



CS457

DEVOPS ASSIGNMENT - 2

Submitted to:

Dr Uma S

Submitted by:

TEAM 8

Akshaya Reddy 18BCS017

Bhavya Tripathi 18BCS019

Harshitha M 18BCS032

Meghana N 18BCS053

S Namratha 18BCS083

Vinita Yadav 18BCS109

Deepanshu Sachdeva 18BCS114

DevOps Assignment - 2

Ansible Playbook Exercise

Set Up-

Install Ansible

https://docs.ansible.com/ansible/latest/installation_guide/intro_installation.html

Create EC2 instance (choose Red hat enterprise linux)

STEP 1 -

Generate a personal access token on Github to configure login.

STEP 2-

1. Create a project directory
2. Use command “npm init”.
3. Install express - “npm install express”.
4. Create a index.js and write the necessary hello world code.
5. To run it, type command “node index.js”.
6. Copy and paste the port number in EC2 instance.
7. Upload this file on a private github repository.

Fri Sep 24 3:26 PM

```
Ansible — softwareupdate < bash -c #!/bin/bash\012set -u\012\012abort() {\012 printf "%s\n" "$@\012 exit 1\012}\012\012if [ -z "${BASH_VERSION..."
Last login: Fri Sep 24 15:07:12 on ttys000
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT20850.
[Namratha-18bcos83-MacBook-Pro:- harshitha$ cd Desktop
[Namratha-18bcos83-MacBook-Pro:Desktop harshitha$ cd Ansible
[Namratha-18bcos83-MacBook-Pro:Ansible harshitha$ ansible --version
ansible [core 2.11.5]
  config file = None
  configured module search path = ['~/Users/harshitha/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /Library/Frameworks/Python.framework/Versions/3.8/lib/python3.8/site-packages/ansible
  ansible collection location = ~/Users/harshitha/.ansible/collections:/usr/share/ansible/collections
  executable location = /Library/Frameworks/Python.framework/Versions/3.8/bin/ansible
  python version = 3.8.3rc1 (v3.8.3rc1:802eb676ba, Apr 29 2020, 18:07:04) [Clang 6.0 (clang-600.0.57)]
  jinja version = 3.0.1
  libyaml = True
Namratha-18bcos83-MacBook-Pro:Ansible harshitha$ npm install express
npm WARN @angular/core@12.0.2 requires a peer of rxjs@^6.5.3 but none is installed. You must install peer dependencies yourself.
npm WARN @angular/core@12.0.2 requires a peer of zone.js@^0.11.4 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/core@4.11.4 requires a peer of react@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/core@4.11.4 requires a peer of react-dom@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself
[...]
npm WARN @material-ui/icons@4.11.2 requires a peer of react@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/icons@4.11.2 requires a peer of react-dom@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself
f.
npm WARN @material-ui/styles@4.11.4 requires a peer of react@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/styles@4.11.4 requires a peer of react-dom@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself
lf.
npm WARN @material-ui/system@4.11.3 requires a peer of react@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/system@4.11.3 requires a peer of react-dom@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself
lf.
npm WARN @material-ui/utils@4.11.2 requires a peer of react@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN @material-ui/utils@4.11.2 requires a peer of react-dom@^16.8.0 || ^17.0.0 but none is installed. You must install peer dependencies yourself
f.
npm WARN react-transition-group@4.4.1 requires a peer of react@>=16.6.0 but none is installed. You must install peer dependencies yourself.
npm WARN react-transition-group@4.4.1 requires a peer of react-dom@>=16.6.0 but none is installed. You must install peer dependencies yourself.
npm WARN harshitha No description
npm WARN harshitha No repository field.
npm WARN harshitha No license field.

+ express@4.17.1
added 50 packages from 37 contributors and audited 95 packages in 3.168s

4 packages are looking for funding
  run 'npm fund' for details

found 0 vulnerabilities

Namratha-18bcos83-MacBook-Pro:Ansible harshitha$ echo> index.js
Namratha-18bcos83-MacBook-Pro:Ansible harshitha$ npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.
```

The image shows the Mac OS Dock at the bottom of the screen, featuring various application icons including Finder, App Store, Safari, Google Chrome, Mail, and others.

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```
Ansible — softwareupdate - bash -c #!/bin/bash|012set -u|012|012abort() {012 printf "%s\n" "$@"|012 exit 1|012}|012|012if [ -z "${BASH_VERSION..."

