1. Setup module to get facts from the target machine.

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"os_family"
"ansible_os_family": "Debian",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_architecture"
        "ansible_architecture": "x86_64",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_distribution"
        "ansible_distribution": "Ubuntu",
        "ansible_distribution_file_parsed": true,
        "ansible_distribution_file_path": "/etc/os-release",
        "ansible_distribution_file_variety": "Debian",
        "ansible_distribution_major_version": "16",
        "ansible_distribution_release": "xenial",
        "ansible_distribution_version": "16.04",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_nodename"
        "ansible_nodename": "TG-DevOps-OS004",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_pkg_mgr"
        "ansible_pkg_mgr": "apt",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_processor"
        "ansible_processor": [
        "ansible_processor_cores": 1,
        "ansible_processor_count": 2,
        "ansible_processor_threads_per_core": 1,
        "ansible_processor_vcpus": 2,

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_user"
        "ansible_user_dir": "/home/osgdev",
        "ansible_user_gecos": "osgdev,,,",
        "ansible_user_gid": 999,
        "ansible_user_id": "osgdev",
        "ansible_user_shell": "/bin/bash",
        "ansible_user_uid": 1000,
        "ansible_userspace_architecture": "x86_64",
        "ansible_userspace_bits": "64",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_python_version"
        "ansible_python_version": "2.7.12",

osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_product_name"
        "ansible_product_name": "VMware Virtual Platform",
```

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup | grep
"ansible_virtualization"
        "ansible_virtualization_role": "guest",
        "ansible_virtualization_type": "VMware",
```

Get all the facts from target machine:

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible localhost -m setup >> facts
```

---

2. Use of When conditionals:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat when.yaml
---
  - hosts: localhost
    tasks:
    - name: print the platform family
      shell: echo $ansible_os_family
      when: ansible_os_family == "Debian"

    - name: Non Debian Machine
      shell: echo "some other family"
      when: ansible_os_family == "RedHat"

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook -v when.yaml
Using /home/osgdev/ansilab/ansible.cfg as config file

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [print the platform family]
**********************************************
changed: [localhost] => {"changed": true, "cmd": "echo
$ansible_os_family", "delta": "0:00:00.003629", "end": "2018-04-29
11:05:55.451684", "rc": 0, "start": "2018-04-29 11:05:55.448055",
"stderr": "", "stderr_lines": [], "stdout": "", "stdout_lines": []}

TASK [Non Debian Machine]
*****************************************************
skipping: [localhost] => {"changed": false, "skip_reason": "Conditional
result was False"}

PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0
```

Note that the second module is skipped (Not failed), since the condition result was false.

---

3. Using Sudo to create users:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat user.yaml
- hosts: localhost
  become: yes
  tasks:
  - name: add several users
    user:
      name: testuser
      state: present
      groups: "docker"

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook user.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [add several users]
*********************************************************
changed: [localhost]

PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0
```

4. Creating Multiple Users using Loops:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat loop.yaml
- hosts: localhost
  become: yes
  tasks:
  - name: add several users
    user:
      name: "{{ item }}"
      state: present
      groups: "docker"
    with_items:
      - testuser1
      - testuser2
```

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook loop.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*****************************************************************
ok: [localhost]

TASK [add several users]
*****************************************************************
changed: [localhost] => (item=testuser1)
changed: [localhost] => (item=testuser2)

PLAY RECAP
*****************************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0
```

5. Using Loops in Variables:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat loopvar.yaml
- hosts: localhost
  become: yes

  vars:
    users_with_items:
      - name: "testuser3"
      - name: "testuser4"

  tasks:
  - name: add several users
    user:
      name: "{{ item.name }}"
      state: present
      groups: "docker"
    with_items: " {{users_with_items }}"

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook loopvar.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*****************************************************************
ok: [localhost]

TASK [add several users]
*****************************************************************
changed: [localhost] => (item={u'name': u'testuser3'})
changed: [localhost] => (item={u'name': u'testuser4'})
```

```
PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0

osgdev@TG-DevOps-OS004:~/ansilab$ cat /etc/passwd
......
....
testuser:x:1004:1004::/home/testuser:
testuser1:x:1005:1005::/home/testuser1:
testuser2:x:1006:1006::/home/testuser2:
testuser3:x:1007:1007::/home/testuser3:
testuser4:x:1008:1008::/home/testuser4:

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home
mysql  osgdev  testuser  testuser1  testuser2  testuser3  testuser4

osgdev@TG-DevOps-OS004:~/ansilab$ ls -l /home
total 28
drwxr-xr-x  2 mysql     mysql     4096 Apr 26 16:12 mysql
drwxr-xr-x 54 osgdev    docker    4096 Apr 29 13:50 osgdev
drwxr-xr-x  2 testuser  testuser  4096 Apr 29 12:55 testuser
drwxr-xr-x  2 testuser1 testuser1 4096 Apr 29 12:56 testuser1
drwxr-xr-x  2 testuser2 testuser2 4096 Apr 29 12:56 testuser2
drwxr-xr-x  2 testuser3 testuser3 4096 Apr 29 13:03 testuser3
drwxr-xr-x  2 testuser4 testuser4 4096 Apr 29 13:03 testuser4
```

