МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ
РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«САМАРСКИЙ НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ
УНИВЕРСИТЕТ ИМЕНИ АКАДЕМИКА С.П. КОРОЛЕВА»

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Кафедра геоинформатики и информационной безопасности

Отчёт по лабораторной работе №2
«Git and CI»

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Steps

1. Gitlab setup (on VM/Docker/Minikube) (VM variant) Download Gitlab-Bitnami vm image from https://bitnami.com/stack/gitlab/virtual-machine

2. Create repo in gitlab with sources of your app

Upload https://github.com/olindata/sample-gitlabci-cpp-project to your Gitlab server.

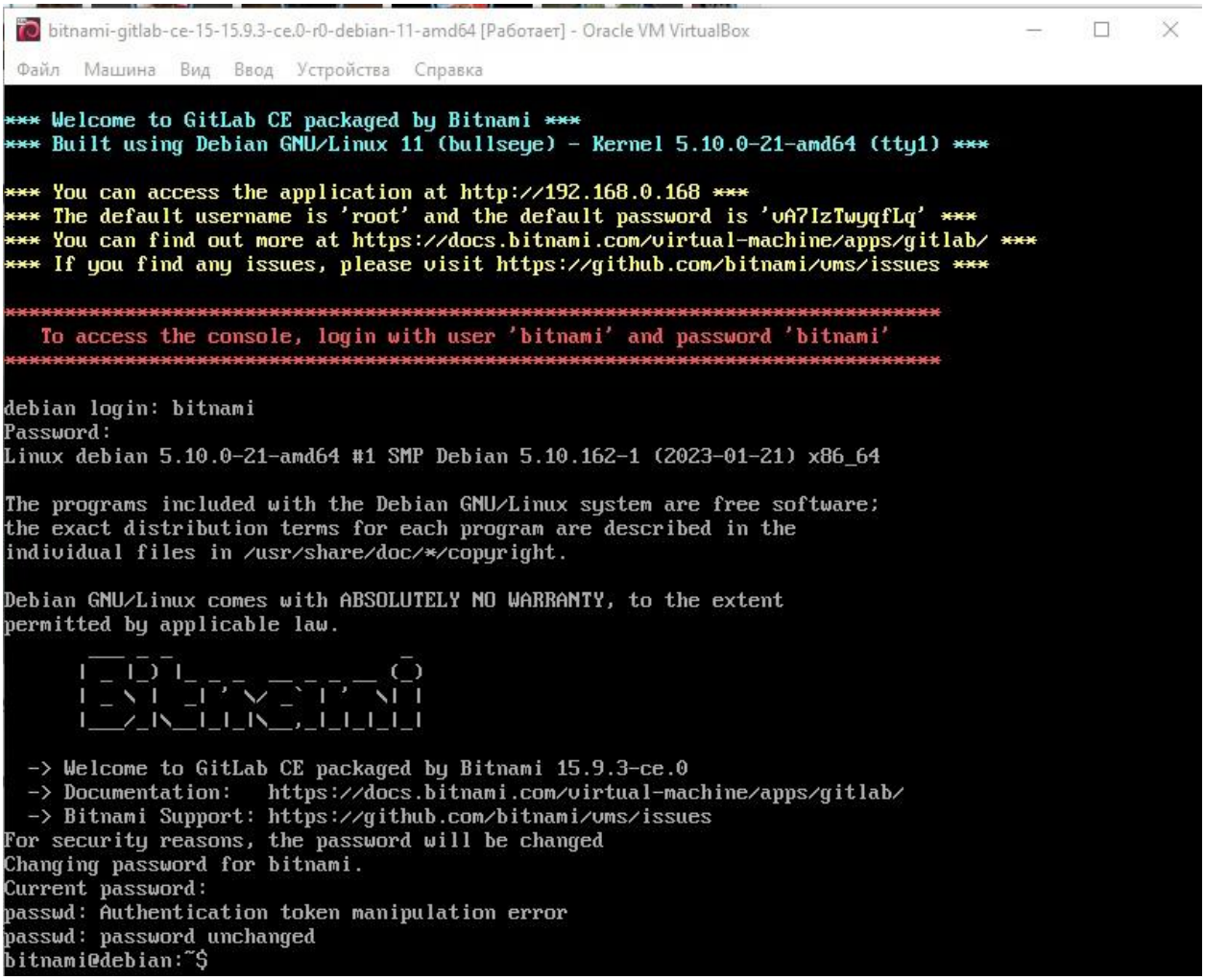
3. Setup runner (Gitlab, Docker, Jenkins, ArgroCD)