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (ansible)
version: (1.0.0)
description:
[entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to /Users/harshitha/Desktop/Ansible/package.json:

{
  "name": "ansible",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\\"Error: no test specified\\\" && exit 1"
  },
  "author": "",
  "license": "ISC"
}

Is this OK? (yes)

New major version of npm available! 6.14.15 → 7.24.1
Changelog: https://github.com/npm/cli/releases/tag/v7.24.1
Run npm install -g npm to update!
```

Namratha-18bcs083-MacBook-Pro:Ansible harshitha\$



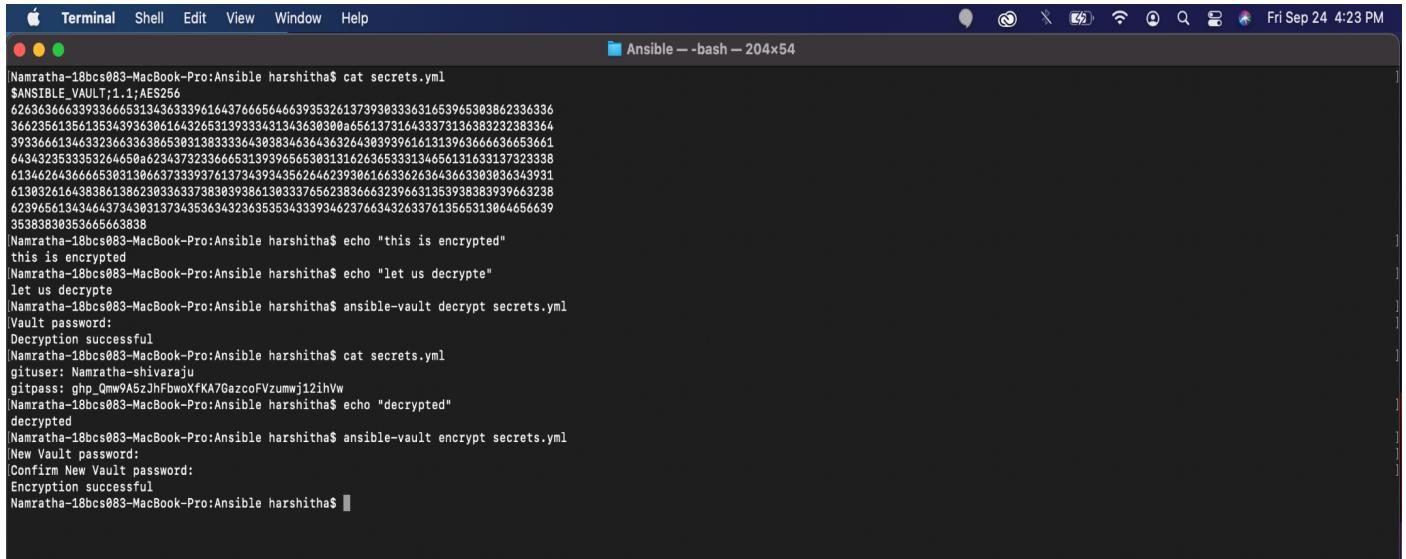
STEP 3-

Create ansible vault

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```
Ansible — softwareupdate - bash -c #!/bin/bash|012set -u|012|012abort() {012 printf "%s\n" "$@"|012 exit 1|012}|012|012if [ -z "${BASH_VERSION...

Namratha-18bcs083-MacBook-Pro:Ansible harshitha$ node index.js
Example app listening at http://localhost:3000
^C
Namratha-18bcs083-MacBook-Pro:Ansible harshitha$ ansible-vault create secrets.yml
New Vault password:
Confirm New Vault password:
Namratha-18bcs083-MacBook-Pro:Ansible harshitha$ cat secrets.yml
$ANSIBLE_VAULT:1.1;AES256
6263636633933665313436339616437665646639353261373930333631653965303862336336
366235613561353439363061643265313933431343639300a656137316433373136383232383364
393366613443236363865380313833336430383463643632643039396161313963666636653661
6434323533353264650a6234373233666531393965639313162636533313465131633137323338
61346264366665303130663733393761373439343562646239306166336263643663303036343931
613832616438386138623033633738303938613033776523836663239663135938838393963238
6239656134346437343031373435363432363535343339346237663432633761356531306465638
3538380353665638
Namratha-18bcs083-MacBook-Pro:Ansible harshitha$ echo "this is encrypted now"|cowsay
-bash: cowsay: command not found
```



```
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ cat secrets.yml
$ANSIBLE_VAULT:1.1;AES256
62636366633933666531343633396164376665646639353261373930333631653965303862336336
36623561356135439363061643265313933431343630300656137316433373136383232383364
3933666134632366336386530313833334303834636436326438393961613139636663653661
6434623533353264650a623437323366531393965530313162636533134656131633137323338
613462643666653031306637339376137343934562646239306166336263643663383036343931
61363261643838613862383333738303938613033376523836632396631353938383939663238
62396561343464373430313734353634323635353433393462376634326337613565313064656639
35383838353665663838
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ echo "this is encrypted"
this is encrypted
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ echo "let us decrypt"
let us decrypt
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ ansible-vault decrypt secrets.yml
Vault password:
Decryption successful
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ cat secrets.yml
gituser: Namratha-shivareaju
gitpass: ghp_QmW9A5zJhFwoXfKA7GazcoFVzumwj12ihVw
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ echo "decrypted"
decrypted
[Namratha-18bc083-MacBook-Pro:Ansible harshitha$ ansible-vault encrypt secrets.yml
New Vault password:
Confirm New Vault password:
Encryption successful
Namratha-18bc083-MacBook-Pro:Ansible harshitha$ ]
```

