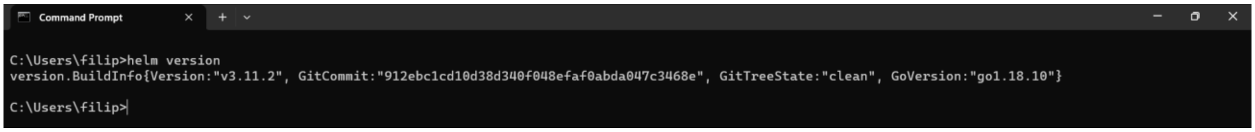
Final Project Assessment

Deploy a WordPress on Kubernetes (using Minicube) with Helm and automation with Jenkins.

Prerequisites:

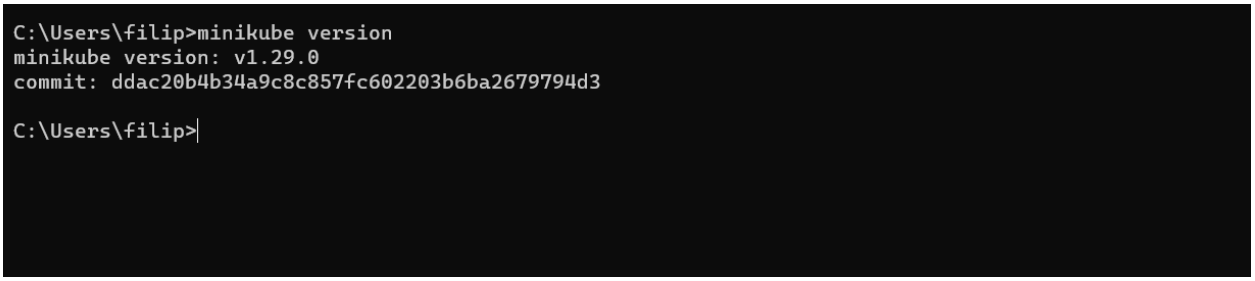
1.Install the necessary tools: Minicube, Helm and Jenkins.

Helm:

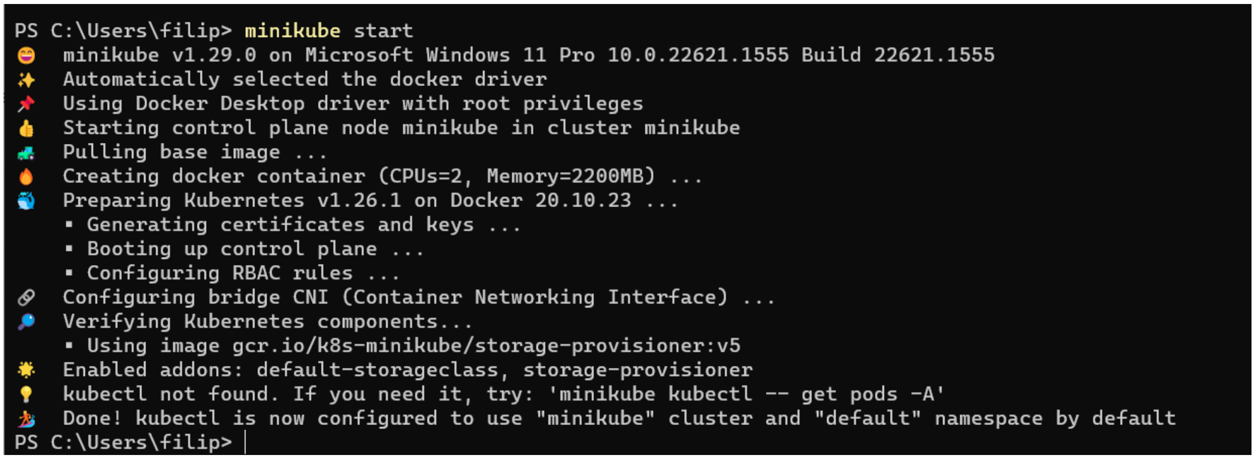


```
C:\Users\filip>helm version
version.BuildInfo{Version:"v3.11.2", GitCommit:"912ebc1cd10d38d340f048efaf0abda047c3468e", GitTreeState:"clean", GoVersion:"go1.18.10"}

C:\Users\filip>
```

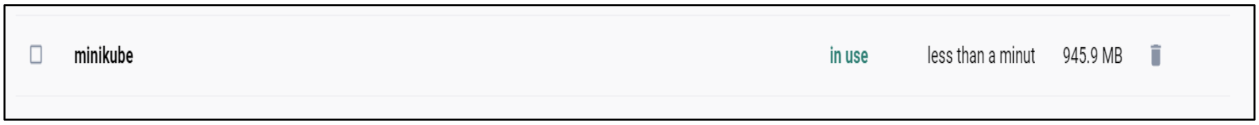
Minikube:



```
C:\Users\filip>minikube version
minikube version: v1.29.0
commit: ddac20b4b34a9c8c857fc602203b6ba2679794d3

C:\Users\filip>
```