6. Using Loops to create personal directories to users:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat loopdir.yaml
- hosts: localhost
  become: yes
  become_user: osgdev

  vars:
    users_with_items:
      - name: "testuser5"
        personal_directories:
        - "tu05"
      - name: "testuser6"
        personal_directories:
        - "tu06"

  tasks:
  - name: User with directories
    user:
      name: "{{ item.name }}"
    with_items: " {{users_with_items }}"

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook loopdir.yaml
```

```
PLAY [localhost]
***************************************************************

TASK [Gathering Facts]
***************************************************************
ok: [localhost]

TASK [User with directories]
*************************************************
failed: [localhost] (item={u'personal_directories': [u'tu05'], u'name':
u'testuser5'}) => {"changed": false, "item": {"name": "testuser5",
"personal_directories": ["tu05"]}, "msg": "useradd: Permission
denied.\nuseradd: cannot lock /etc/passwd; try again later.\n", "name":
"testuser5", "rc": 1}
failed: [localhost] (item={u'personal_directories': [u'tu06'], u'name':
u'testuser6'}) => {"changed": false, "item": {"name": "testuser6",
"personal_directories": ["tu06"]}, "msg": "useradd: Permission
denied.\nuseradd: cannot lock /etc/passwd; try again later.\n", "name":
"testuser6", "rc": 1}
      to retry, use: --limit @/home/osgdev/ansilab/loopdir.retry

PLAY RECAP
*********************************************************************
localhost                  : ok=1    changed=0    unreachable=0
failed=1
```

7. Using Loops to create common directories:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat loopcomdir.yaml
- hosts: localhost
  become: yes
  become_user: osgdev

  vars:
    users_with_items:
      - name: "testuser5"
        personal_directories:
        - "tu05"
      - name: "testuser6"
        personal_directories:
        - "tu06"

    common_directories:
      - ".ssh"
      - "loops"

  tasks:
  - name: Create common directories
    file:
      dest: "/home/{{ item.0.name }}/{{ item.1 }}"
      owner: "{{ item.0.name }}"
      group: "{{ item.0.name }}"
```

```
      state: directory
    with_nested:
      - "{{ users_with_items }}"
      - "{{ common_directories }}
```

---

8. Working Loops with folder creation (as an alternative, if step 3 fails)

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat dir1.yaml
- hosts: localhost

  tasks:
  - name: To Create a folder
    file:
      path: "/home/osgdev/ansilab/trialdir/trial"
      owner: osgdev
      group: docker
      state: directory
      mode: 0755

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook dir1.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*****************************************************
ok: [localhost]

TASK [To Create a folder]
*****************************************************
changed: [localhost]

PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0
```

9. Using Loops to create multiple folders:

```
osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/trialdir/
trial

osgdev@TG-DevOps-OS004:~/ansilab$ cat dir2.yaml
- hosts: localhost

  tasks:
  - name: To Create a folder
    file:
      path: "/home/osgdev/ansilab/trialdir/{{ item }}"
```

```
      owner: osgdev
      group: docker
      state: directory
      mode: 0755
    with_items:
    - trial1
    - trial2

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook dir2.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [To Create a folder]
*****************************************************
changed: [localhost] => (item=trial1)
changed: [localhost] => (item=trial2)

PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/trialdir/
trial  trial1  trial2
```

---

10. Nested Loops:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat dir4.yaml
- hosts: localhost

  tasks:
  - name: To Create a folder
    file:
      path: "/home/osgdev/ansilab/trialdir/{{ item[0] }}/{{ item[1] }}"
      owner: osgdev
      group: docker
      state: touch
      mode: 0755
    with_nested:
      - ['trial1', 'trial2']
      - ['file1', 'file2', 'file3']

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook dir4.yaml
```

```
PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*****************************************************************
ok: [localhost]

TASK [To Create a folder]
*****************************************************
changed: [localhost] => (item=[u'trial1', u'file1'])
changed: [localhost] => (item=[u'trial1', u'file2'])
changed: [localhost] => (item=[u'trial1', u'file3'])
changed: [localhost] => (item=[u'trial2', u'file1'])
changed: [localhost] => (item=[u'trial2', u'file2'])
changed: [localhost] => (item=[u'trial2', u'file3'])

PLAY RECAP
*********************************************************************
localhost                  : ok=2    changed=1    unreachable=0
failed=0

osgdev@TG-DevOps-OS004:~/ansilab$ tree /home/osgdev/ansilab/trialdir/
/home/osgdev/ansilab/trialdir/
├── trial
├── trial1
│   ├── file1
│   ├── file2
│   └── file3
└── trial2
    ├── file1
    ├── file2
    └── file3

3 directories, 6 files
```