STEP 4

Ansible playbook example

```
1 ---  
2   - name: Install and Launch the Simple NodeJS Application  
3     hosts: nodeserver  
4     vars_files:  
5       |- secrets.yml  
6     vars:  
7       |- destdir: /apps/SampleNodeApp  
8     tasks:  
9  
10    |- name : install Node and NPM  
11      become: yes  
12      register: ymrepo  
13      yum:  
14        name: nodejs  
15        state: latest  
16  
17    |- name : validate the nodejs installation  
18      debug: msg="Installation of node is Successfull"  
19      when: ymrepo is changed  
20  
21    |- name: Version of Node and NPM  
22      shell:  
23        "npm -v && node -v"  
24      register: versioninfo  
25  
26    |- name: Version Info  
27      debug:  
28        msg: "Version info {{ versioninfo.stdout_lines }}"  
29      when: versioninfo is changed  
30  
31    |- name: Download the NodeJS code from the GitRepo  
32      become: yes  
33      git:  
34        repo: 'https://{{gituser}}:{{gitpass}}@github.com/Namratha-shivaraju/Assignment2.git'  
35        dest: "{{ destdir }}"  
36  
37    |- name: Change the ownership of the directory  
38      become: yes  
39      file:  
40        path: "{{destdir}}"  
41        owner: "ec2-user"  
42      register: chgrpout  
43  
44    |- name: Install Dependencies with NPM install command  
45      shell:
```

```
46      "npm install"
47      args:
48          | chdir: "{{ destdir }}"
49          register: npminstlout
50
51      - name: Debug npm install command
52          | debug: msg='{{npminstlout.stdout_lines}}'
53
54
55      - name: Start the App
56          | async: 10
57          poll: 0
58          shell:
59              | "(node index.js > nodesrv.log 2>&1 &)"
60          args:
61              | chdir: "{{ destdir }}"
62          register: appstart
63
64      - name: Validating the port is open
65          | tags: nodevalidate
66          wait_for:
67              | host: "localhost"
68              | port: 3000
69              | delay: 10
70              | timeout: 30
71              | state: started
72          | msg: "NodeJS server is not running"
```

