

# Secure Coding

## Basic Commands

### 1. ipconfig - to get ip address

```
PS C:\Users\ganga> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter VirtualBox Host-Only Network:
```

### 2. cd - to change directory

```
PS C:\Users\ganga> cd .\OneDrive\
PS C:\Users\ganga\OneDrive>
```

### 3. ping

```
PS C:\Users\ganga\OneDrive> ping www.vitap.ac.in

Pinging vitap.ac.in [67.222.140.114] with 32 bytes of data:
Reply from 67.222.140.114: bytes=32 time=225ms TTL=50
Reply from 67.222.140.114: bytes=32 time=223ms TTL=50
Reply from 67.222.140.114: bytes=32 time=224ms TTL=50
```

### 4. dir- list of all directories

```
PS C:\Users\ganga\OneDrive> dir

Directory: C:\Users\ganga\OneDrive

Mode                LastWriteTime         Length Name
----                -
d----1           21/06/2020   06:06 PM             Attachments
d-r--1           03/03/2021   09:04 AM             Desktop
```

## 5. ls - list of all directories

```
PS C:\Users\ganga\OneDrive> ls

Directory: C:\Users\ganga\OneDrive


Mode                LastWriteTime         Length Name
----                -
d----1           21/06/2020   06:06 PM             Attachments
d-r--1           03/03/2021   09:04 AM             Desktop
```

## 6. Get-Alias -will list the preloaded Alias's and will show you what Cmdlet they are mapped to

```
PS C:\Users\ganga> Get-Alias

CommandType      Name                                Version      Source
-----
Alias            % -> ForEach-Object
Alias            ? -> Where-Object
Alias            ac -> Add-Content
Alias            asnp -> Add-PSSnapin
Alias            cat -> Get-Content
Alias            cd -> Set-Location
Alias            CFS -> ConvertFrom-String          3.1.0.0     Microsoft.PowerShell.Utility
Alias            chdir -> Set-Location
Alias            clc -> Clear-Content
Alias            clear -> Clear-Host
Alias            clhy -> Clear-History
Alias            cli -> Clear-Item
```

## 7. Get-Command -Retrieve list of Cmdlets

```
PS C:\Users\ganga\OneDrive> Get-Command

CommandType      Name                                Version
-----
Alias            Add-AppPackage                    2.0.1.0
Alias            Add-AppPackageVolume              2.0.1.0
Alias            Add-AppProvisionedPackage         3.0
Alias            Add-ProvisionedAppPackage         3.0
Alias            Add-ProvisionedAppxPackage        3.0
Alias            Add-ProvisioningPackage           3.0
Alias            Add-TrustProvisioningCertificate  3.0
```

## 8. Get-Process - gives all running processes

```
PS C:\Users\ganga\OneDrive> Get-Process

Handles  NPM(K)  PM(K)  WS(K)  CPU(s)  Id  SI ProcessName
-----
296      15      2796   3396   0.00    3308 0 aips
390      22     15276  22644   2.72   2088 1 ApplicationFrameHost
1067     23    139224  27672  1,345.03 3200 0 audiodg
1631      9      1860    424   0.00   4928 0 BTDevMgr
302      16     29688  34324   1.09   1616 1 chrome
292      18     39408  38356   1.89   2192 1 chrome
```

**9.Get-ChildItems**-Gets the items and child items in one or more specified locations.

```
PS C:\Users\ganga> Get-ChildItem
```

Directory: C:\Users\ganga

Mode	LastWriteTime	Length	Name
d-----	02/03/2021 04:10 PM		.android
d-----	21/06/2020 07:09 PM		.AndroidStudio4.0
d-----	15/11/2020 12:44 PM		.atom
d-----	01/07/2020 09:00 PM		.config
d-----	20/09/2020 03:32 PM		.gradle
d-----	15/07/2020 03:23 PM		.idlerc

**10.piping** - here the result is sorted

```
PS C:\Users\ganga> Get-process|select ProcessName,ID|Sort ProcessName|FL
```

ProcessName : aips  
Id : 3308

ProcessName : ApplicationFrameHost  
Id : 2088

ProcessName : audiodg  
Id : 3200

ProcessName : BTDevMgr  
Id : 4928

**11.Gwmi Win32\_Bios | select SerialNumber** -Pull computer serial number

```
PS C:\Users\ganga\OneDrive> Gwmi Win32_Bios | select SerialNumber
```

SerialNumber

-----

CND8484GP4

**12.Gwmi win32\_OperatingSystem -comp | server).reboot()**- Reboot a machine

```
PS C:\Users\ganga\OneDrive> (Gwmi win32_OperatingSystem -comp | server).reboot()
```

