CI/CD Project

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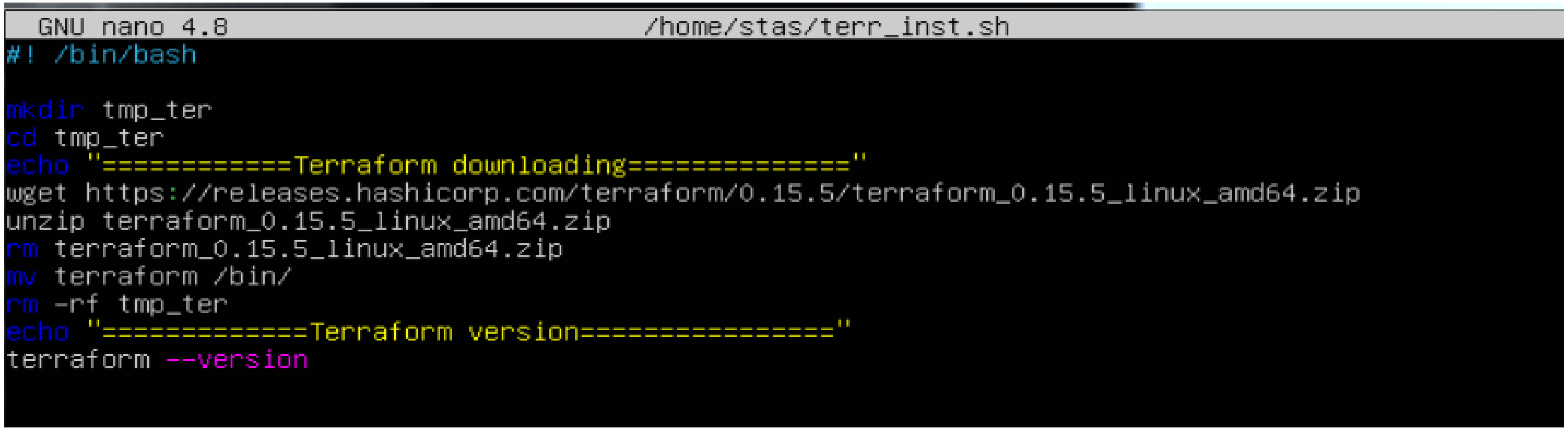
Task: create automated system of building project and push it to Target Server.

Stages:

- Running a bash script for installing Terraform
- Using Terraform to create two AWS EC2 instances.
- Using Ansible to install Docker
- Using Docker to execute Jenkins in container
- Using Jenkins to Deploy index.html from Github to Target Server.

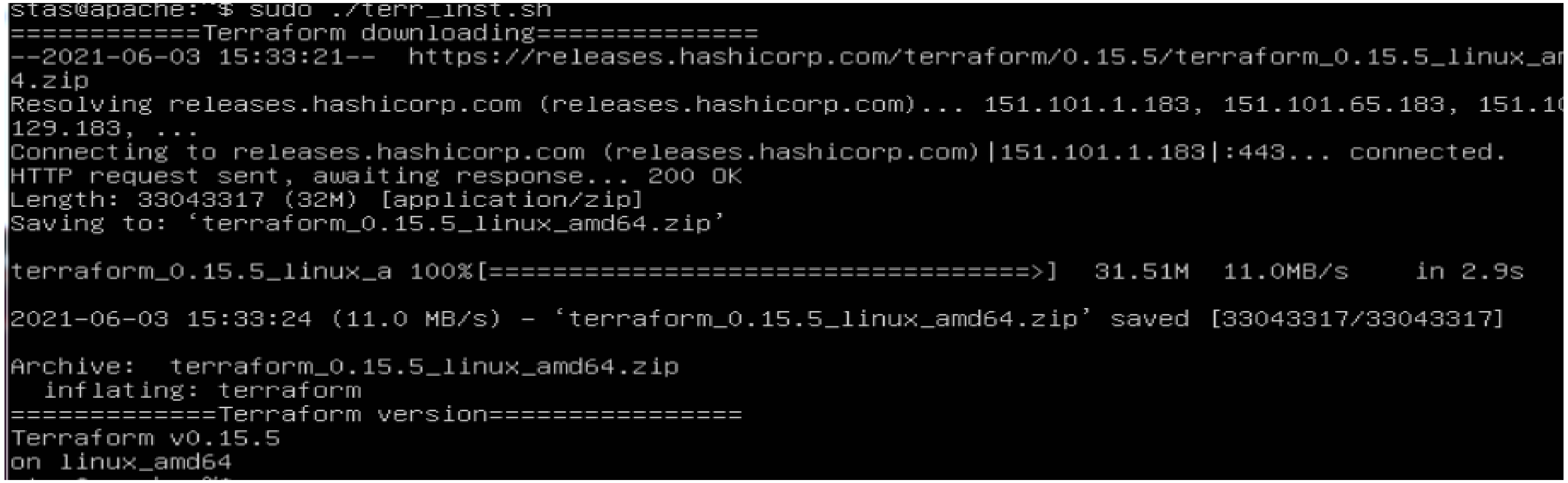
Bash script.