STEP 5-

Launch playbook

```
[Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ rm -rf secrets.yml
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ ansible-vault create secrets.yml
[New Vault password:
[Confirm New Vault password:
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ rm -rf secrets.yml
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ ansible-vault create secrets.yml
New Vault password:
Confirm New Vault password:
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ cat secrets.yml
$ANSIBLE_VAULT;1.1;AES256
30353366333962353065633531623666613464626536366430333561323031373761316366616365
6237376238363338623832653363653739316334643164640a393338666439666565316263356237
383562326161623339623835306264346266353663623266623037393263321646364623536
3665333262363261370a323035383633353237306434633038393161653231356235636237303134
636166636532653066326439394303064313765326438373062613137633963376232621613639
32373135626333366266303233343139333630623635613538373335366566663233613739336631
62386231373436363732626664646666666337656136383264636237666339346461316330346439
61303561306365373335
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ echo "this is to encrypt"
this is to encrypt
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ ansible-vault decrypt secrets.yml
Vault password:
Decryption successful
Namratha-18bcs083-MacBook-Pro:Assign-2-Ansible harshitha$ ansible-playbook gitexample.yml -i ansible_hosts --ask-vault-pass
Vault password:

PLAY [Install and Launch the Simple NodeJS Application] ****
*****
TASK [Gathering Facts] ****
*****
ok: [13.232.222.194]

TASK [install Node and NPM] ****
*****
ok: [13.232.222.194]

TASK [validate the nodejs installation] ****
*****
skipping: [13.232.222.194]

TASK [Version of Node and NPM] ****
*****
changed: [13.232.222.194]

TASK [Version Info] ****
*****
ok: [13.232.222.194] => {
    "msg": "Version info ['6.14.11', 'v10.24.0']"
}
[

TASK [Download the NodeJS code from the GitRepo] ****
*****
```

```
ok: [13.232.222.194]

TASK [Change the ownership of the directory] *****
ok: [13.232.222.194]

TASK [Install Dependencies with NPM install command] *****
changed: [13.232.222.194]

TASK [Debug npm install command] *****
ok: [13.232.222.194] => {
    "msg": [
        "up to date in 0.385s",
        "found 0 vulnerabilities"
    ]
}

TASK [Start the App] *****
changed: [13.232.222.194]
```