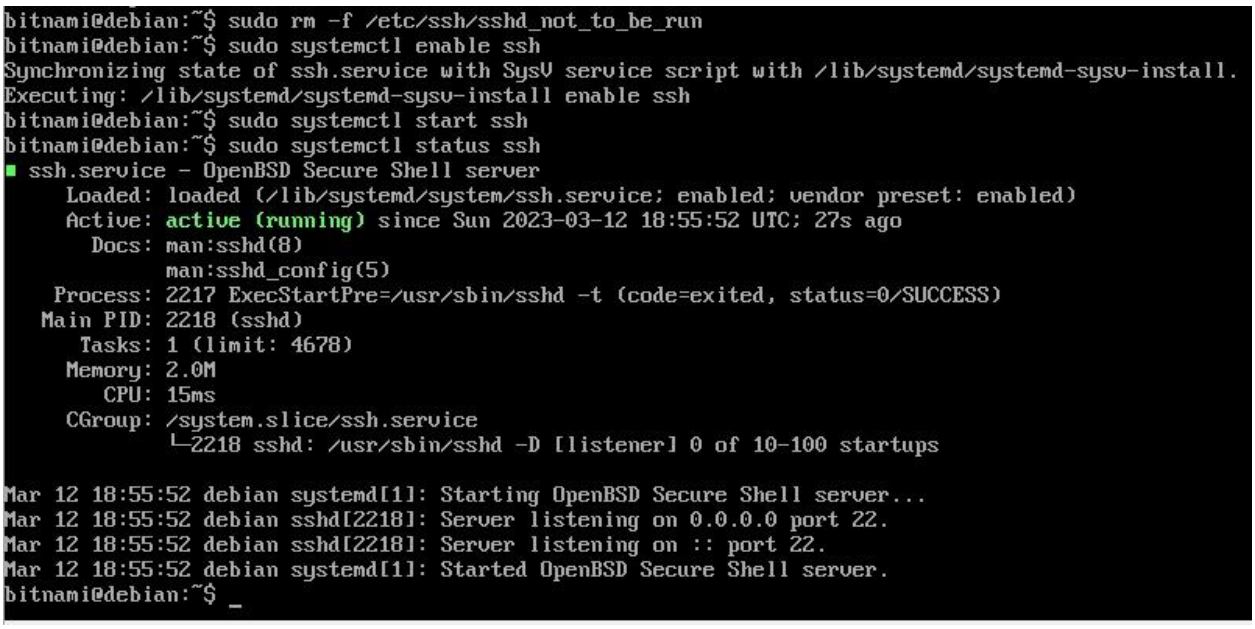
4. Edit .gitlab-ci.yml to run runner in shell mode (without Docker)

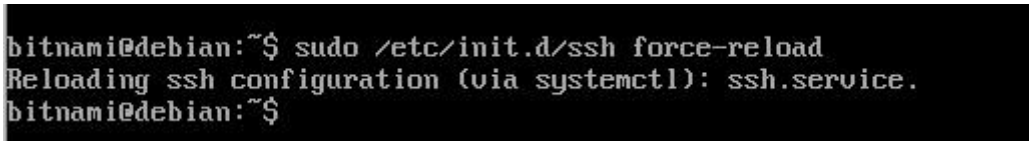
5. Run Pipeline: CI/CD > Pipelines > Run pipeline

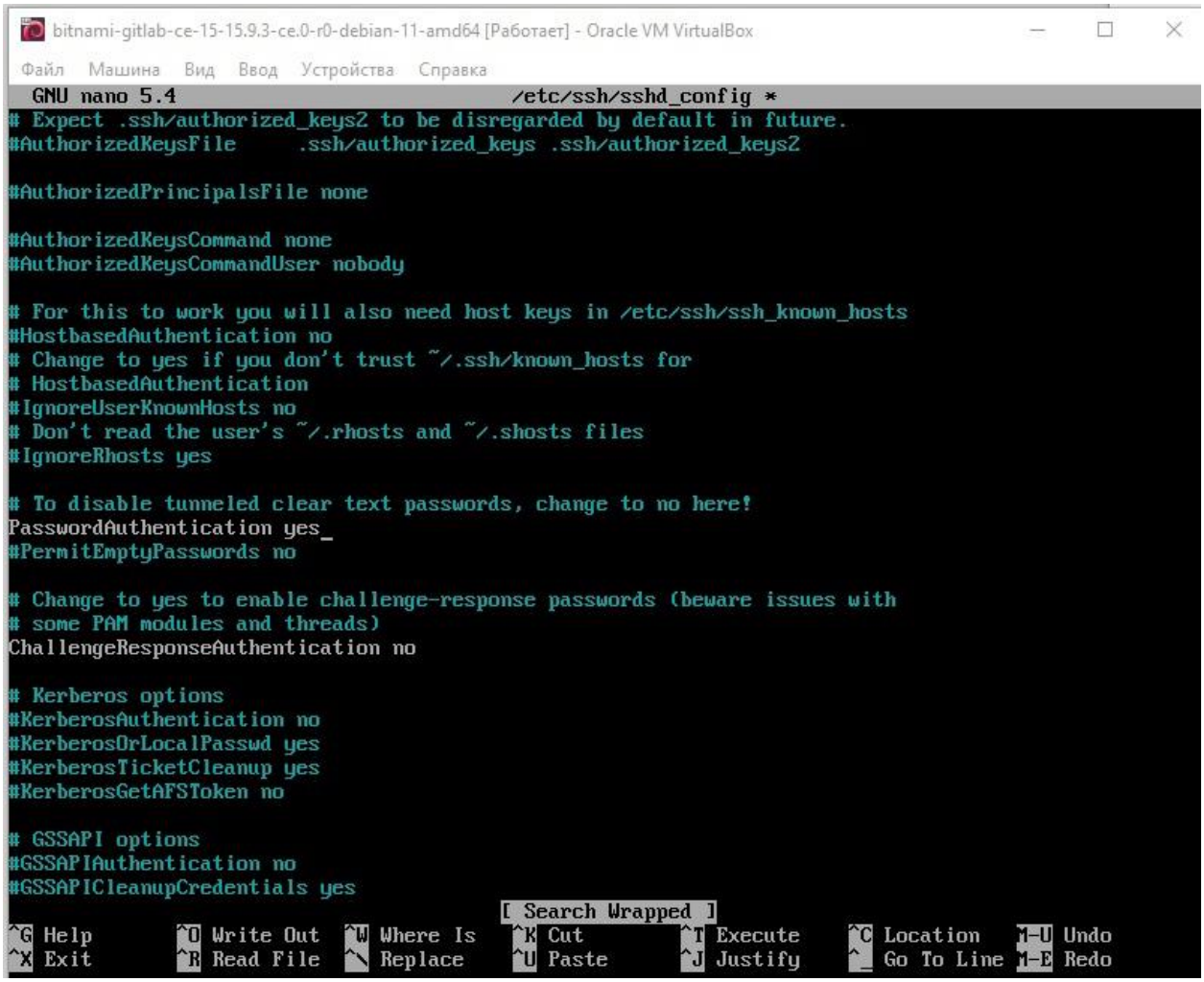
6. Create Assignment2 report and send it by e-mail (docx/link to google doc) or through creation repo fork + pull request.