This is my bash script for installing terraform.



```
  GNU nano 4.8                                      /home/stas/terr_inst.sh
#! /bin/bash

mkdir tmp_ter
cd tmp_ter
echo "============Terraform downloading=============="
wget https://releases.hashicorp.com/terraform/0.15.5/terraform_0.15.5_linux_amd64.zip
unzip terraform_0.15.5_linux_amd64.zip
rm terraform_0.15.5_linux_amd64.zip
mv terraform /bin/
rm -rf tmp_ter
echo "=============Terraform version================"
terraform --version
```

The result of the script execution.

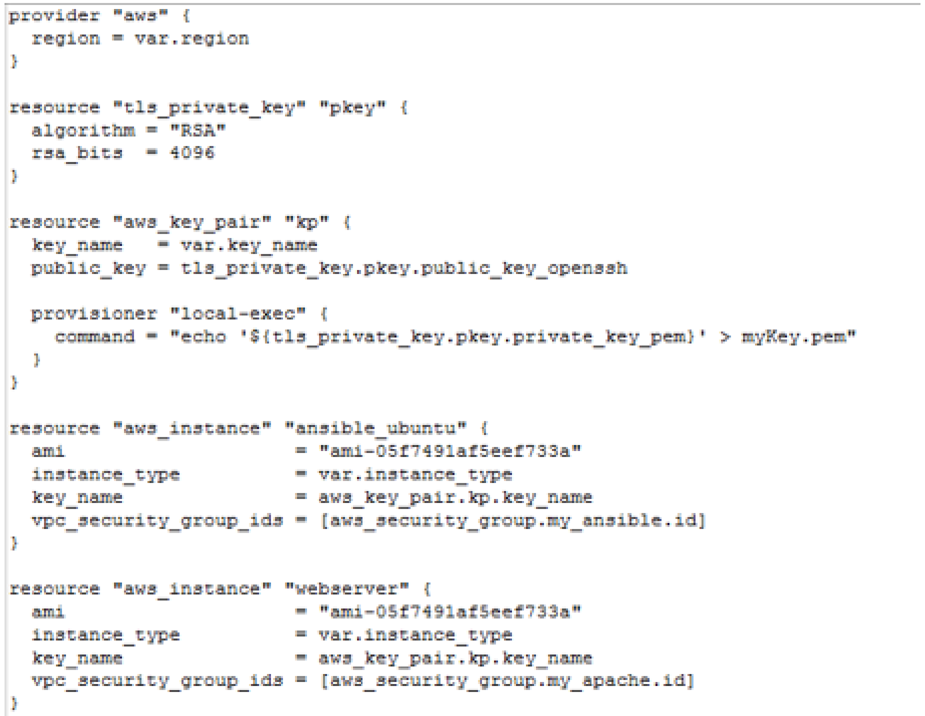


```
stas@apache:~$ sudo ./terr_inst.sh
============Terraform downloading==============
--2021-06-03 15:33:21--  https://releases.hashicorp.com/terraform/0.15.5/terraform_0.15.5_linux_ar
4.zip
Resolving releases.hashicorp.com (releases.hashicorp.com)... 151.101.1.183, 151.101.65.183, 151.10
129.183, ...
Connecting to releases.hashicorp.com (releases.hashicorp.com)|151.101.1.183|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 33043317 (32M) [application/zip]
Saving to: ‘terraform_0.15.5_linux_amd64.zip’

terraform_0.15.5_linux_a 100%[===================================>]  31.51M  11.0MB/s    in 2.9s

2021-06-03 15:33:24 (11.0 MB/s) - ‘terraform_0.15.5_linux_amd64.zip’ saved [33043317/33043317]

Archive:  terraform_0.15.5_linux_amd64.zip
  inflating: terraform
=============Terraform version================
Terraform v0.15.5
on linux_amd64
```

Terraform.

