Deploy a Web Application in Docker Container on AWS Using Terraform

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Goal, tasks

- Goal – deploy a web application in Docker container by creating AWS infrastructure according to the given requirements
- Tasks:
  - Examine the specified AWS infrastructure and CI/CD pipeline requirements
  - Development of the Terraform project structure
  - Implementation of the application deployment procedure using Terraform

Terraform Project Structure

- project
  - app
  - config
  - modules
  - provider.tf
  - terraform.tf
  - variables.tf
  - main.tf
  - outputs.tf

- app
  - web
    - index.html
    - Dockerfile
  - Makefile

- config
  - dev.tfvars
  - prod.tfvars
  - secret.tfvars
  - buildspec.yml

- modules
  - s3
  - ecr
 - init-build
  - network
  - codebuild

Implementation – Main Steps

- Creating an account on AWS
- Creating an user with required permissions using AWS IAM (manually)
- Installing Terraform and Atom
- Creating Terraform modules
- Creating "main" Terraform files
- Creating configuration files (Makefile, Dockerfile, buildspec.yml , *.tfvars,)
- Creating cloud infrastructure and CI/CD pipeline with the specified requirements on AWS
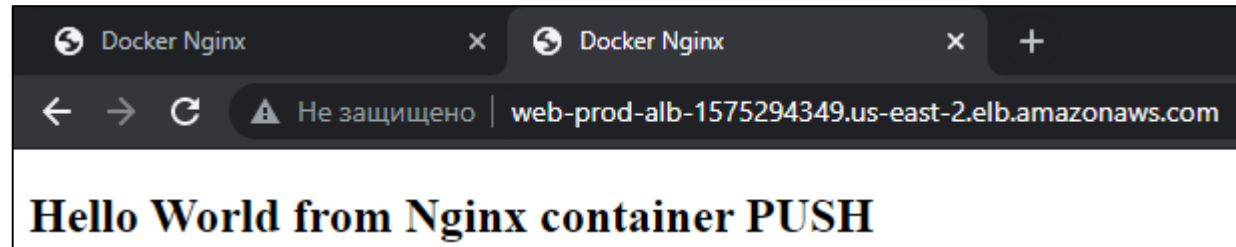- Checking results

Demo - Results

```
Outputs:

account_id = "480681066960"
alb_hostname = "web-dev-alb-1276865717.us-east-2.elb.amazonaws.com"
aws_ecr_repository_url = "480681066960.dkr.ecr.us-east-2.amazonaws.com/web-dev-nginx"
aws_region_name = "us-east-2"
codebuild_project_name = "web-dev-nginx"
dynamodb_table_name = "table-web-dev-nginx-us-east-2"
s3_bucket_arn = "arn:aws:s3:::bucket-web-dev-nginx-us-east-2"
s3_bucket_name = "bucket-web-dev-nginx-us-east-2.s3.amazonaws.com"
```


Hello World from Nginx container PUSH 1

Hello World from Nginx container PUSH 2
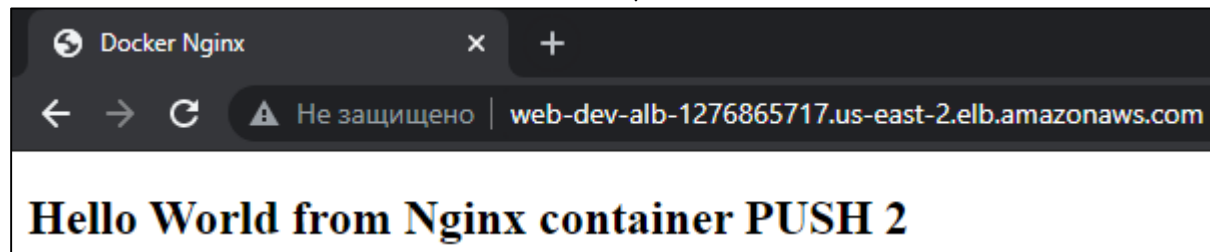
Demo - Results

```
Outputs:

account_id = "480681066960"
alb_hostname = "web-prod-alb-1575294349.us-east-2.elb.amazonaws.com"
aws_ecr_repository_url = "480681066960.dkr.ecr.us-east-2.amazonaws.com/web-prod-nginx"
aws_region_name = "us-east-2"
codebuild_project_name = "web-prod-nginx"
dynamodb_table_name = "table-web-prod-nginx-us-east-2"
s3_bucket_arn = "arn:aws:s3:::bucket-web-prod-nginx-us-east-2"
s3_bucket_name = "bucket-web-prod-nginx-us-east-2.s3.amazonaws.com"
```

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Hello World from Nginx container PUSH

Conclusions

- To deploy a web application in Docker container by creating a cloud infrastructure and CI/CD pipeline on AWS, it is advisable to use Terraform

- To implement different environments, you can use .tfvars files with specified variable values and store the .tfstate files in different S3 buckets

Thank You

Github repository:

https://github.com/mykshtompel/demo3