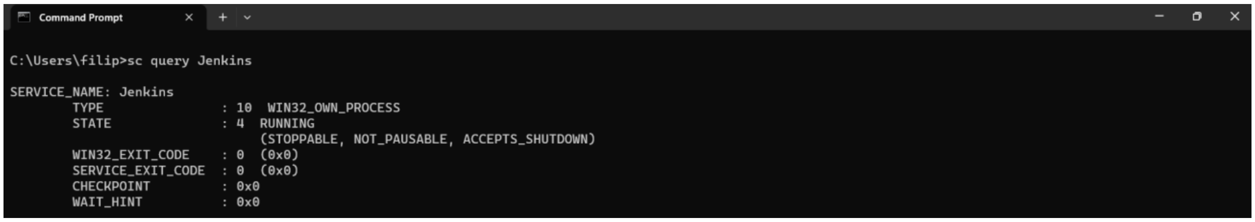


```
PS C:\Users\filip> minikube start
😄  minikube v1.29.0 on Microsoft Windows 11 Pro 10.0.22621.1555 Build 22621.1555
✨  Automatically selected the docker driver
📌  Using Docker Desktop driver with root privileges
👍  Starting control plane node minikube in cluster minikube
🚜  Pulling base image ...
🔥  Creating docker container (CPUs=2, Memory=2200MB) ...
🐳  Preparing Kubernetes v1.26.1 on Docker 20.10.23 ...
    ▪ Generating certificates and keys ...
    ▪ Booting up control plane ...
    ▪ Configuring RBAC rules ...
🔗  Configuring bridge CNI (Container Networking Interface) ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: default-storageclass, storage-provisioner
💡  kubectl not found. If you need it, try: 'minikube kubectl -- get pods -A'
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
PS C:\Users\filip>
```

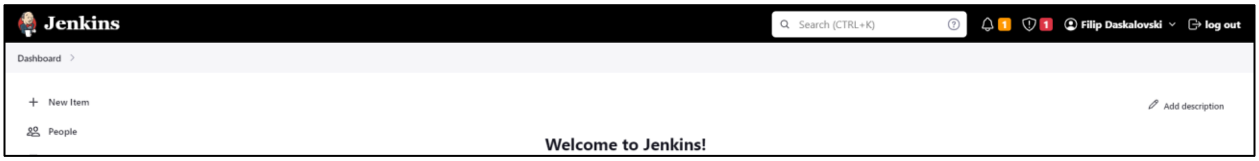


□ minikube in use less than a minut 945.9 MB

Jenkins:

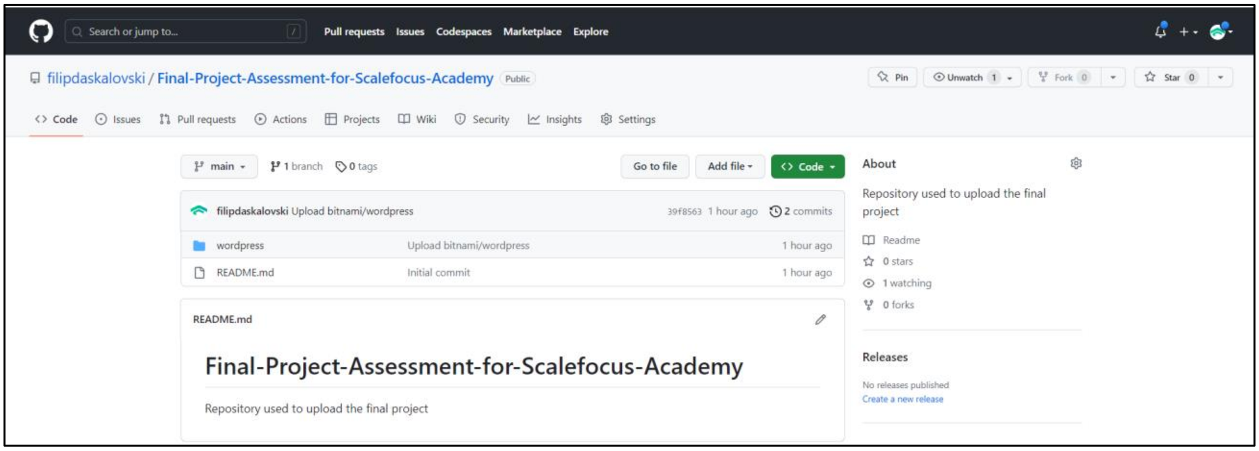


```
C:\Users\filip>sc query Jenkins

SERVICE_NAME: Jenkins
        TYPE               : 10  WIN32_OWN_PROCESS
        STATE              : 4  RUNNING
                                (STOPPABLE, NOT_PAUSABLE, ACCEPTS_SHUTDOWN)
        WIN32_EXIT_CODE    : 0  (0x0)
        SERVICE_EXIT_CODE  : 0  (0x0)
        CHECKPOINT         : 0x0
        WAIT_HINT          : 0x0
```



Welcome to Jenkins!

2. Separate repo in your GitHub Profile named: Final Project Assessment for Scalefocus Academy



filipdaskalovski / Final-Project-Assessment-for-Scalefocus-Academy

filipdaskalovski Upload bitnami/wordpress 39f8563 1 hour ago 2 commits

wordpress	Upload bitnami/wordpress	1 hour ago
README.md	Initial commit	1 hour ago