---

11. Blocks:

Create File and Folder:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat block.yaml
- hosts: localhost

  vars:
    folder_path: /home/osgdev/ansilab/block

  tasks:
  - name: To Create a folder
    file:
      path: "{{folder_path}}/NEWSAMPLE2"
```

```
      owner: osgdev
      group: docker
      state: directory
      mode: 0755

  - name: To Create a file
    file:
      path: "{{folder_path}}/NEWSAMPLE2/new_file2"
      state: touch

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook block.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [To Create a folder]
*******************************************************
ok: [localhost]

TASK [To Create a file]
*********************************************************
changed: [localhost]

PLAY RECAP
*********************************************************************
localhost                  : ok=3    changed=1    unreachable=0
failed=0

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/block
NEWSAMPLE2
osgdev@TG-DevOps-OS004:~/ansilab$ ls
/home/osgdev/ansilab/block/NEWSAMPLE2/
new_file2

Remove the folder and file to recreate them.

osgdev@TG-DevOps-OS004:~/ansilab$ rm -rf /home/osgdev/ansilab/block/

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/block
osgdev@TG-DevOps-OS004:~/ansilab$
```

---

12. Making above set of activities into a block:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat block1.yaml
- hosts: localhost
```

```
  vars:
    folder_path: /home/osgdev/ansilab/block

  tasks:
  - block:
    - name: To Create a folder
      file:
        path: "{{folder_path}}/NEWSAMPLE2"
        owner: osgdev
        group: docker
        state: directory
        mode: 0755

    - name: To Create a file
      file:
        path: "{{folder_path}}/NEWSAMPLE2/new_file2"
        state: touch

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook block1.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [To Create a folder]
*******************************************************
changed: [localhost]

TASK [To Create a file]
*********************************************************
changed: [localhost]

PLAY RECAP
*********************************************************************
localhost                  : ok=3    changed=2    unreachable=0
failed=0

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/block
NEWSAMPLE2
osgdev@TG-DevOps-OS004:~/ansilab$ ls
/home/osgdev/ansilab/block/NEWSAMPLE2/
new_file2
osgdev@TG-DevOps-OS004:~/ansilab$ rm -rf
/home/osgdev/ansilab/block/NEWSAMPLE2/
osgdev@TG-DevOps-OS004:~/ansilab$
```

---

13. Error Handling in a block:

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat block2.yaml
- hosts: localhost

  vars:
    folder_path: /home/osgdev/ansilab/block

  tasks:
  - name: Folder and File Creation
    block:
    - name: Debug activity
      debug: msg='working on creating folder and file'

    - name: To Create a folder
      file:
        path: "{{folder_path}}/NEWSAMPLE2"
        owner: osgdev
        group: docker
        state: directory
        mode: 0755

    - name: To Create a file
      file:
        path: "{{folder_path}}/NEWSAMPLE1/new_file2"
        state: touch

    rescue:
    - name: Need to correct error
      debug: msg='Caught an error'

    - name: To Create a file
      file:
        path: "{{folder_path}}/NEWSAMPLE2/new_file2"
        state: touch

    - name: Error corrected
      debug: msg='Error Rectified'

    always:
    - name: Executing always
      debug: msg='Happy ending'

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-playbook block2.yaml

PLAY [localhost]
*****************************************************************

TASK [Gathering Facts]
*********************************************************
ok: [localhost]

TASK [Debug activity]
*********************************************************
ok: [localhost] => {
```

```
    "msg": "working on creating folder and file"
}

TASK [To Create a folder]
*******************************************************
changed: [localhost]

