BOSCH CONNECTED INDUSTRY

PROGRAMING ASSESSMENT

PREPARED BY BCI/OPS

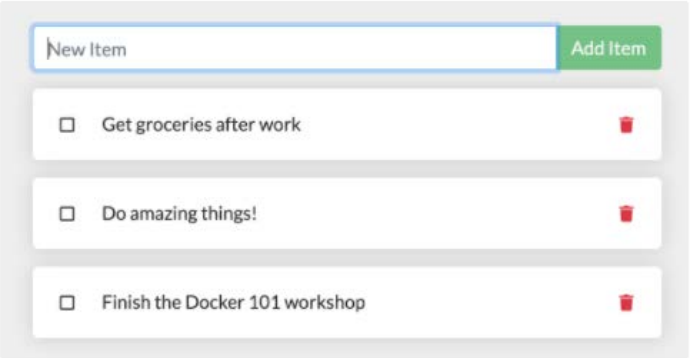
BOSCH

Programing Assessment
Goals

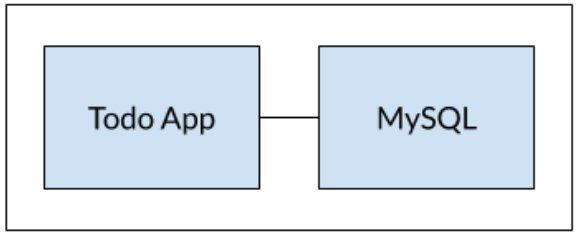
- Create deployment scripts using Ansible to deploy an application to some target servers (or virtual machines)

Programing Assessment
Application

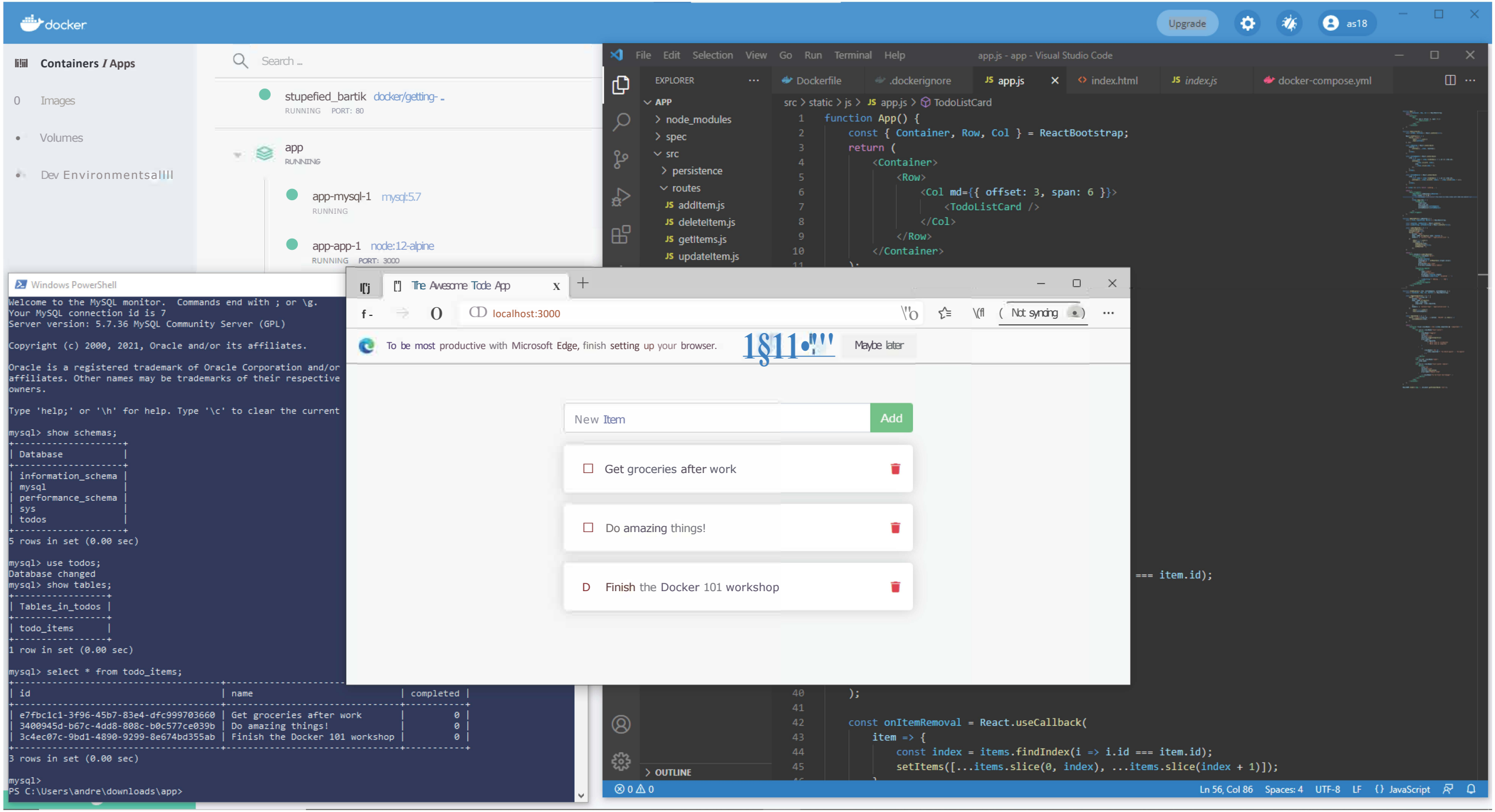
- Use the complete “Todo” application provided by Docker in the following tutorial: https://docs.docker.com/get-started/02_our_app/
- This application contains two services: the main application and a database. All steps for getting the application running and configured are provided in the different parts of the “Getting Started” section in Docker
- Please use this application with the Docker-compose file configuration



Application UI



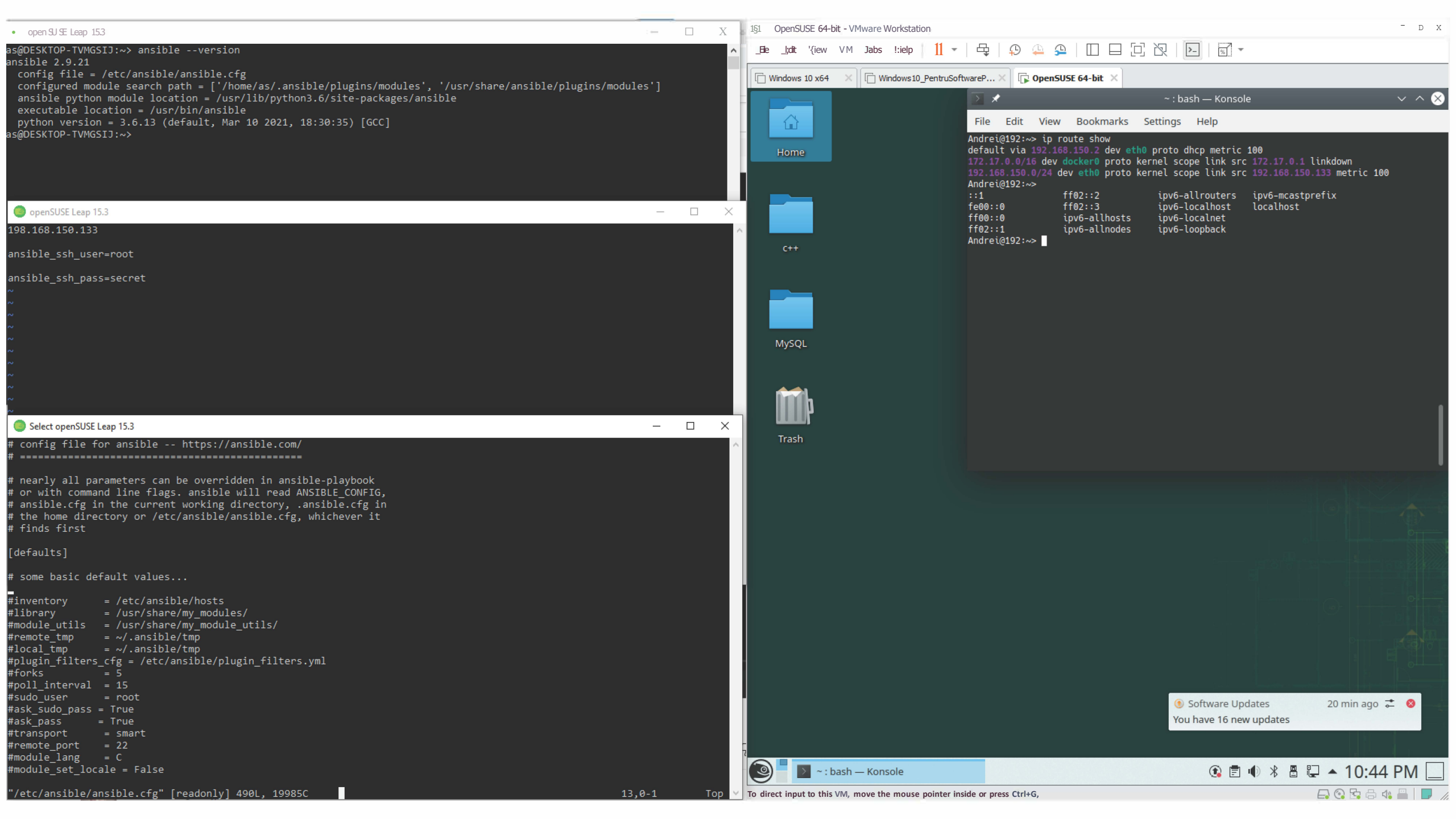
Application Architecture


docker
Upgrade
as18
Containers / Apps
0 Images
Volumes
Dev Environments
Search ...
stupefied_bartik docker/getting-...
RUNNING PORT: 80
app
RUNNING
app-mysql-1 mysql:5.7
RUNNING
app-app-1 node:12-alpine
RUNNING PORT: 3000
Windows PowerShell
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 7
Server version: 5.7.36 MySQL Community Server (GPL)
Copyright (c) 2000, 2021, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or affiliates. Other names may be trademarks of their respective owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current
mysql> show schemas;
| Database |
| information_schema |
| mysql |
| performance_schema |
| sys |
| todos |
5 rows in set (0.00 sec)
mysql> use todos;
Database changed
mysql> show tables;
| Tables_in_todos |
| todo_items |
1 row in set (0.00 sec)
mysql> select * from todo_items;
id	name	completed
e7fbc1c1-3f96-45b7-83e4-dfc999703660	Get groceries after work	0
3400945d-b67c-4dd8-808c-b0c577ce039b	Do amazing things!	0
3c4ec07c-9bd1-4890-9299-8e674bd355ab	Finish the Docker 101 workshop	0
3 rows in set (0.00 sec)
mysql>
PS C:\Users\andre\downloads\app>
The Awesome Todo App
localhost:3000
Not syncing
To be most productive with Microsoft Edge, finish setting up your browser.
Maybe later
New Item
Add
Get groceries after work
Do amazing things!
Finish the Docker 101 workshop
app.js - app - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
APP
node_modules
spec
src
persistence
routes
addItem.js
deleteItem.js
getItems.js
updateItem.js
Dockerfile
.dockerignore
app.js
index.html
index.js
docker-compose.yml
src > static > js > app.js > TodoListCard
function App() {
const { Container, Row, Col } = ReactBootstrap;
return (
<Container>
<Row>
<Col md={{ offset: 3, span: 6 }}>
<TodoListCard />
</Col>
</Row>
</Container>
);
=== item.id);
);
const onItemRemoval = React.useCallback(
item => {
const index = items.findIndex(i => i.id === item.id);
setItems([...items.slice(0, index), ...items.slice(index + 1)]);
OUTLINE
Ln 56, Col 86 Spaces: 4 UTF-8 LF JavaScript

Programing Assessment
Deployment

- Create a deployment playbook using **Ansible** to be able to easily deploy the complete “Todo” application to on-premise (or cloud) virtual machines without having to do it manually.
- The port in which the application runs on the target virtual machine should be configurable via the inventory.
- Execute the deployment job for one virtual machine and ensure it works as expected