README.md

Final-Project-Assessment-for-Scalefocus-Academy

Repository used to upload the final project

About

Repository used to upload the final project

Readme
0 stars
1 watching
0 forks

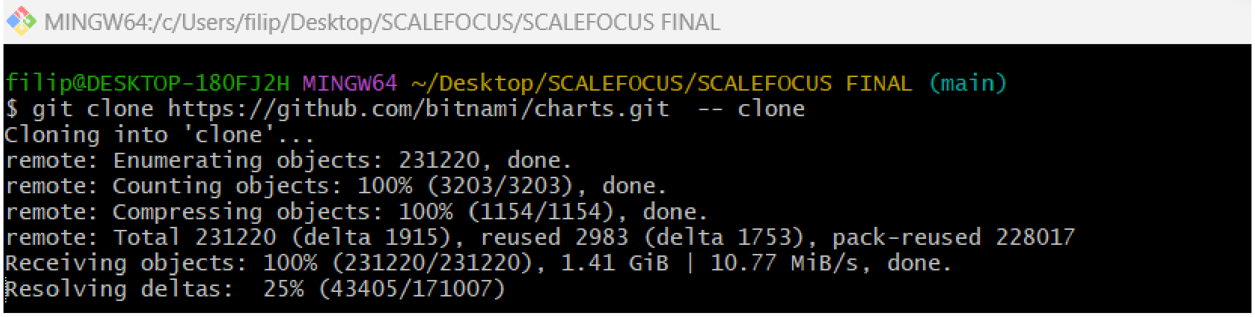
Releases

No releases published
Create a new release

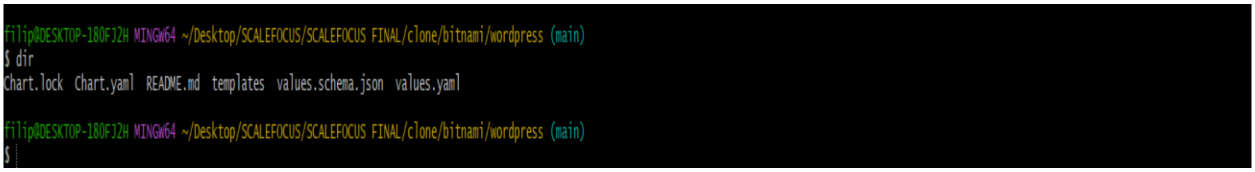
Requirement for the Project Assessment:

1. Download Helm chart for WordPress. (Bitnami chart:

https://github.com/bitnami/charts/tree/main/bitnami/wordpress)

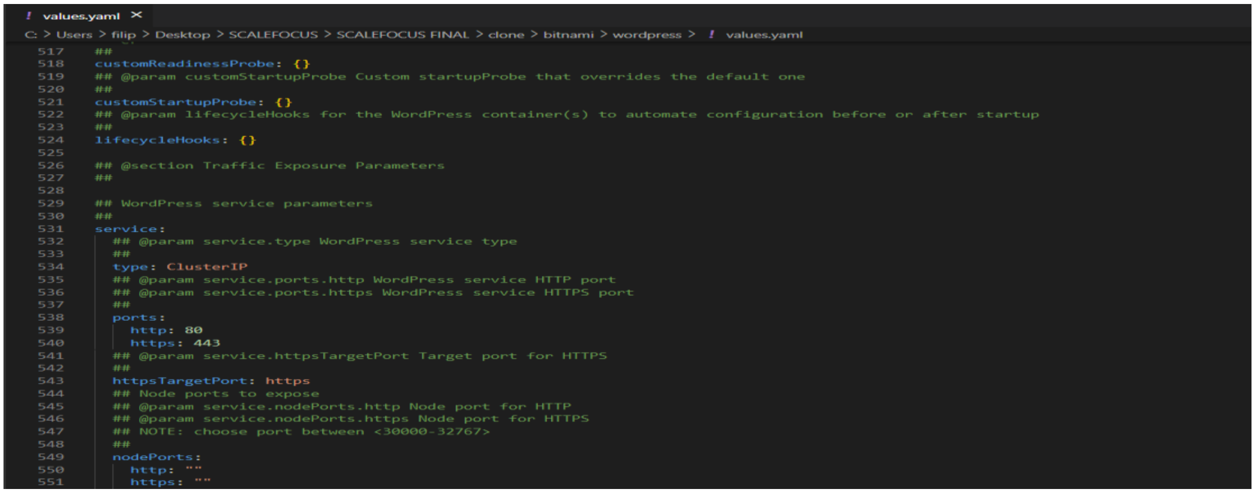


```
filip@DESKTOP-180FJ2H MINGW64 ~/Desktop/SCALEFOCUS/SCALEFOCUS FINAL (main)
$ git clone https://github.com/bitnami/charts.git  -- clone
Cloning into 'clone'...
remote: Enumerating objects: 231220, done.
remote: Counting objects: 100% (3203/3203), done.
remote: Compressing objects: 100% (1154/1154), done.
remote: Total 231220 (delta 1915), reused 2983 (delta 1753), pack-reused 228017
Receiving objects: 100% (231220/231220), 1.41 GiB | 10.77 MiB/s, done.
Resolving deltas:  25% (43405/171007)
```

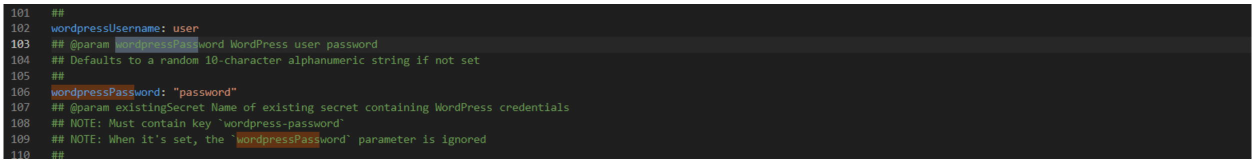


```
filip@DESKTOP-180FJ2H MINGW64 ~/Desktop/SCALEFOCUS/SCALEFOCUS FINAL/clone/bitnami/wordpress (main)
$ dir
Chart.lock  Chart.yaml  README.md  templates  values.schema.json  values.yaml

filip@DESKTOP-180FJ2H MINGW64 ~/Desktop/SCALEFOCUS/SCALEFOCUS FINAL/clone/bitnami/wordpress (main)
$
```