TASK [To Create a file]
*******************************************************
An exception occurred during task execution. To see the full traceback,
use -vvv. The error was: IOError: [Errno 2] No such file or directory:
'/home/osgdev/ansilab/block/NEWSAMPLE1/new_file2'
fatal: [localhost]: FAILED! => {"changed": false, "module_stderr":
"Traceback (most recent call last):\n  File
\"/tmp/ansible_RiF9_3/ansible_module_file.py\", line 474, in <module>\n
main()\n  File \"/tmp/ansible_RiF9_3/ansible_module_file.py\", line 448,
in main\n    open(b_path, 'wb').close()\nIOError: [Errno 2] No such file
or directory: '/home/osgdev/ansilab/block/NEWSAMPLE1/new_file2'\n",
"module_stdout": "", "msg": "MODULE FAILURE", "rc": 0}

TASK [Need to correct error]
*************************************************
ok: [localhost] => {
    "msg": "Caught an error"
}

TASK [To Create a file]
*******************************************************
changed: [localhost]

TASK [Error corrected]
*********************************************************
ok: [localhost] => {
    "msg": "Error Rectified"
}

TASK [Executing always]
*******************************************************
ok: [localhost] => {
    "msg": "Happy ending"
}

PLAY RECAP
*********************************************************************
localhost                  : ok=7    changed=2    unreachable=0
failed=1

osgdev@TG-DevOps-OS004:~/ansilab$ ls /home/osgdev/ansilab/block/
NEWSAMPLE2

osgdev@TG-DevOps-OS004:~/ansilab$ ls
/home/osgdev/ansilab/block/NEWSAMPLE2/
new_file2
```

Ansible Vaults

14. Creating Encrypted Files with Ansible vaults:

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault create foo.yml
New Vault password:
Confirm New Vault password:
---------------
- program:
    name: DevOps Professional
    duration: 20
----------------

osgdev@TG-DevOps-OS004:~/ansilab$ cat foo.yml
$ANSIBLE_VAULT;1.1;AES256
61656335386339663165613338303265373533663364636239613465393366663434653464303334
61393431643637386134336237653933306264383739346 30a6164333138653837666337663836 36
31646536326537656562363031323434633262373264363336666665313064313939333763623430
39656463653339376 20a643165643473361643531326435430653339396332363539373462663 3
64623466393963333438613861663638623936336164313131333434303266346462313961336363
65643134626334336239653166623463356263313362323636323462666631363761616236393562
61633163653162623136633563356432396 3
```

---

15. Editing Encrypted Files with Ansible vaults:

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault edit foo.yml
Vault password:
```

---

16. Encrypting Unencrypted Files with Ansible vaults :

```
osgdev@TG-DevOps-OS004:~/ansilab$ cat info.yml
- information
  name: important
  content: 100

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault encrypt info.yml
New Vault password:
Confirm New Vault password:
Encryption successful

osgdev@TG-DevOps-OS004:~/ansilab$ cat info.yml
$ANSIBLE_VAULT;1.1;AES256
64633239343163643364306235366262353639633966316139383033353031303239666230363931
38613433386464353836636266396663353163356666266640a646561346339306532303661646166
38633837633566366531653630663534306431396631626130663064356263656364356639663934
39616437646134623 30a34383034393136323065646130633536643264343266633639653263383 2
62363737366234653738656536313339323739656264613036326562646438343835633032613665
61656365303133383130353438393962303732363261663530 63
```

17. Decrypting Encrypted Files with Ansible vaults :

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault decrypt info.yml
Vault password:
Decryption successful

osgdev@TG-DevOps-OS004:~/ansilab$ cat info.yml
- information
  name: important
  content: 100

osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault decrypt foo.yml
Vault password:
Decryption successful

osgdev@TG-DevOps-OS004:~/ansilab$ cat foo.yml
- program:
    name: DevOps Professional
    duration: 20
```

18. Encrypt the file again and view it with password with Ansible vaults:

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault encrypt foo.yml
New Vault password:
Confirm New Vault password:
Encryption successful

osgdev@TG-DevOps-OS004:~/ansilab$ cat foo.yml
$ANSIBLE_VAULT;1.1;AES256
66313961343732343966373264323961633865653037656266613562613066346332323863666164
36613137616433373737613133643766623064626366613 80a3062373838656335303334353234 66
39333036356361383635396334316165663763616132353463373366313539393336633132353832
38386435323638613 70a37666539656463333237343431333932323232643435343732656638666 6
36383938636136663566646439343233626262666636643033303035373564396639623262663932
32336536333763666234323832326562353635393563396631616264333238313965333735316532
63366631363534326135386231333363626 1
```

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault view foo.yml
Vault password:
- program:
    name: DevOps Professional
    duration: 20
```

19. Changing the passwords with Ansible vaults :

```
osgdev@TG-DevOps-OS004:~/ansilab$ ansible-vault rekey foo.yml
```

```
Vault password:
New Vault password:
Confirm New Vault password:
Rekey successful
```

19.

20.