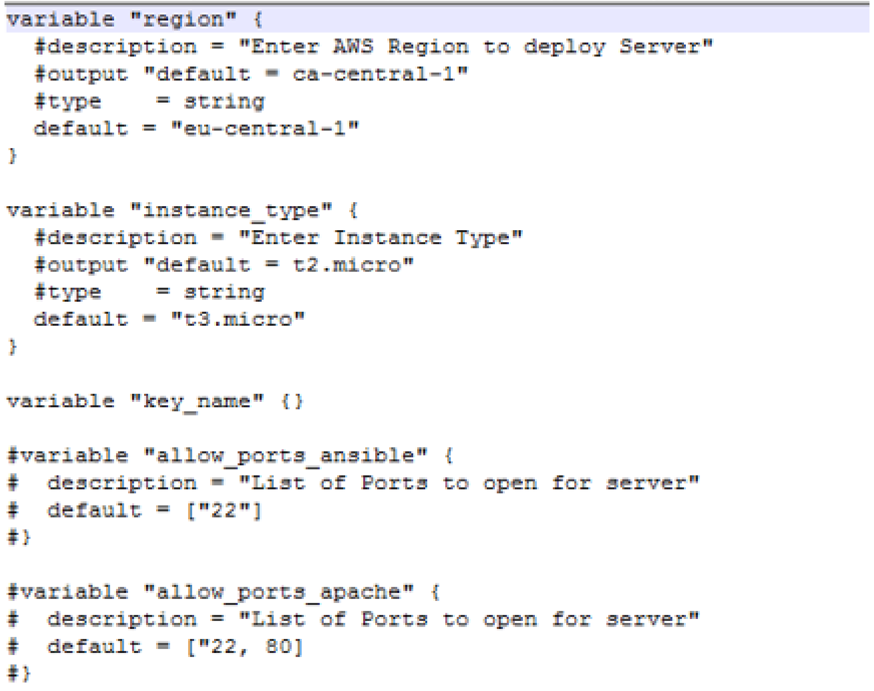
This is my Terraform script for creating two AWS EC2 instances.

Main.tf



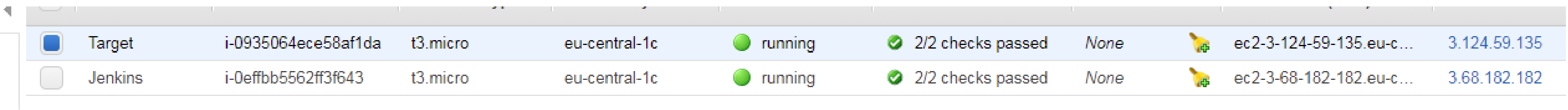
```
provider "aws" {
  region = var.region
}

resource "tls_private_key" "pkey" {
  algorithm = "RSA"
  rsa_bits  = 4096
}

resource "aws_key_pair" "kp" {
  key_name   = var.key_name
  public_key = tls_private_key.pkey.public_key_openssh

  provisioner "local-exec" {
    command = "echo '${tls_private_key.pkey.private_key_pem}' > myKey.pem"
  }
}

resource "aws_instance" "ansible_ubuntu" {
  ami                    = "ami-05f7491af5eef733a"
  instance_type          = var.instance_type
  key_name               = aws_key_pair.kp.key_name
  vpc_security_group_ids = [aws_security_group.my_ansible.id]
}

resource "aws_instance" "webserver" {
  ami                    = "ami-05f7491af5eef733a"
  instance_type          = var.instance_type
  key_name               = aws_key_pair.kp.key_name
  vpc_security_group_ids = [aws_security_group.my_apache.id]
}
```

Variables.tf



```
variable "region" {
  #description = "Enter AWS Region to deploy Server"
  #output "default = ca-central-1"
  #type     = string
  default = "eu-central-1"
}

variable "instance_type" {
  #description = "Enter Instance Type"
  #output "default = t2.micro"
  #type     = string
  default = "t3.micro"
}

variable "key_name" {}

#variable "allow_ports_ansible" {
#   description = "List of Ports to open for server"
#   default = ["22"]
#}

#variable "allow_ports_apache" {
#   description = "List of Ports to open for server"
#   default = ["22", 80]
#}
```

The result or Terraform script.



☑	Target	i-0935064ece58af1da	t3.micro	eu-central-1c	● running	✓ 2/2 checks passed	None		ec2-3-124-59-135.eu-c...	3.124.59.135
☐	Jenkins	i-0effbb5562ff3f643	t3.micro	eu-central-1c	● running	✓ 2/2 checks passed	None		ec2-3-68-182-182.eu-c...	3.68.182.182

Ansible.