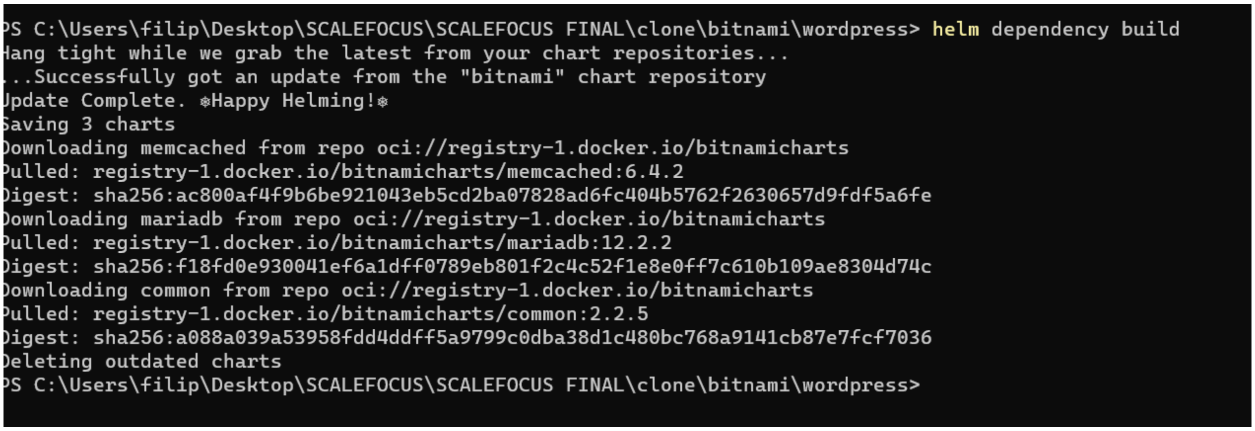
2. In values.yaml, you need to change line 543 from type: LoadBalancer to type: ClusterIP (Hint: there will be one more problem when deploying. Resolve it.)


values.yaml
C: > Users > filip > Desktop > SCALEFOCUS > SCALEFOCUS FINAL > clone > bitnami > wordpress > values.yaml

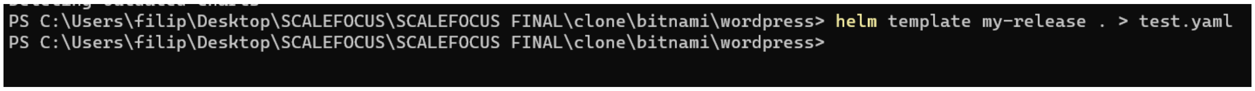
```
517   ##
518   customReadinessProbe: {}
519   ## @param customStartupProbe Custom startupProbe that overrides the default one
520   ##
521   customStartupProbe: {}
522   ## @param lifecycleHooks for the WordPress container(s) to automate configuration before or after startup
523   ##
524   lifecycleHooks: {}
525
526   ## @section Traffic Exposure Parameters
527   ##
528
529   ## WordPress service parameters
530   ##
531   service:
532     ## @param service.type WordPress service type
533     ##
534     type: ClusterIP
535     ## @param service.ports.http WordPress service HTTP port
536     ## @param service.ports.https WordPress service HTTPS port
537     ##
538     ports:
539       http: 80
540       https: 443
541     ## @param service.httpsTargetPort Target port for HTTPS
542     ##
543     httpsTargetPort: https
544     ## Node ports to expose
545     ## @param service.nodePorts.http Node port for HTTP
546     ## @param service.nodePorts.https Node port for HTTPS
547     ## NOTE: choose port between <30000-32767>
548     ##
549     nodePorts:
550       http: ""
551       https: ""
```



```
101  ##
102  wordpressUsername: user
103  ## @param wordpressPassword WordPress user password
104  ## Defaults to a random 10-character alphanumeric string if not set
105  ##
106  wordpressPassword: "password"
107  ## @param existingSecret Name of existing secret containing WordPress credentials
108  ## NOTE: Must contain key `wordpress-password`
109  ## NOTE: When it's set, the `wordpressPassword` parameter is ignored
110  ##
```