STEP 6-

Validate



NOTE

SSH connection

Download the .pem file and place it in a different directory. Change the location of .pem file in ansible_hosts to the present directory. Then follow the command lines in the below screenshots-

```
Terminal Shell Edit View Window Help
Desktop — ec2-user@ip-172-31-33-231:~ ssh -i Ansible.pem ec2-user@ec2-13-232-222-194.ap-south-1.compute.amazonaws.com — 204x54
Fri Sep 24 6:44 PM

Last login: Fri Sep 24 17:23:56 on ttys002
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://help.ubuntu.com/kb/HT200050.
Name: Namratha-180be883-MacBook-Pro:Desktop harshitha$ cd Desktop
Name: Namratha-180be883-MacBook-Pro:Desktop harshitha$ ssh -i "Ansible.pem" ec2-user@ec2-13-232-222-194.ap-south-1.compute.amazonaws.com
Last login: Fri Sep 24 11:34:53 2021 from 49.206.10.24
[ec2-user@ip-172-31-33-231 ~]$ sudo yum install git
Updating Subscription Management repositories...
Unable to read consumer identity

This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.

Last metadata expiration check: 3:30:17 ago on Fri 24 Sep 2021 09:07:38 AM UTC.
Dependencies resolved.
=====
Package           Arch      Version       Repository      Size
=====
Installing:
git              x86_64    2.27.0-1.el8   rhel-8-appstream-rhui-rpms 164 k
Installing dependencies:
emacs-filesystem noarch   1:26.1-5.el8   rhel-8-baseos-rhui-rpms 69 k
git-core          x86_64    2.27.0-1.el8   rhel-8-appstream-rhui-rpms 5.7 M
git-core-doc      noarch   2.27.0-1.el8   rhel-8-appstream-rhui-rpms 2.5 M
perl-Error        noarch   1:0.17025-2.el8  rhel-8-appstream-rhui-rpms 46 k
perl-Git          noarch   2.27.0-1.el8   rhel-8-appstream-rhui-rpms 78 k
perl-TermReadKey x86_64    2.37-7.el8    rhel-8-appstream-rhui-rpms 46 k

Transaction Summary
=====
Install 7 Packages

Total download size: 8.6 M
Installed size: 45 M
Is this ok [y/N]: y
Downloading Packages
(1/7): perl-TermReadKey-2.37-7.el8.x86_64.rpm 386 kB/s | 40 kB 00:00
(2/7): git-core-doc-2.27.0-1.el8.noarch.rpm 16 MB/s | 2.5 MB 00:00
(3/7): perl-Git-2.27.0-1.el8.noarch.rpm 1.1 MB/s | 78 kB 00:00
(4/7): git-core-2.27.0-1.el8.x86_64.rpm 26 MB/s | 5.7 MB 00:00
(5/7): git-2.27.0-1.el8.x86_64.rpm 2.4 MB/s | 164 kB 00:00
(6/7): perl-Error-0.17025-2.el8.noarch.rpm 534 kB/s | 46 kB 00:00
(7/7): emacs-filesystem-26.1-5.el8.noarch.rpm 1.2 MB/s | 69 kB 00:00

Total 23 MB/s | 8.6 MB 00:00

Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing  : git-core-2.27.0-1.el8.x86_64 1/7
Installing  : git-core-doc-2.27.0-1.el8.noarch 2/7

Terminal Shell Edit View Window Help
Desktop — ec2-user@ip-172-31-33-231:~ ssh -i Ansible.pem ec2-user@ec2-13-232-222-194.ap-south-1.compute.amazonaws.com — 204x54
Fri Sep 24 6:45 PM
```

```
git-core          x86_64    2.27.0-1.el8   rhel-8-appstream-rhui-rpms 5.7 M
git-core-doc      noarch   2.27.0-1.el8   rhel-8-appstream-rhui-rpms 2.5 M
perl-Error        noarch   1:0.17025-2.el8  rhel-8-appstream-rhui-rpms 46 k
perl-Git          noarch   2.27.0-1.el8   rhel-8-appstream-rhui-rpms 78 k
perl-TermReadKey x86_64    2.37-7.el8    rhel-8-appstream-rhui-rpms 46 k

Transaction Summary
=====
Install 7 Packages

Total download size: 8.6 M
Installed size: 45 M
Is this ok [y/N]: y
Downloading Packages
(1/7): perl-TermReadKey-2.37-7.el8.x86_64.rpm 386 kB/s | 40 kB 00:00
(2/7): git-core-doc-2.27.0-1.el8.noarch.rpm 16 MB/s | 2.5 MB 00:00
(3/7): perl-Git-2.27.0-1.el8.noarch.rpm 1.1 MB/s | 78 kB 00:00
(4/7): git-core-2.27.0-1.el8.x86_64.rpm 26 MB/s | 5.7 MB 00:00
(5/7): git-2.27.0-1.el8.x86_64.rpm 2.4 MB/s | 164 kB 00:00
(6/7): perl-Error-0.17025-2.el8.noarch.rpm 534 kB/s | 46 kB 00:00
(7/7): emacs-filesystem-26.1-5.el8.noarch.rpm 1.2 MB/s | 69 kB 00:00

Total 23 MB/s | 8.6 MB 00:00

Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing  : git-core-2.27.0-1.el8.x86_64 1/7
Installing  : git-core-doc-2.27.0-1.el8.noarch 2/7
Installing  : emacs-filesystem-1:26.1-5.el8.noarch 3/7
Installing  : perl-Error-1:0.17025-2.el8.noarch 4/7
Installing  : perl-TermReadKey-2.37-7.el8.x86_64 5/7
Installing  : git-2.27.0-1.el8.x86_64 6/7
Installing  : perl-Git-2.27.0-1.el8.noarch 7/7
Running scriptlet: git-2.27.0-1.el8.x86_64 7/7
Verifying   : git-core-2.27.0-1.el8.x86_64 1/7
Verifying   : perl-TermReadKey-2.37-7.el8.x86_64 2/7
Verifying   : git-core-doc-2.27.0-1.el8.noarch 3/7
Verifying   : perl-Error-1:0.17025-2.el8.noarch 4/7
Verifying   : git-2.27.0-1.el8.x86_64 5/7
Verifying   : perl-Git-2.27.0-1.el8.noarch 6/7
Verifying   : emacs-filesystem-1:26.1-5.el8.noarch 7/7

Installed products updated.

Installed:
emacs-filesystem-1:26.1-5.el8.noarch          git-2.27.0-1.el8.x86_64
git-core-2.27.0-1.el8.x86_64                  git-core-doc-2.27.0-1.el8.noarch
perl-Error-1:0.17025-2.el8.noarch             perl-Git-2.27.0-1.el8.noarch
perl-TermReadKey-2.37-7.el8.x86_64            perl-TermReadKey-2.37-7.el8.x86_64

Complete!
[ec2-user@ip-172-31-33-231 ~]$
```