Steps 1.


bitnami-gitlab-ce-15-15.9.3-ce.0-r0-debian-11-amd64 [Работает] - Oracle VM VirtualBox
Файл Машина Вид Ввод Устройства Справка
*** Welcome to GitLab CE packaged by Bitnami ***
*** Built using Debian GNU/Linux 11 (bullseye) - Kernel 5.10.0-21-amd64 (tty1) ***
*** You can access the application at http://192.168.0.168 ***
*** The default username is 'root' and the default password is 'vA7IzTwyqfLq' ***
*** You can find out more at https://docs.bitnami.com/virtual-machine/apps/gitlab/ ***
*** If you find any issues, please visit https://github.com/bitnami/vms/issues ***
To access the console, login with user 'bitnami' and password 'bitnami'
debian login: bitnami
Password:
Linux debian 5.10.0-21-amd64 #1 SMP Debian 5.10.162-1 (2023-01-21) x86_64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
-> Welcome to GitLab CE packaged by Bitnami 15.9.3-ce.0
-> Documentation: https://docs.bitnami.com/virtual-machine/apps/gitlab/
-> Bitnami Support: https://github.com/bitnami/vms/issues
For security reasons, the password will be changed
Changing password for bitnami.
Current password:
passwd: Authentication token manipulation error
passwd: password unchanged
bitnami@debian:~$


bitnami@debian:~$ sudo rm -f /etc/ssh/sshd_not_to_be_run
bitnami@debian:~$ sudo systemctl enable ssh
Synchronizing state of ssh.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable ssh
bitnami@debian:~$ sudo systemctl start ssh
bitnami@debian:~$ sudo systemctl status ssh
ssh.service - OpenBSD Secure Shell server
Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
Active: active (running) since Sun 2023-03-12 18:55:52 UTC; 27s ago
Docs: man:sshd(8)
man:sshd_config(5)
Process: 2217 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
Main PID: 2218 (sshd)
Tasks: 1 (limit: 4678)
Memory: 2.0M
CPU: 15ms
CGroup: /system.slice/ssh.service
└─2218 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
Mar 12 18:55:52 debian systemd[1]: Starting OpenBSD Secure Shell server...
Mar 12 18:55:52 debian sshd[2218]: Server listening on 0.0.0.0 port 22.
Mar 12 18:55:52 debian sshd[2218]: Server listening on :: port 22.
Mar 12 18:55:52 debian systemd[1]: Started OpenBSD Secure Shell server.
bitnami@debian:~$