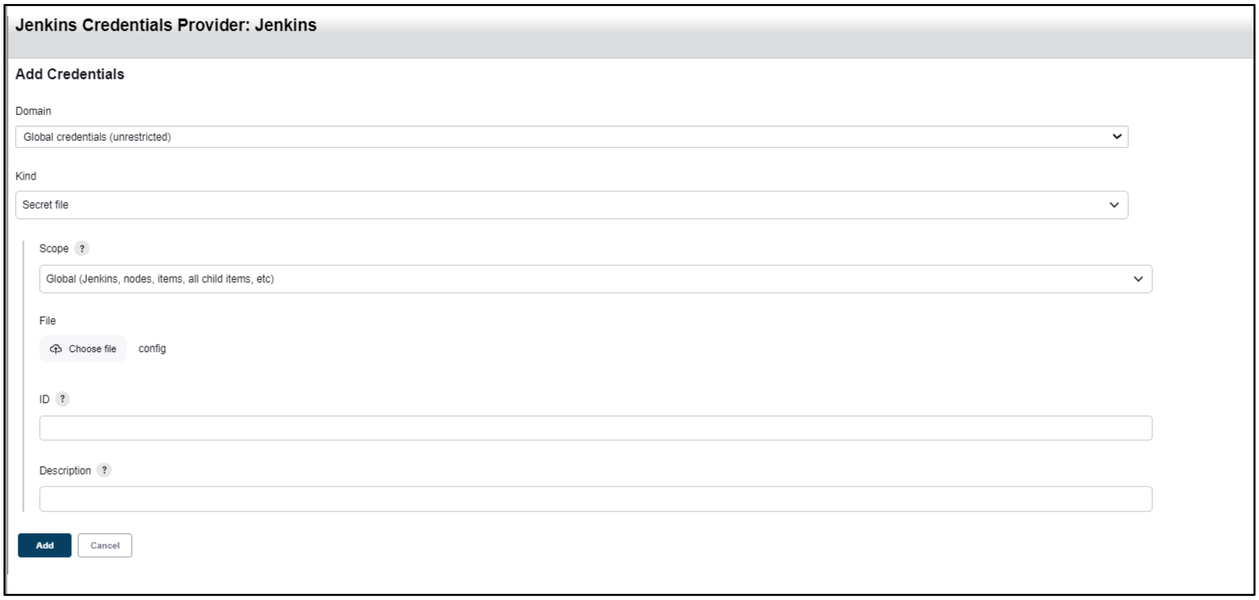


```
PS C:\Users\filip\Desktop\SCALEFOCUS\SCALEFOCUS FINAL\clone\bitnami\wordpress> helm dependency build
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "bitnami" chart repository
Update Complete. ⎈Happy Helming!⎈
Saving 3 charts
Downloading memcached from repo oci://registry-1.docker.io/bitnamicharts
Pulled: registry-1.docker.io/bitnamicharts/memcached:6.4.2
Digest: sha256:ac800af4f9b6be921043eb5cd2ba07828ad6fc404b5762f2630657d9fdf5a6fe
Downloading mariadb from repo oci://registry-1.docker.io/bitnamicharts
Pulled: registry-1.docker.io/bitnamicharts/mariadb:12.2.2
Digest: sha256:f18fd0e930041ef6a1dff0789eb801f2c4c52f1e8e0ff7c610b109ae8304d74c
Downloading common from repo oci://registry-1.docker.io/bitnamicharts
Pulled: registry-1.docker.io/bitnamicharts/common:2.2.5
Digest: sha256:a088a039a53958fdd4ddff5a9799c0dba38d1c480bc768a9141cb87e7fcf7036
Deleting outdated charts
PS C:\Users\filip\Desktop\SCALEFOCUS\SCALEFOCUS FINAL\clone\bitnami\wordpress>
```



```
Deleting outdated charts
PS C:\Users\filip\Desktop\SCALEFOCUS\SCALEFOCUS FINAL\clone\bitnami\wordpress> helm template my-release . > test.yaml
PS C:\Users\filip\Desktop\SCALEFOCUS\SCALEFOCUS FINAL\clone\bitnami\wordpress>
```

3. Create a Jenkins pipeline that checks if wp namespace exists, if it doesn’t then it creates one. Checks if WordPress exists, if it doesn’t then it installs the chart.



Jenkins Credentials Provider: Jenkins

Add Credentials

Domain: Global credentials (unrestricted)

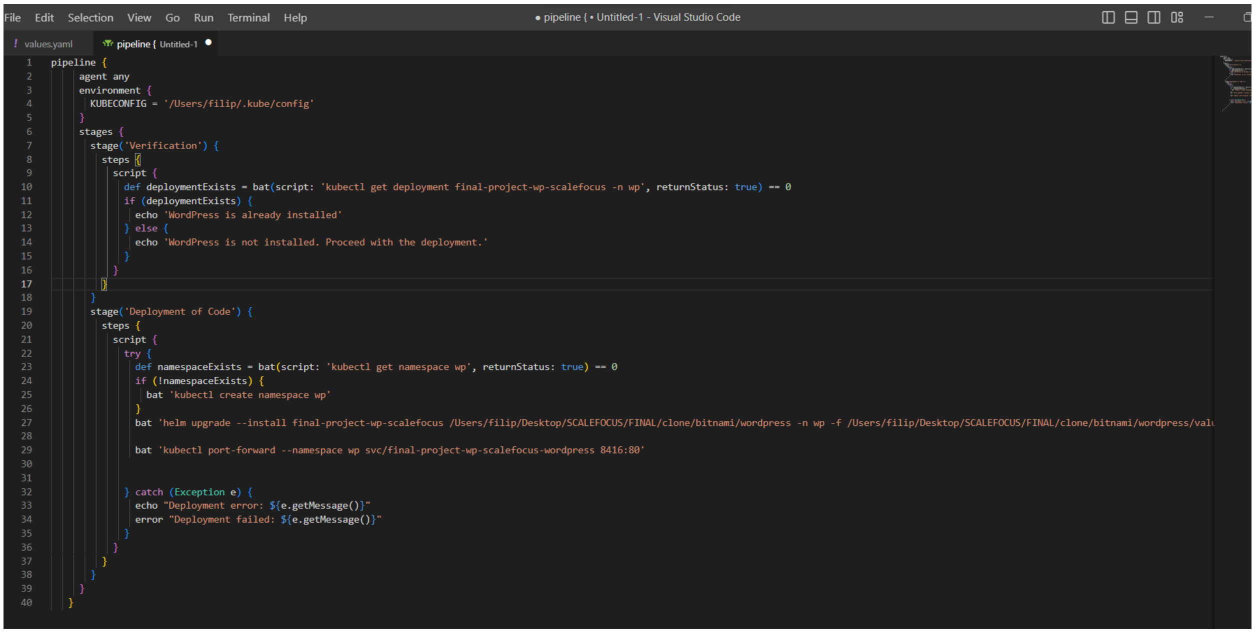
Kind: Secret file

Scope: Global (Jenkins, nodes, items, all child items, etc)

File: config

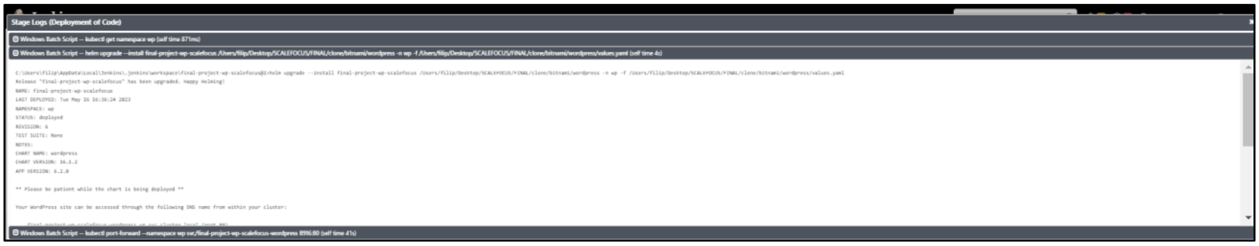
ID:

Description:



File Edit Selection View Go Run Terminal Help
● pipeline { • Untitled-1 - Visual Studio Code
values.yaml
pipeline { Untitled-1

```
pipeline {
    agent any
    environment {
      KUBECONFIG = '/Users/filip/.kube/config'
    }
    stages {
      stage('Verification') {
        steps {
          script {
            def deploymentExists = bat(script: 'kubectl get deployment final-project-wp-scalefocus -n wp', returnStatus: true) == 0
            if (deploymentExists) {
              echo 'WordPress is already installed'
            } else {
              echo 'WordPress is not installed. Proceed with the deployment.'
            }
          }
        }
      }
      stage('Deployment of Code') {
        steps {
          script {
            try {
              def namespaceExists = bat(script: 'kubectl get namespace wp', returnStatus: true) == 0
              if (!namespaceExists) {
                bat 'kubectl create namespace wp'
              }
              bat 'helm upgrade --install final-project-wp-scalefocus /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress -n wp -f /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress/valu

              bat 'kubectl port-forward --namespace wp svc/final-project-wp-scalefocus-wordpress 8416:80'


            } catch (Exception e) {
              echo "Deployment error: ${e.getMessage()}"
              error "Deployment failed: ${e.getMessage()}"
            }
          }
        }
      }
    }
  }
```



Stage Logs (Deployment of Code)

Windows Batch Script -- kubectl get namespace wp (self time 871ms)

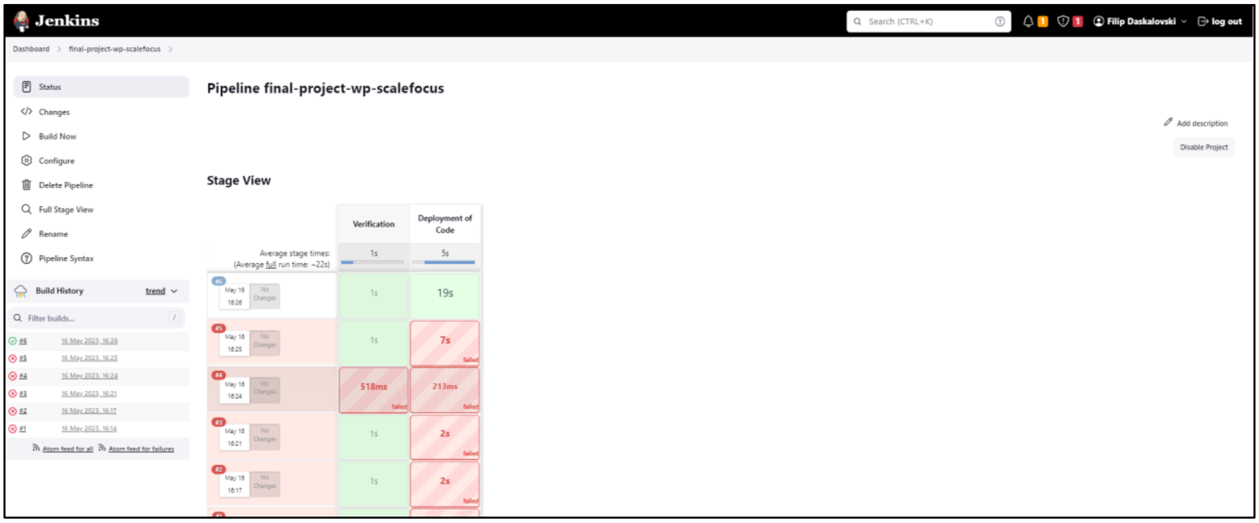
Windows Batch Script -- helm upgrade --install final-project-wp-scalefocus /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress -n wp -f /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress/values.yaml (self time 4s)

```
C:\Users\filip\AppData\Local\Jenkins\.jenkins\workspace\final-project-wp-scalefocus@2>helm upgrade --install final-project-wp-scalefocus /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress -n wp -f /Users/filip/Desktop/SCALEFOCUS/FINAL/clone/bitnami/wordpress/values.yaml
Release "final-project-wp-scalefocus" has been upgraded. Happy Helming!
NAME: final-project-wp-scalefocus
LAST DEPLOYED: Tue May 16 16:36:24 2023
NAMESPACE: wp
STATUS: deployed
REVISION: 6
TEST SUITE: None
NOTES:
CHART NAME: wordpress
CHART VERSION: 16.1.2
APP VERSION: 6.2.0

** Please be patient while the chart is being deployed **

Your WordPress site can be accessed through the following DNS name from within your cluster:

    final-project-wp-scalefocus-wordpress.wp.svc.cluster.local (port 80)
```

