeb59f322984ee98c.js
34 delete: s3://udapeople-94bc776/bundle.js
35 delete: s3://udapeople-94bc776/1ceff91236080b7d9c5b0221106855.eot
36 delete: s3://udapeople-94bc776/7d234c755f55c47d2c5a.js
37 delete: s3://udapeople-94bc776/224b6d9d16679ab0282a2a7ea709eb.ttf
38 delete: s3://udapeople-94bc776/images/6ab15f4239b7d187935cf6f4ec331bf-kiwi.svg
39 delete: s3://udapeople-94bc776/index.html
40 remove_bucket: udapeople-94bc776
41 CircleCI received exit code 0
```



11 - Provide a screenshot of a graph of your EC2 instance including available memory, available disk space, and CPU usage. [SCREENSHOT11]:





12- Provide a screenshot of an alert that was sent by Prometheus.  
[SCREENSHOT12]:

