

COMPTE RENDU RHCE

Q1:

```
[root@localhost ~]# ssh student@localhost
student@localhost's password:
Register this system with Red Hat Insights: insights-client --register
Create an account or view all your systems at https://red.ht/insights-dashboard
Last login: Sat Aug  3 18:15:30 2024 from ::1
[student@localhost ~]$ ls
ansible
[student@localhost ~]$ cd ansible/
[student@localhost ansible]$ cat ansible.cfg
[defaults]
remote_user = student
host_key_checking= false
ask_pass= false
inventory = /home/student/ansible/inventory
roles_path = /home/student/ansible/roles
collections_paths = /home/student/ansible/collections
[student@localhost ansible]$ cat inventory
[dev]
servera
[test]
serverb
[prod]
servera
[balancers]
serverb
```

Q2:

```
---
- name: Creating yum repos
  become: yes
  hosts: all
  tasks:
    - name: Create BaseOS Repository
      ansible.builtin.yum_repository:
        name: "baseos"
        description: "Baseos Description"
        baseurl: http://content/rhel9.0/x86_64/dvd/BaseOS
        gpgcheck: yes
        gpgkey: http://content.example.com/rhel9.0/x86_64/dvd/RPM-GPG-KEY-redhat-release
        enabled: yes

    - name: Create Appstream Repository
      ansible.builtin.yum_repository:
        name: "appstream"
        description: "App Description"
        baseurl: http://content/rhel9.0/x86_64/dvd/AppStream
        gpgcheck: yes
        gpgkey: http://content.example.com/rhel9.0/x86_64/dvd/RPM-GPG-KEY-redhat-release
        enabled: yes
```

Q3:

```
[student@localhost collections]$ ls
ansible_collections      linux-system-roles.logging      linux-system-roles.storage      rhel-system-roles.journald      rhel-system-roles.selinux
linux-system-roles.ad_integration  linux-system-roles.metrics      linux-system-roles.systemd      rhel-system-roles.kdump        rhel-system-roles.snapshot
linux-system-roles.bootloader      linux-system-roles.nbde_client  linux-system-roles.timesync      rhel-system-roles.kernel_settings  rhel-system-roles.ssh
linux-system-roles.certificate      linux-system-roles.nbde_server  linux-system-roles.tlog          rhel-system-roles.keylime_server  rhel-system-roles.sshd
linux-system-roles.cockpit          linux-system-roles.network      linux-system-roles.vpn          rhel-system-roles.logging         rhel-system-roles.storage
linux-system-roles.crypto_policies  linux-system-roles.podman       rhel-system-roles.ad_integration  rhel-system-roles.metrics         rhel-system-roles.systemd
linux-system-roles.fapolicyd        linux-system-roles.postfix      rhel-system-roles.bootloader     rhel-system-roles.nbde_client     rhel-system-roles.timesync
linux-system-roles.firewall         linux-system-roles.postgresql   rhel-system-roles.certificate     rhel-system-roles.nbde_server     rhel-system-roles.tlog
linux-system-roles.ha_cluster       linux-system-roles.rhc          rhel-system-roles.cockpit         rhel-system-roles.network         rhel-system-roles.vpn
linux-system-roles.journald         linux-system-roles.selinux      rhel-system-roles.crypto_policies  rhel-system-roles.podman          rhel-system-roles.snapshot
linux-system-roles.kdump           linux-system-roles.snapshot     rhel-system-roles.fapolicyd       rhel-system-roles.postfix         rhel-system-roles.postgresql
linux-system-roles.kernel_settings  linux-system-roles.ssh         rhel-system-roles.firewall        rhel-system-roles.postgresql      rhel-system-roles.rhc
linux-system-roles.keylime_server  linux-system-roles.sshd        rhel-system-roles.ha_cluster
[student@localhost collections]$ cd ansible_collections/
[student@localhost ansible_collections]$ ls
community      community.general-9.2.0.info
[student@localhost ansible_collections]$
```

Q4:

```
--
- src: https://galaxy.ansible.com/ui/standalone/roles/WeslleyMiler/balancer/
  name: balancer
- src: https://galaxy.ansible.com/ui/standalone/roles/JelleBrouwer02/php/
  name: phpinfo
```

Q5:

```
[student@localhost roles]$ tree
.
├── apache
│   ├── tasks
│   │   └── main.yml
│   └── templates
│       └── template.j2
└── apache_role.yml
```

tasks/main.yml file:

```
---
- name: Install httpd package
  ansible.builtin.yum:
    name: httpd
    state: present

- name: Start and enable httpd service
  ansible.builtin.service:
    name: httpd
    state: started
    enabled: yes

- name: Create index.html from template
  ansible.builtin.template:
    src: template.j2
    dest: /var/www/html/index.html
```

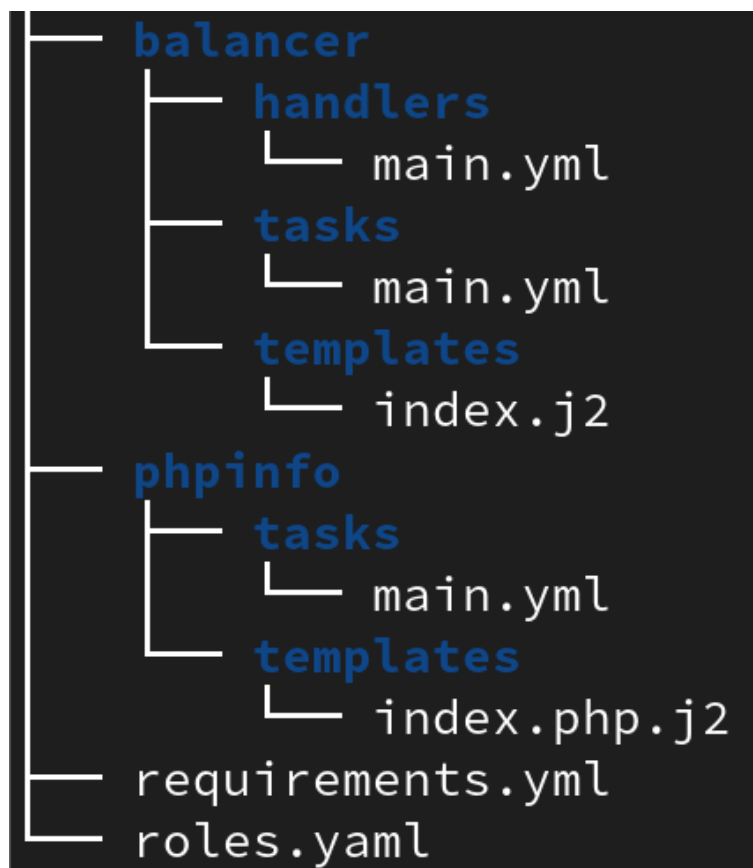
templates/template.j2 file:

```
My host is {{ ansible_fqdn }} on {{ ansible_default_ipv4.address }}
~
~
```

apache_role.yml file:

```
--  
- name: Apply apache role to dev group  
  hosts: dev  
  become: yes  
  roles:  
    - apache
```

Q6:



balancer/tasks/main.yml file:

```
--  
- name: Install httpd package  
  ansible.builtin.yum:  
    name: httpd  
    state: present  
  
- name: Start and enable httpd service  
  ansible.builtin.service:  
    name: httpd  
    state: started  
    enabled: yes  
  
- name: Deploy load balancer index.html  
  ansible.builtin.template:  
    src: index.j2  
    dest: /var/www/html/index.html  
  notify:  
    - Restart httpd
```

balancer/templates/index.j2 file:

```
Welcome to {{ ansible_hostname }}.lab.example.com, (version 1.0)
```

balancer/handlers/main.yml file:

```
--  
- name: Restart httpd  
  ansible.builtin.service:  
    name: httpd  
    state: restarted
```

phpinfo/tasks/main.yml file:

```
--  
- name: Install httpd and php packages  
  ansible.builtin.yum:  
    name: "{{ item }}"  
    state: present  
  loop:  
    - httpd  
    - php  
  
- name: Deploy PHP info page  
  ansible.builtin.template:  
    src: index.php.j2  
    dest: /var/www/html/index.php  
  
- name: Ensure httpd is started and enabled  
  ansible.builtin.service:  
    name: httpd  
    state: started  
    enabled: yes
```

phpinfo/templates/index.php.j2 file:

```
Welcome to {{ ansible_hostname }}.lab.example.com, (version 1.0)  
~
```

roles.yml file:

```
--  
- name: Apply balancer role to balancers group  
  hosts: balancers  
  become: yes  
  roles:  
    - balancer  
  
- name: Apply phpinfo role to webservers group  
  hosts: webservers  
  become: yes  
  roles:  
    - phpinfo
```

Q7.1:

```
--  
- name: Configure NTP on all managed nodes  
  hosts: all  
  become: yes  
  tasks:  
    - name: Ensure the NTP system role is applied  
      redhat.rhel_system_roles.ntp:  
        server:  
          - 172.25.254.254  
        iburst: yes
```

Q7.2:

```
---
- name: Set SELinux mode to enforcing on all managed nodes
  hosts: all
  become: yes
  tasks:
    - name: Ensure SELinux is in enforcing mode
      redhat.rhel_system_roles.selinux:
        mode: enforcing
```

Q8:

```
---
- name: Install vsftpd and mariadb-server in dev and test groups
  hosts: dev,test
  become: yes
  tasks:
    - name: Install vsftpd
      ansible.builtin.yum:
        name: vsftpd
        state: present

    - name: Install mariadb-server
      ansible.builtin.yum:
        name: mariadb-server
        state: present

- name: Install RPM Development Tools in prod group
  hosts: prod
  become: yes
  tasks:
    - name: Install RPM Development Tools group package
      ansible.builtin.yum:
        name: "@Development Tools"
        state: present

- name: Update all packages in dev group
  hosts: dev
  become: yes
  tasks:
    - name: Update all packages
      ansible.builtin.yum:
        name: '*'
        state: latest
```


Q9:

```
---
- name: Configure web content on dev group
  hosts: dev
  become: yes
  tasks:
    - name: Create /devweb directory with devops group ownership
      ansible.builtin.file:
        path: /devweb
        state: directory
        owner: root
        group: devops
        mode: '2775'

    - name: Set SELinux context type to httpd for /devweb directory
      community.general.sefcontext:
        target: '/devweb(/.*)?'
        setype: httpd_sys_rw_content_t
        state: present

    - name: Apply SELinux context to /devweb directory
      ansible.builtin.command:
        cmd: restorecon -R /devweb

    - name: Create index.html with content "Development"
      ansible.builtin.copy:
        dest: /devweb/index.html
        content: "Development"
        owner: root
        group: devops
        mode: '0644'

    - name: Create a symbolic link from /devweb to /var/www/html/devweb
      ansible.builtin.file:
        src: /devweb
        dest: /var/www/html/devweb
        state: link
```

Q10:

hwreport.j2 file:

```
HOSTNAME={{ inventory_hostname }}
MEMORY={{ ansible_facts['memtotal_mb'] | default('NONE') }}
BIOS={{ ansible_facts['bios_version'] | default('NONE') }}
CPU={{ ansible_facts['processor_vcpus'] | default('NONE') }}
DISK_SIZE_VDA={{ ansible_facts['devices']['vda']['size'] | default('NONE') }}
DISK_SIZE_VDB={{ ansible_facts['devices']['vdb']['size'] | default('NONE') }}
```

hwreport.yml file:

```
---
- name: producing an output file
  hosts: all
  become: true
  tasks:
    - name: producing an output file called /root/hwreport
      template:
        src: /home/student/ansible/hwreport.j2
        dest: /root/hwreport
```

Q11:

```
---
- name: replacing contents
  hosts: all
  become: true
  tasks:
    - name: content in dev group
      copy:
        content: "Development"
        dest: /etc/issue
        when: "'dev' in group_names"

    - name: content in test group
      copy:
        content: "Test"
        dest: /etc/issue
        when: "'test' in group_names"

    - name: content in production group
      copy:
        content: "Production"
        dest: /etc/issue
        when: "'prod' in group_names"
```

Q12:

hosts.j2 file:

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4::1
localhost localhost.localdomain localhost6 localhost6.localdomain6
{% for i in groups['all'] %}
{{ hostvars[i]['ansible_facts']['default_ipv4']['address'] }} {{ hostvars[i]['ansible_facts']['fqdn'] }} {{ hostvars[i]['ansible_facts']['hostname'] }}
{% endfor %}
```

hosts.yml file:

```
---
- name: Gathering facts of all hosts
  hosts: all
  become: true
  tasks:
    - name: Generating the file /etc/hosts using Jinja2 file on dev group
      ansible.builtin.template:
        src: /home/student/ansible/hosts.j2
        dest: /etc/myhosts
        when: inventory_hostname in groups['dev']
```

Q13:

```
[student@localhost ansible]$ echo "P@ssw0rd" > /home/student/ansible/secret.txt
[student@localhost ansible]$ cat secret.txt
P@ssw0rd
[student@localhost ansible]$ ansible-vault encrypt vault.yml --vault-password-file=/home/student/ansible/secret.txt
Encryption successful
[student@localhost ansible]$ ansible-vault view vault.yml --vault-password-file=/home/student/ansible/secret.txt
pw_developer: lamdev
pw_manager: lammgr
```

Q14:

```
--
- name: Manage developer users
  hosts: all
  become: true
  vars_files:
    - /home/student/ansible/vault.yml
    - /home/student/ansible/user_list.yml
  tasks:
    - name: Create group opsdev
      ansible.builtin.group:
        name: opsdev
        state: present
      when: inventory_hostname in groups['dev'] or inventory_hostname in groups['test']

    - name: Create developer users and add to opsdev group
      ansible.builtin.user:
        name: "{{ item.username }}"
        group: opsdev
        password: "{{ pw_developer | password_hash('sha512') }}"
        state: present
      loop: "{{ users | selectattr('job', 'equalto', 'developer') | list }}"
      when: inventory_hostname in groups['dev'] or inventory_hostname in groups['test']

- name: Manage manager users
  hosts: test
  become: true
  vars_files:
    - /home/student/ansible/vault.yml
    - /home/student/ansible/user_list.yml
  tasks:
    - name: Create group opsmgr
      ansible.builtin.group:
        name: opsmgr
        state: present

    - name: Create manager users and add to opsmgr group
      ansible.builtin.user:
        name: "{{ item.username }}"
        group: opsmgr
        password: "{{ pw_manager | password_hash('sha512') }}"
        state: present
      loop: "{{ users | selectattr('job', 'equalto', 'manager') | list }}"
      when: inventory_hostname in groups['test']
```

Q15:

```
[student@localhost ansible]$ ansible-vault rekey vault.yml
Vault password:
New Vault password:
Confirm New Vault password:
Rekey successful
[student@localhost ansible]$
```

Q16:

```
--  
- name: Ensure cron job for student user is present  
  hosts: all  
  become: true  
  tasks:  
    - name: Create cron job for student user  
      cron:  
        name: "Log EX294 progress"  
        minute: "*/2"  
        job: "logger 'EX294 in progress'"  
        user: "student"
```

Q17:

```
---
- name: Manage Logical Volume
  hosts: all
  become: true
  tasks:
    - name: Create and configure logical volume
      block:

        - name: Debug message if volume group not found
          debug:
            msg: "vg not found"
            when: "'research' not in ansible_lvm.vgs"

        - name: Create logical volume of 1500M size
          lvol:
            vg: research
            lv: data
            size: 1500
            state: present

      rescue:
        - name: Debug message if logical volume size is less than 1500M
          debug:
            msg: "Insufficient size of vg"

        - name: Create logical volume of 800M size
          lvol:
            vg: research
            lv: data
            size: 800
            state: present

      always:
        - name: Create file system on logical volume
          filesystem:
            fstype: ext3
            dev: "/dev/research/data"
```