Windows Batch Script -- kubectl port-forward --namespace wp svc/final-project-wp-scalefocus-wordpress 8416:80 (self time 41s)

4. Name the Helm Deployment as: final-project-wp-scalefocus.

5. Deploy the helm chart using the Jenkins pipeline.



Pipeline final-project-wp-scalefocus

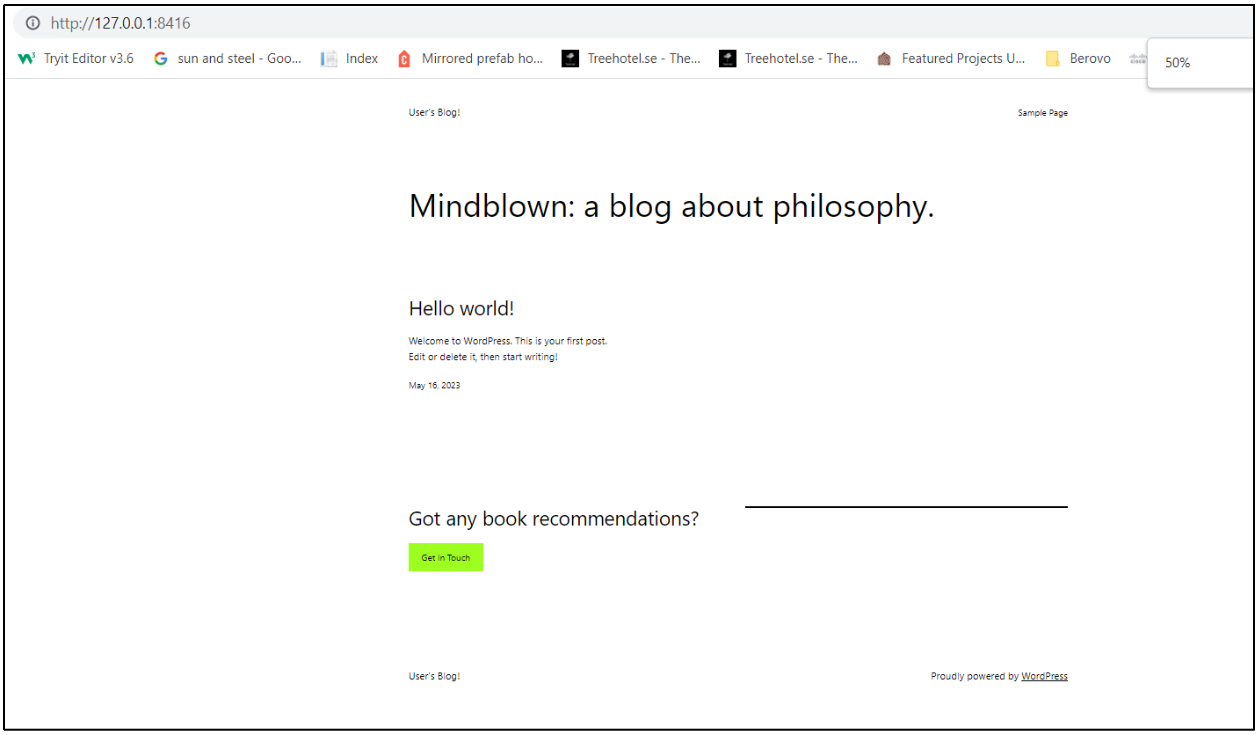
Stage View

	Verification	Deployment of Code
Average stage times: (Average full run time: ~22s)	1s	5s
#6 May 16 16:26 No Changes	1s	19s
#5 May 16 16:25 No Changes	1s	7s failed
#4 May 16 16:24 No Changes	518ms failed	213ms failed
#3 May 16 16:21 No Changes	1s	2s failed
#2 May 16 16:17 No Changes	1s	2s failed

Build History

#6	16 May 2023, 16:26
#5	16 May 2023, 16:25
#4	16 May 2023, 16:24
#3	16 May 2023, 16:21
#2	16 May 2023, 16:17
#1	16 May 2023, 16:14

6. Load the home page of the WordPress to see the final result.



Mindblown: a blog about philosophy.

Hello world!