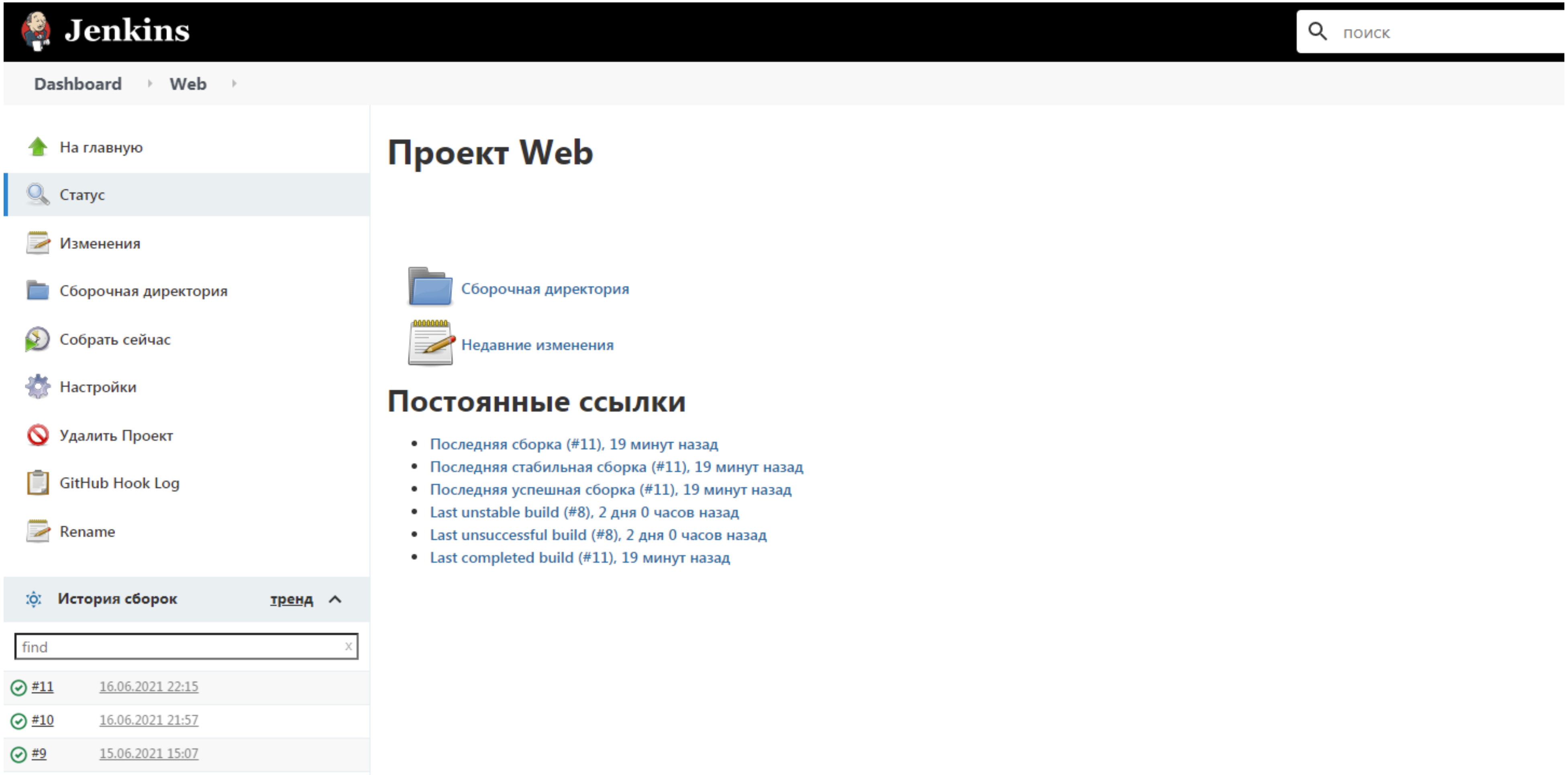
This is my Ansible script to install Docker.

```
---
- name: Installing Docker
  hosts: all
  become: yes

#  vars:
# create_containers: 1
#  default_container_name: docker
#  default_container_image: ubuntu
#  default_container_command: sleep 1d

  tasks:
    - name: Install aptitude using apt
      apt: name=aptitude state=latest update_cache=yes force_apt_get=yes

    - name: Install required system packages
      apt: name={{ item }} state=latest update_cache=yes
      loop: [ 'apt-transport-https', 'ca-certificates', 'curl', 'software-properties-common', 'python3-pip', 'virtualenv', 'python3-setuptools']

    - name: Add Docker GPG apt Key
      apt_key:
        url: https://download.docker.com/linux/ubuntu/gpg
        state: present

    - name: Add Docker Repository
      apt_repository:
        repo: deb https://download.docker.com/linux/ubuntu bionic stable
        state: present

    - name: Update apt and install Docker-ce
      apt: update_cache=yes name=docker-ce state=latest

    - name: Install Docker Module for Python
      pip:
        name: docker
```