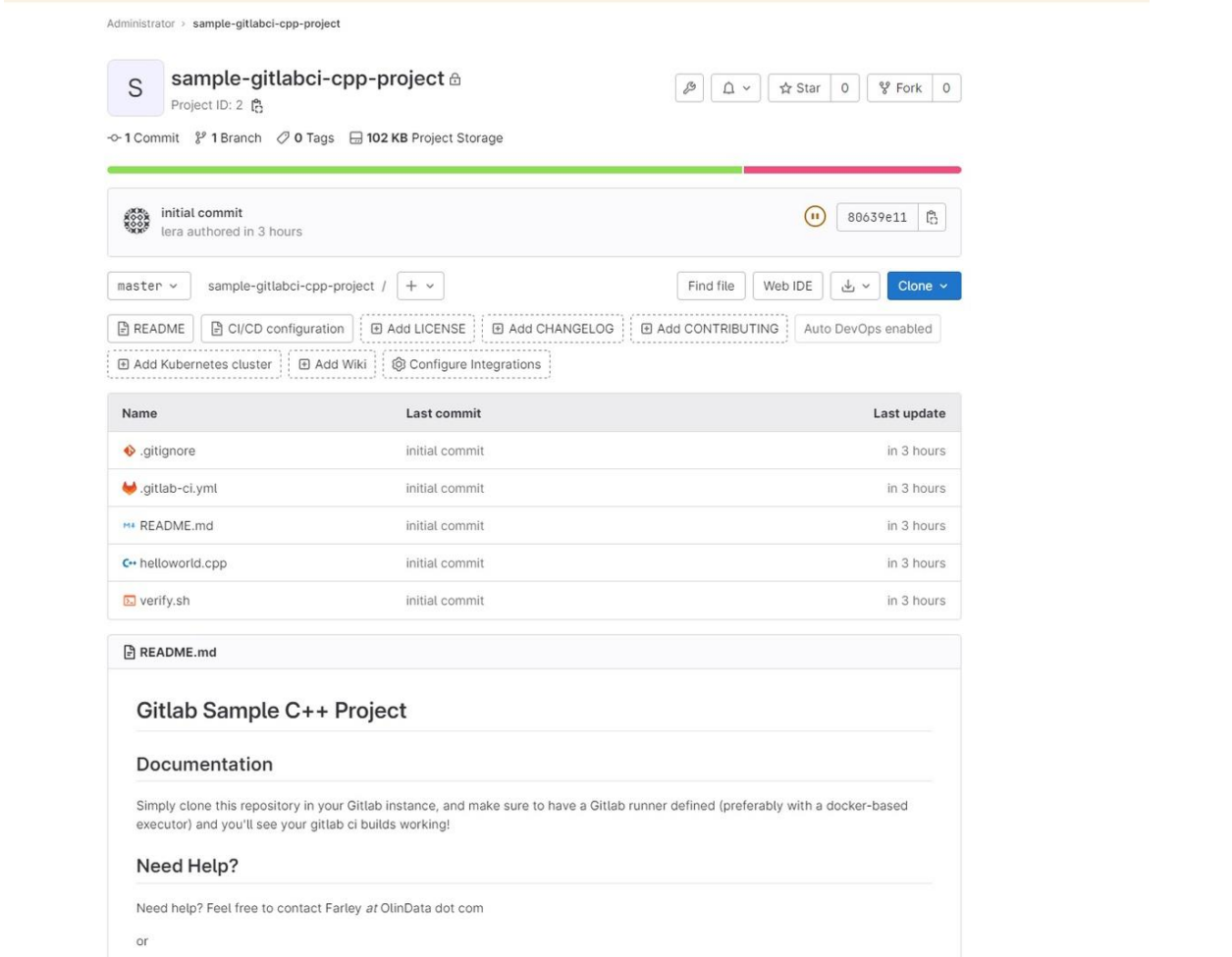

bitnami@debian:~$ sudo /etc/init.d/ssh force-reload
Reloading ssh configuration (via systemctl): ssh.service.
bitnami@debian:~$




```
bitnami@debian:~$ wget https://github.com/olindata/sample-gitlabci-cpp-project/archive/refs/heads/ma
ster.zip
--2023-03-12 20:38:19--  https://github.com/olindata/sample-gitlabci-cpp-project/archive/refs/heads/
master.zip
Resolving github.com (github.com)... 140.82.121.4
Connecting to github.com (github.com)|140.82.121.4|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/olindata/sample-gitlabci-cpp-project/zip/refs/heads/master [fo
llowing]
--2023-03-12 20:38:20--  https://codeload.github.com/olindata/sample-gitlabci-cpp-project/zip/refs/h
eads/master
Resolving codeload.github.com (codeload.github.com)... 140.82.121.10
Connecting to codeload.github.com (codeload.github.com)|140.82.121.10|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/zip]
Saving to: ■master.zip■

master.zip                  [ <=>                                ]   2.05K  --.-KB/s    in 0s

2023-03-12 20:38:20 (23.7 MB/s) - ■master.zip■ saved [2095]

bitnami@debian:~$ unzip master.zip
Archive:  master.zip
4af9cf42b539a1a094014ff326b3b3bad10f189a
   creating: sample-gitlabci-cpp-project-master/
 extracting: sample-gitlabci-cpp-project-master/.gitignore
  inflating: sample-gitlabci-cpp-project-master/.gitlab-ci.yml
  inflating: sample-gitlabci-cpp-project-master/README.md
  inflating: sample-gitlabci-cpp-project-master/helloworld.cpp
  inflating: sample-gitlabci-cpp-project-master/verify.sh
bitnami@debian:~$
```

Step 2

```
bitnami@debian:~/sample-gitlabci-cpp-project-master$ git commit -m "initial commit"
[master (root-commit) 80639e1] initial commit
 5 files changed, 66 insertions(+)
 create mode 100644 .gitignore
 create mode 100644 .gitlab-ci.yml
 create mode 100644 README.md
 create mode 100644 helloworld.cpp
 create mode 100755 verify.sh
bitnami@debian:~/sample-gitlabci-cpp-project-master$ git push -u origin --all
Username for 'https://192.168.0.168': root
Password for 'https://root@192.168.0.168':
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (7/7), 1.28 KiB | 1.28 MiB/s, done.
Total 7 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote:
remote: The private project root/sample-gitlabci-cpp-project was successfully created.
remote:
remote: To configure the remote, run:
remote:   git remote add origin https://192.168.0.168/root/sample-gitlabci-cpp-project.git
remote:
remote: To view the project, visit:
remote:   https://192.168.0.168/root/sample-gitlabci-cpp-project
remote:
remote:
remote:
To https://192.168.0.168/root/sample-gitlabci-cpp-project.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
bitnami@debian:~/sample-gitlabci-cpp-project-master$ _
```

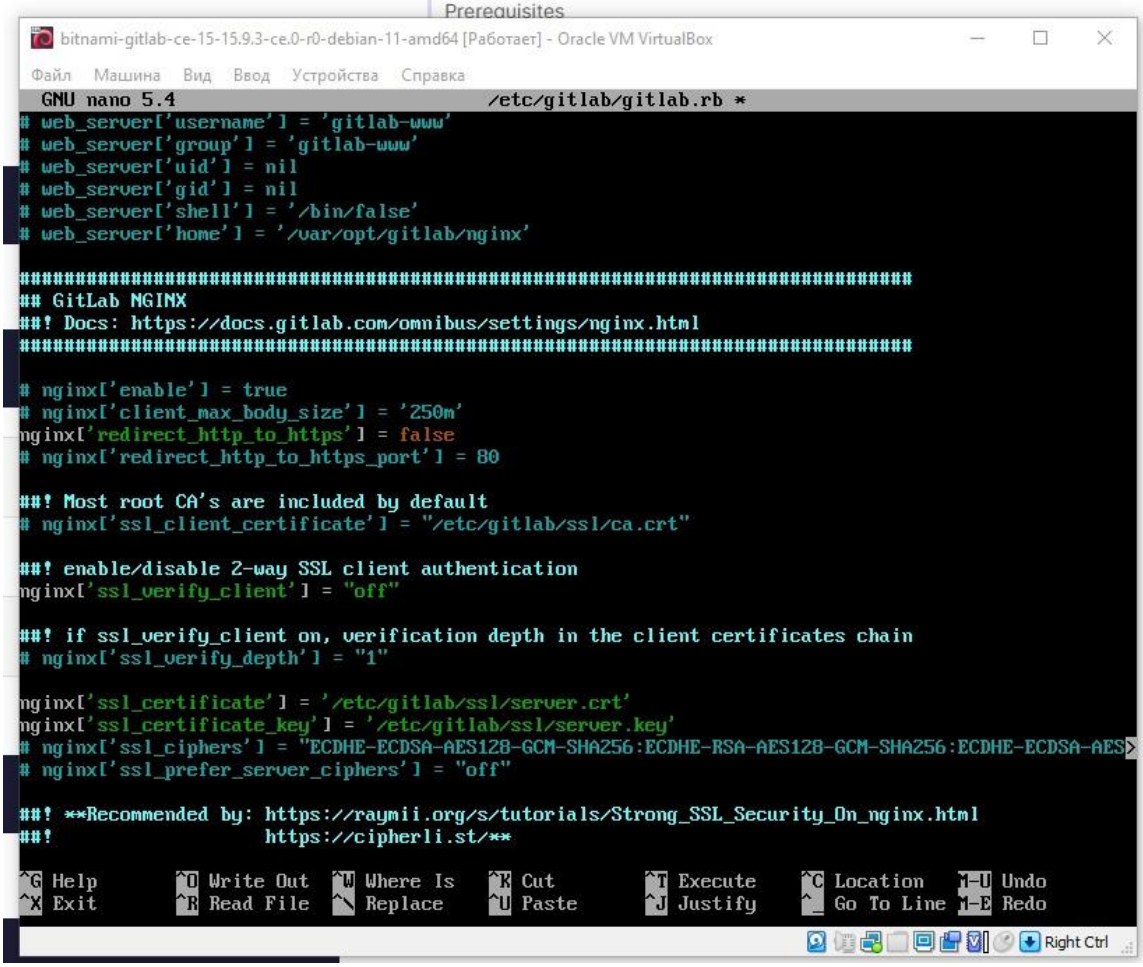


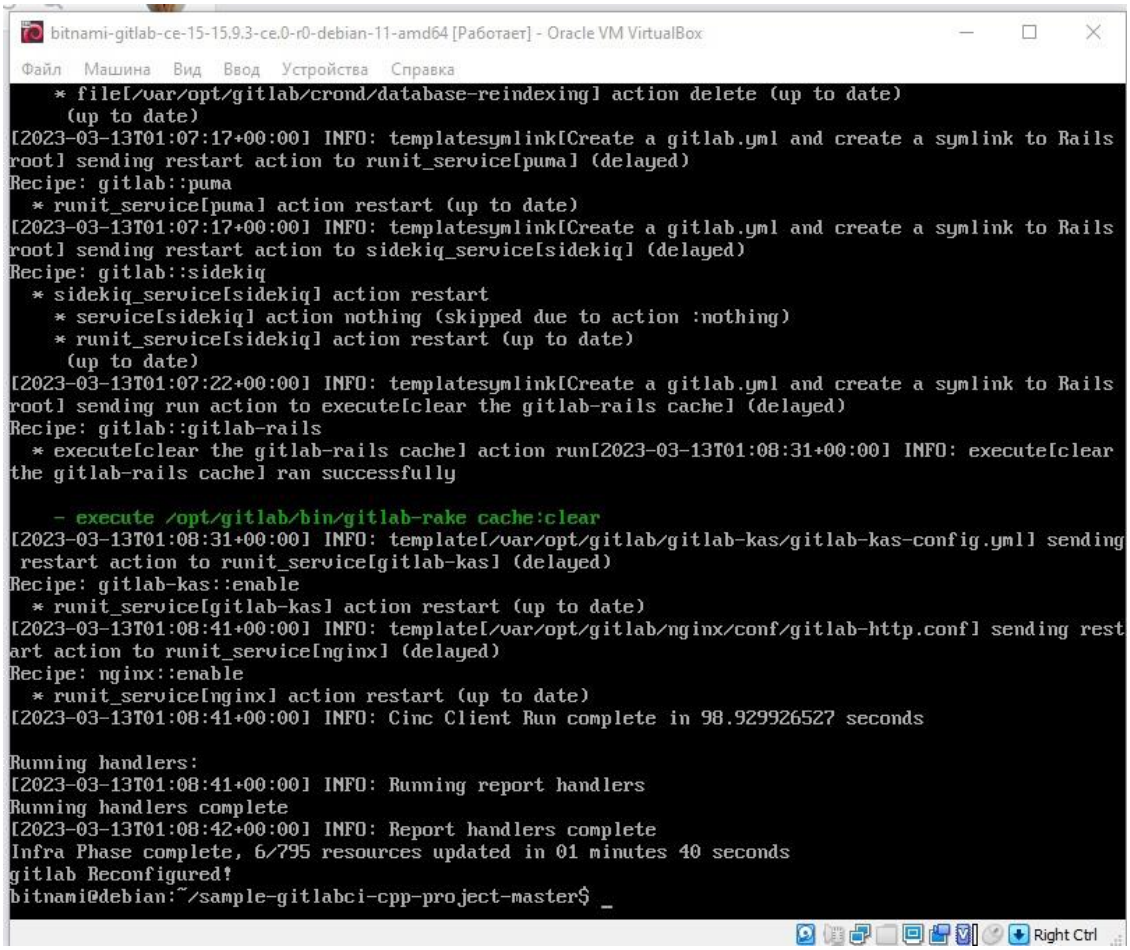
Step 3

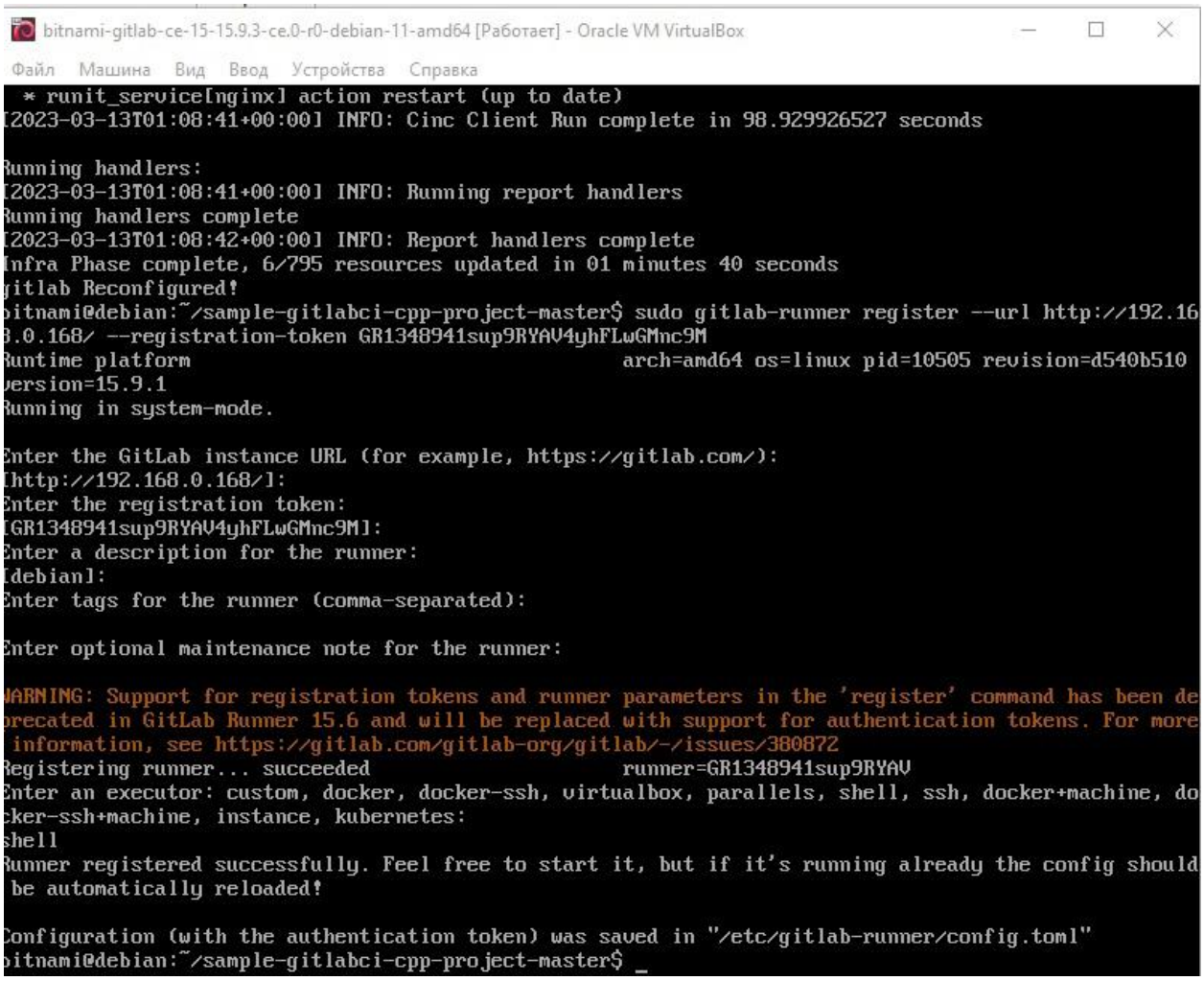
```
bitnami@debian:~/sample-gitlabci-cpp-project-master$ curl -L "https://packages.gitlab.com/install/re
positories/runner/gitlab-runner/script.deb.sh" | sudo bash
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  6885  100  6885    0     0  17790      0 --:--:-- --:--:-- --:--:-- 17790
Detected operating system as debian/bullseye.
Checking for curl...
Detected curl...
Checking for gpg...
Detected gpg...
Running apt-get update... done.
Installing debian-archive-keyring which is needed for installing
apt-transport-https on many Debian systems.
Installing apt-transport-https... done.
Installing /etc/apt/sources.list.d/runner_gitlab-runner.list...done.
Importing packagecloud gpg key... done.
Running apt-get update... done.
```

```
bitnami@debian:~/sample-gitlabci-cpp-project-master$ sudo apt install gitlab-runner
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  docker-engine
The following NEW packages will be installed:
  gitlab-runner
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 449 MB of archives.
After this operation, 488 MB of additional disk space will be used.
Get:1 https://packages.gitlab.com/runner/gitlab-runner/debian bullseye/main amd64 gitlab-runner amd6
4 15.9.1 [449 MB]
Fetched 449 MB in 22s (20.4 MB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package gitlab-runner.
(Reading database ... 110811 files and directories currently installed.)
Preparing to unpack .../gitlab-runner_15.9.1_amd64.deb ...
Unpacking gitlab-runner (15.9.1) ...
Setting up gitlab-runner (15.9.1) ...
GitLab Runner: creating gitlab-runner...
Home directory skeleton not used
Runtime platform                                    arch=amd64 os=linux pid=9623 revision=d540b510 v
ersion=15.9.1
gitlab-runner: the service is not installed
Runtime platform                                    arch=amd64 os=linux pid=9629 revision=d540b510 v
ersion=15.9.1
gitlab-ci-multi-runner: the service is not installed
Runtime platform                                    arch=amd64 os=linux pid=9645 revision=d540b510 v
ersion=15.9.1
Runtime platform                                    arch=amd64 os=linux pid=9684 revision=d540b510 v
ersion=15.9.1
INFO: Docker installation not found, skipping clear-docker-cache
bitnami@debian:~/sample-gitlabci-cpp-project-master$
```

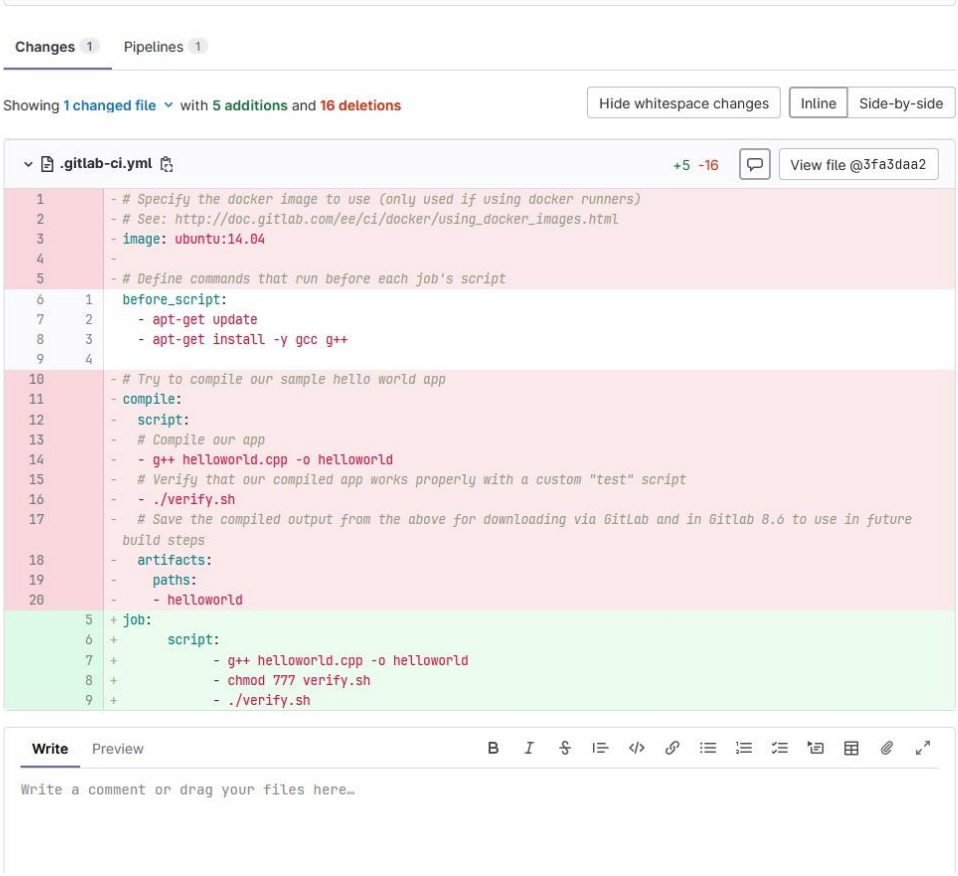
Prerequisites



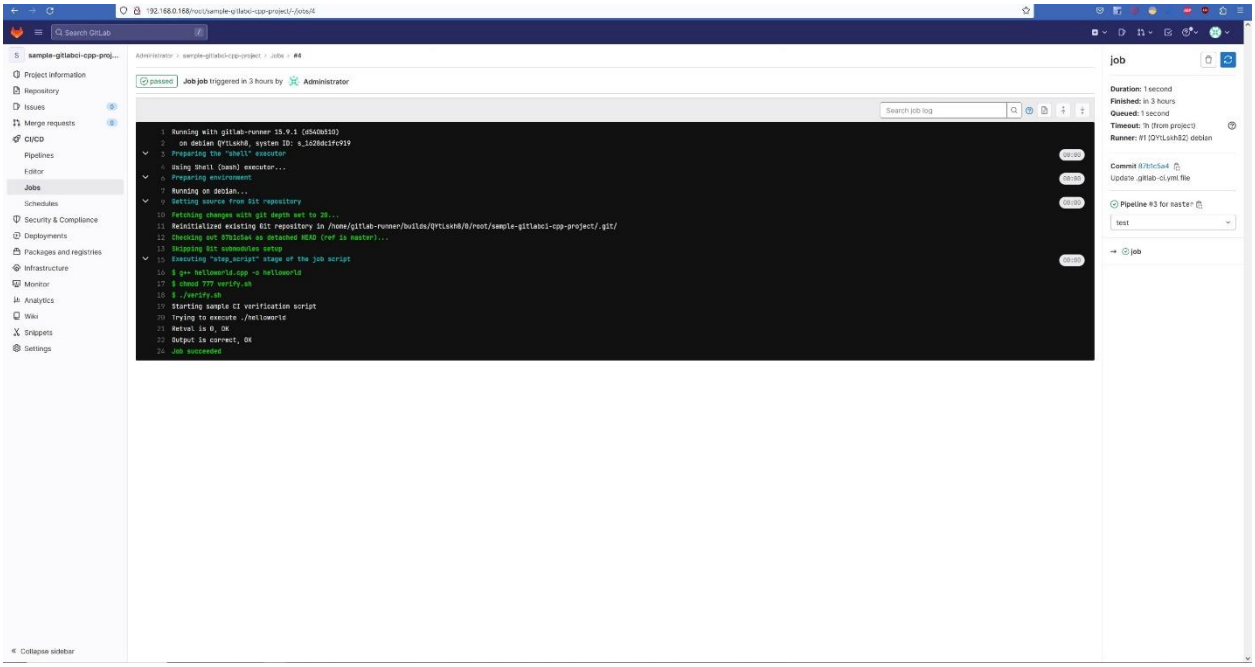



bitnami-gitlab-ce-15-15.9.3-ce.0-r0-debian-11-amd64 [Работает] - Oracle VM VirtualBox
Файл Машина Вид Ввод Устройства Справка
* runit_service[nginx] action restart (up to date)
[2023-03-13T01:08:41+00:00] INFO: Cinc Client Run complete in 98.929926527 seconds
Running handlers:
[2023-03-13T01:08:41+00:00] INFO: Running report handlers
Running handlers complete
[2023-03-13T01:08:42+00:00] INFO: Report handlers complete
Infra Phase complete, 6/795 resources updated in 01 minutes 40 seconds
gitlab Reconfigured!
bitnami@debian:~/sample-gitlabci-cpp-project-master$ sudo gitlab-runner register --url http://192.16
8.0.168/ --registration-token GR1348941sup9RYAV4yhFLwGMnc9M
Runtime platform arch=amd64 os=linux pid=10505 revision=d540b510
version=15.9.1
Running in system-mode.
Enter the GitLab instance URL (for example, https://gitlab.com/):
[http://192.168.0.168/]:
Enter the registration token:
[GR1348941sup9RYAV4yhFLwGMnc9M]:
Enter a description for the runner:
[debian]:
Enter tags for the runner (comma-separated):
Enter optional maintenance note for the runner:
WARNING: Support for registration tokens and runner parameters in the 'register' command has been de
precated in GitLab Runner 15.6 and will be replaced with support for authentication tokens. For more
information, see https://gitlab.com/gitlab-org/gitlab/-/issues/380872
Registering runner... succeeded runner=GR1348941sup9RYAV
Enter an executor: custom, docker, docker-ssh, virtualbox, parallels, shell, ssh, docker+machine, do
cker-ssh+machine, instance, kubernetes:
shell
Runner registered successfully. Feel free to start it, but if it's running already the config should
be automatically reloaded!
Configuration (with the authentication token) was saved in "/etc/gitlab-runner/config.toml"
bitnami@debian:~/sample-gitlabci-cpp-project-master$

Step 4


Changes 1
Pipelines 1
Showing 1 changed file with 5 additions and 16 deletions
Hide whitespace changes
Inline
Side-by-side
.gitlab-ci.yml
+5 -16
View file @3fa3daa2
- # Specify the docker image to use (only used if using docker runners)
- # See: http://doc.gitlab.com/ee/ci/docker/using_docker_images.html
- image: ubuntu:14.04
-
- # Define commands that run before each job's script
before_script:
- apt-get update
- apt-get install -y gcc g++
- # Try to compile our sample hello world app
- compile:
- script:
- # Compile our app
- - g++ helloworld.cpp -o helloworld
- # Verify that our compiled app works properly with a custom "test" script
- - ./verify.sh
- # Save the compiled output from the above for downloading via GitLab and in Gitlab 8.6 to use in future build steps
- artifacts:
- paths:
- - helloworld
+ job:
+ script:
+ - g++ helloworld.cpp -o helloworld
+ - chmod 777 verify.sh
+ - ./verify.sh
Write
Preview
Write a comment or drag your files here…

Step 5


job
Duration: 1 second
Finished: in 3 hours
Queued: 1 second
Timeout: 1h (from project)
Runner: #1 (QYtLskh8Z) debian
Commit 87b1c5a4
Update .gitlab-ci.yml file
Pipeline #3 for master
test
job
Running with gitlab-runner 15.9.1 (d540b510)
on debian QYtLskh8, system ID: s_1c20dc1fc919
Preparing the "shell" executor
Using Shell (bash) executor...
Preparing environment
Running on debian...
Getting source from Git repository
Fetching changes with git depth set to 20...
Reinitialized existing Git repository in /home/gitlab-runner/builds/QYtLskh8/0/root/sample-gitlabci-cpp-project/.git/
Checking out 87b1c5a4 as detached HEAD (ref is master)...
Skipping Git submodules setup
Executing "step_script" stage of the job script
$ g++ helloworld.cpp -o helloworld
$ chmod 777 verify.sh
$ ./verify.sh
Starting sample CI verification script
Trying to execute ./helloworld
Retval is 0, OK
Output is correct, OK
Job succeeded