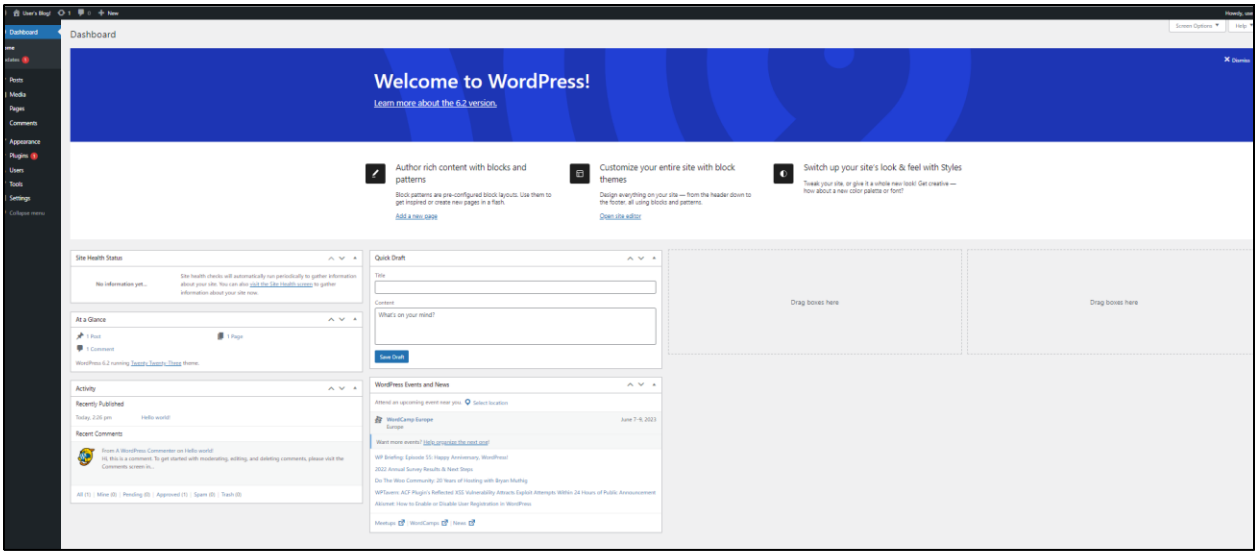
Welcome to WordPress. This is your first post.
Edit or delete it, then start writing!

May 16, 2023

Got any book recommendations?

User's Blog!

Proudly powered by WordPress



Dashboard

Welcome to WordPress!

Learn more about the 6.2 version.

Author rich content with blocks and patterns

Block patterns are pre-configured block layouts. Use them to get inspired or create new pages in a flash.

Customize your entire site with block themes

Design everything on your site — from the header down to the footer, all using blocks and patterns.

Switch up your site's look & feel with Styles

Tweak your site, or give it a whole new look! Get creative — how about a new color palette or font?

Site Health Status

No information yet...

Site health checks will automatically run periodically to gather information about your site. You can also visit the Site Health screen to gather information about your site now.

Quick Draft

Title:

Content: What's on your mind?

At a Glance

1 Post
1 Page
1 Comment

WordPress 6.2 running Twenty Twenty-Three theme.

Activity

Recently Published

Today, 2:26 pm Hello world!

Recent Comments

From A WordPress Commenter on Hello world!
Hi, this is a comment. To get started with moderating, editing, and deleting comments, please visit the Comments screen in...

All (1) | Mine (0) | Pending (0) | Approved (1) | Spam (0) | Trash (0)

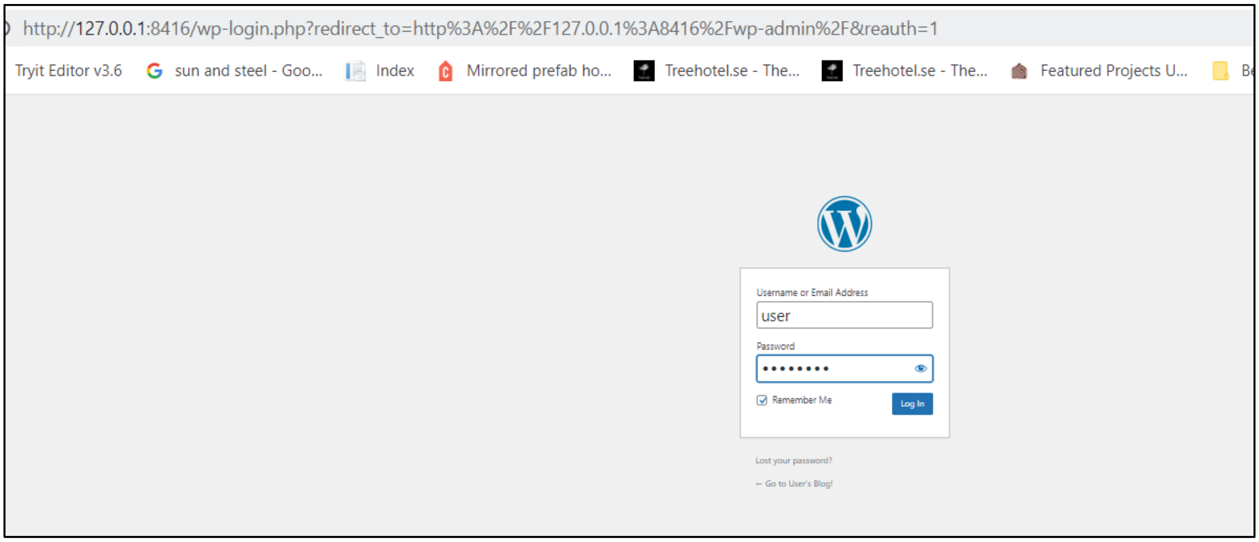
WordPress Events and News

Attend an upcoming event near you.

WordCamp Europe
Europe
June 7–9, 2023

Want more events? Help organize the next one!

WP Briefing: Episode 55: Happy Anniversary, WordPress!
2022 Annual Survey Results & Next Steps
Do The Woo Community: 20 Years of Hosting with Bryan Muthig
WPTavern: ACF Plugin's Reflected XSS Vulnerability Attracts Exploit Attempts Within 24 Hours of Public Announcement
Akismet: How to Enable or Disable User Registration in WordPress



http://127.0.0.1:8416/wp-login.php?redirect_to=http%3A%2F%2F127.0.0.1%3A8416%2Fwp-admin%2F&reauth=1

Username or Email Address: user

Password: ••••••••

☑ Remember Me