I run Jenkins in a container with the command

sudo docker run –p 8080:8080 –p 50000:50000 –d –v jenkins_home:/var/jenkins_home jenkins/jenkins:lts

In Jenkins, I set up a build that picks up files frog Github after receiving notifications by webhook.



#11 16.06.2021 22:15
#10 16.06.2021 21:57
#9 15.06.2021 15:07

Проект Web

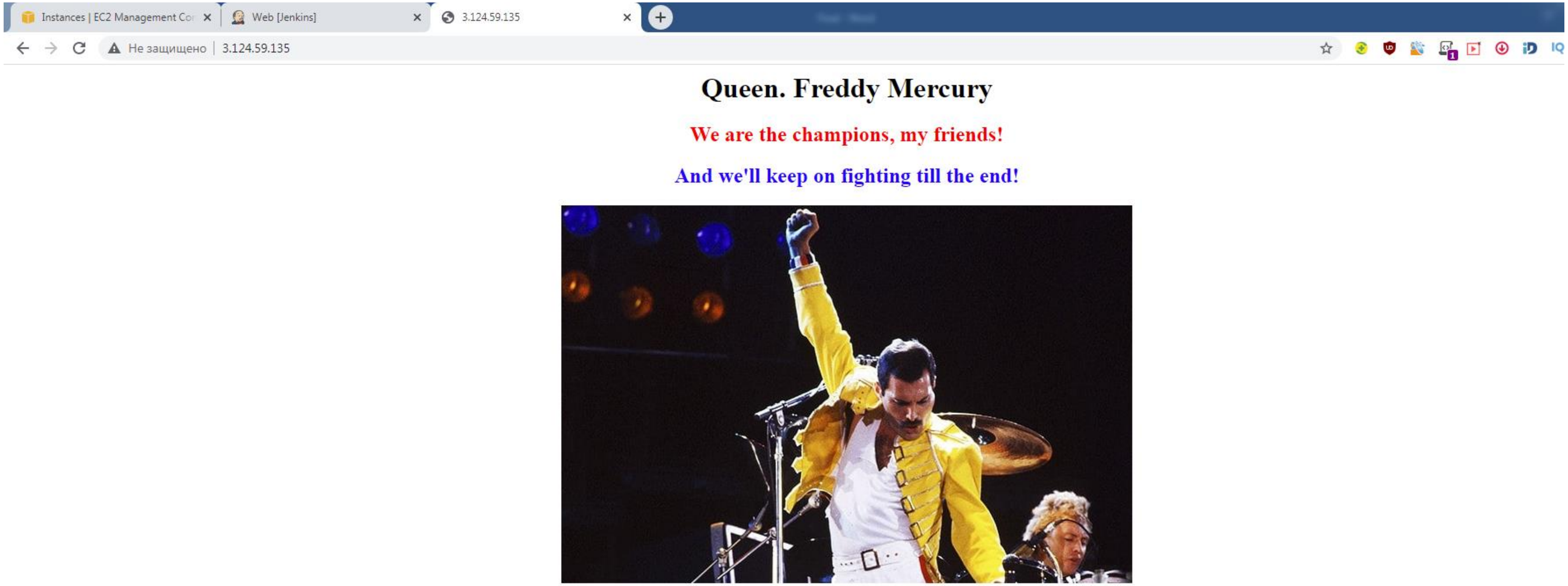
Сборочная директория

Недавние изменения

Постоянные ссылки

- Последняя сборка (#11), 19 минут назад
- Последняя стабильная сборка (#11), 19 минут назад
- Последняя успешная сборка (#11), 19 минут назад
- Last unstable build (#8), 2 дня 0 часов назад
- Last unsuccessful build (#8), 2 дня 0 часов назад
- Last completed build (#11), 19 минут назад

We can see the result of the work on the webserver, which is configured on the AWS EC2 instance.



Queen. Freddy Mercury

We are the champions, my friends!

And we'll keep on fighting till the end!

That's all!

Thanks for attention.