- Notes:
  - You must assume that the target virtual machine only has a basic Linux installation. Packages that are specific to the deployment of this application are not already available and must be installed
  - Application should work as expected in the virtual machine


openSUSE Leap 15.3
as@DESKTOP-TVMGSIJ:~> ansible --version
ansible 2.9.21
config file = /etc/ansible/ansible.cfg
configured module search path = ['/home/as/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
ansible python module location = /usr/lib/python3.6/site-packages/ansible
executable location = /usr/bin/ansible
python version = 3.6.13 (default, Mar 10 2021, 18:30:35) [GCC]
as@DESKTOP-TVMGSIJ:~>
openSUSE Leap 15.3
198.168.150.133
ansible_ssh_user=root
ansible_ssh_pass=secret
Select openSUSE Leap 15.3
config file for ansible -- https://ansible.com/
nearly all parameters can be overridden in ansible-playbook
or with command line flags. ansible will read ANSIBLE_CONFIG,
ansible.cfg in the current working directory, .ansible.cfg in
the home directory or /etc/ansible/ansible.cfg, whichever it
finds first
[defaults]
some basic default values...
#inventory = /etc/ansible/hosts
#library = /usr/share/my_modules/
#module_utils = /usr/share/my_module_utils/
#remote_tmp = ~/.ansible/tmp
#local_tmp = ~/.ansible/tmp
#plugin_filters_cfg = /etc/ansible/plugin_filters.yml
#forks = 5
#poll_interval = 15
#sudo_user = root
#ask_sudo_pass = True
#ask_pass = True
#transport = smart
#remote_port = 22
#module_lang = C
#module_set_locale = False
"/etc/ansible/ansible.cfg" [readonly] 490L, 19985C
13,0-1
Top
OpenSUSE 64-bit - VMware Workstation
Windows 10 x64
Windows10_PentruSoftwareP...
OpenSUSE 64-bit
Home
c++
MySQL
Trash
~ : bash — Konsole
File Edit View Bookmarks Settings Help
Andrei@192:~> ip route show
default via 192.168.150.2 dev eth0 proto dhcp metric 100
172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1 linkdown
192.168.150.0/24 dev eth0 proto kernel scope link src 192.168.150.133 metric 100
Andrei@192:~>
::1 ff02::2 ipv6-allrouters ipv6-mcastprefix
fe00::0 ff02::3 ipv6-localhost localhost
ff00::0 ipv6-allhosts ipv6-localnet
ff02::1 ipv6-allnodes ipv6-loopback
Andrei@192:~>
Software Updates 20 min ago
You have 16 new updates
~ : bash — Konsole
10:44 PM
To direct input to this VM, move the mouse pointer inside or press Ctrl+G,

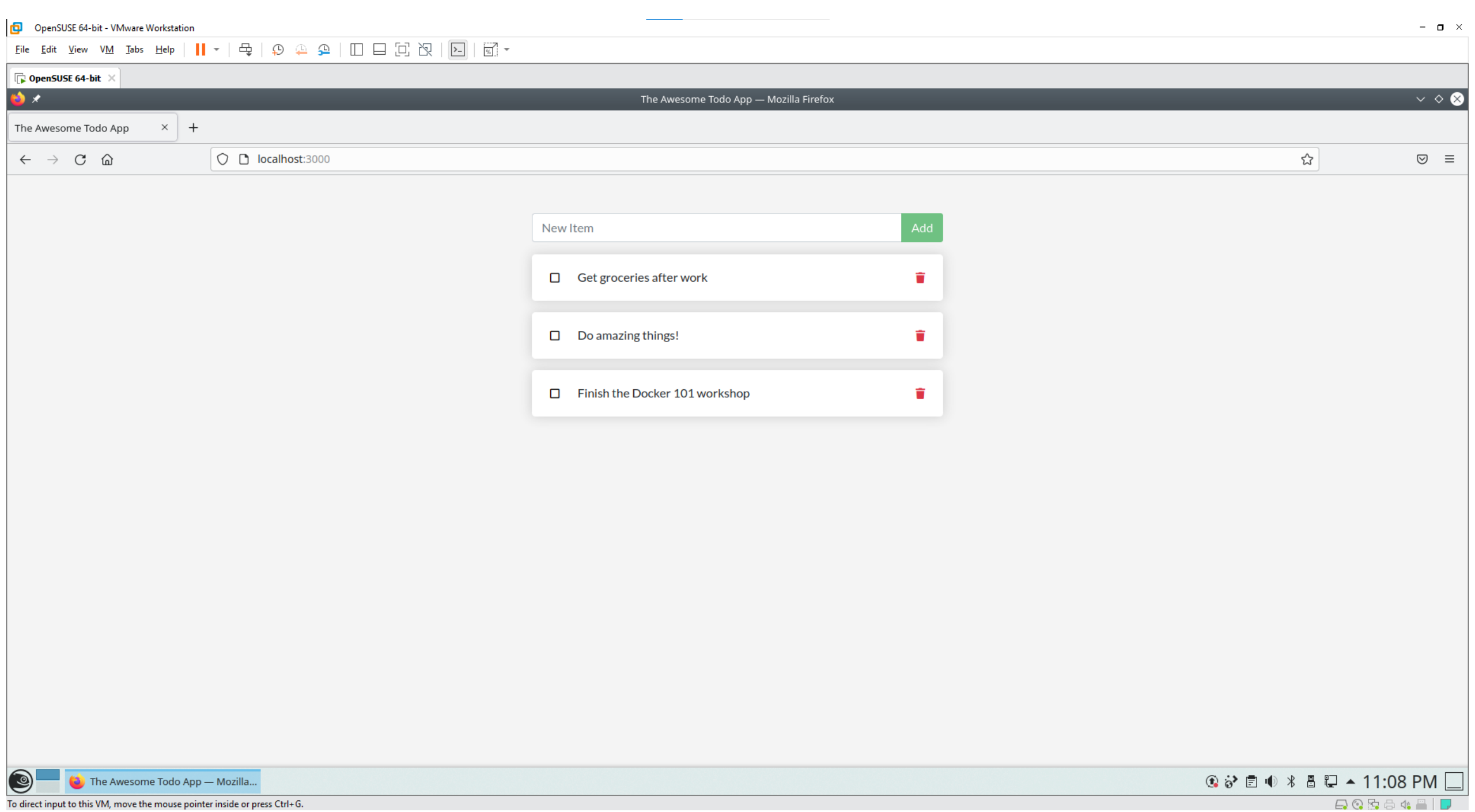
Select open5U5E Leap 15.3

```
#ANSIBLE PLAYBOOK
- hosts: "hosts"
  tasks:
  - name: Configuring Docker Repository
  zypper_repository:
  name: Docker
  description: "Docker Repo"
  baseurl: "https://download.docker.com/linux/sles/docker-ce.repo"
  gpgcheck: no
  register: x

  -name: Checking Configuration Status
   debug:
     var: x.failed

  -name: Installing Docker
   package:
      name: "install docker-ce docker-ce-cli containerd.io"
     state: present
  register: y

  -name: Checking Install Status
   debug:
     var: y.failed

  -Starting Docker Daemon
   service:
      name: docker
      state: started
      enabled: yes
   when: y.failed == false

  -name: "Launch database container"
    docker_container:
      name: "todo-app"
      image: mysql:5.7
    volumes:
    - "todo-mysql-data:/var/lib/mysql"
    restart: true
    networks:
    - name: "todo-app"
    alias:
    - "mysql"
    env:s
      MYSQL_DATABASE: todos
      MYSQL_PASSWORD: secret

    -name: Pull Getting-started Docker Image
      docker_image:
      name: as18/Getting-started
      tag: lastest
      source: pull

   -name: Launtching Getting-started Container
    docker_container:
         name: Getting-started
         image: as18/Getting-started
         state: started
         exposed_ports:
                - "3000"
         ports:
                - "3000:3000"
-- INSERT --                                                    1,18          All
```

Programing Assessment
Deliverables

In one public repository, please provide the following:

- Ansible playbook and inventory for deployment of the application
- Link to virtual machine where we can see the application. Alternatively, a video of the application running can be added to the public repository
- To facilitate navigation of the repository, please created a README file.


OpenSUSE 64-bit - VMware Workstation
File Edit View VM Tabs Help
OpenSUSE 64-bit
The Awesome Todo App — Mozilla Firefox
The Awesome Todo App
localhost:3000
New Item
Add
Get groceries after work
Do amazing things!
Finish the Docker 101 workshop
The Awesome Todo App — Mozilla...
11:08 PM
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

I have also attached the public repository link as follows:

https://github.com/AS1812/ProgrammingAssessment