**13.Gwmi Win32\_LogicalDisk**- Gather Logical Disk Space information

```
PS C:\Users\ganga\OneDrive> Gwmi Win32_LogicalDisk
```

```
DeviceID      : C:  
DriveType     : 3  
ProviderName  :  
FreeSpace     : 15276261376  
Size          : 126710968320  
VolumeName    : Windows
```

```
DeviceID      : D:  
DriveType     : 3  
ProviderName  :  
FreeSpace     : 346996236288  
Size          : 984699891712  
VolumeName    : DATA
```

```
DeviceID      : E:  
DriveType     : 3  
ProviderName  :
```

#### 14.Gwmi Win32\_Process- Show running processes

```
PS C:\Users\ganga\OneDrive> Gwmi Win32_Process
```

```
__GENUS       : 2  
__CLASS       : Win32_Process  
__SUPERCLASS  : CIM_Process  
__DYNASTY     : CIM_ManagedSystemElement  
__RELPATH     : Win32_Process.Handle="0"  
__PROPERTY_COUNT : 45  
__DERIVATION  : {CIM_Process, CIM_LogicalElement, CIM_ManagedSystemElement}  
__SERVER      : LAPTOP-OREUD2V6
```

#### 15.\$NIC = Get-WMIObject Win32\_NetworkAdapterConfiguration | where{\$\_.IPEnabled -eq "TRUE"}

**\$NIC -Show Network Adapters**

```
PS C:\Users\ganga\OneDrive> $NIC = Get-WMIObject Win32_NetworkAdapterConfiguration | where{$_.IPEnabled -eq "TRUE"}  
PS C:\Users\ganga\OneDrive> $NIC
```

```
DHCPEnabled    : True  
IPAddress      : {192.168.1.100, fe80::2062:630e:1390:f7a4}  
DefaultIPGateway : {192.168.1.1}  
DNSDomain      : dlinkrouter  
ServiceName     : RTWlanE  
Description     : Realtek RTL8822BE 802.11ac PCIe Adapter #2  
Index          : 1
```

```
DHCPEnabled    : False  
IPAddress      : {192.168.56.1, fe80::75b6:d3d2:e91:6068}  
DefaultIPGateway :
```

#### 16.Get-Process | Where { \$\_.handles -gt 500 } | Sort handles | Format-Table -Process

```
PS C:\Users\ganga\OneDrive> Get-Process | Where { $_.handles -gt 500 } | Sort handles | Format-Table
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
502	30	59768	43780	1.19	19756	1	powershell
504	28	27988	3108	0.31	19384	1	steamwebhelper
509	179	400240	358580	138.44	10048	1	Teams
513	27	12652	18536	4.94	14940	1	ModuleCoreService
516	19	3836	2396		5632	0	svchost
518	20	7104	3764	0.80	5544	1	ETDCtrl
520	35	39932	4732	2.06	1332	1	HPAudioSwitch

17. Ps -Find the processes in the memory

```
PS C:\Users\ganga\OneDrive> Ps
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
296	15	2796	3384		3308	0	aips
351	21	14968	22072	2.72	2088	1	ApplicationFrameHost
1071	23	139188	25140	1,376.66	3200	0	audiodg

18.whoami- Current User

```
PS C:\Users\ganga\OneDrive> whoami
laptop-oreud2v6\ganga
```

19.Get-WmiObject -Class Win32\_ComputerSystem -Get information about the make and model of a computer

```
PS C:\Users\ganga\OneDrive> Get-WmiObject -Class Win32_ComputerSystem
>>
```

```

Domain                : WORKGROUP
Manufacturer          : HP
Model                 : HP Pavilion Gaming Laptop 15-cx0xxx
Name                  : LAPTOP-OREUD2V6
PrimaryOwnerName      : gangasuresh2000@gmail.com
TotalPhysicalMemory   : 17062678528

```

20.Get-WmiObject -Class Win32\_Product -ComputerName . | Format-Wide -Column 1 -Get information about the Installed applications

```
PS C:\Users\ganga\OneDrive> Get-WmiObject -Class Win32_Product -ComputerName . | Format-Wide -Column 1
>>
```

```

Python 3.8.4 Core Interpreter (64-bit)
Python 3.8.4 Tcl/Tk Support (64-bit)
Python 3.8.4 Test Suite (64-bit)
BlueJ
Python 3.8.4 Development Libraries (64-bit)

```

## Exercise

- Find the first five processes using the most memory

```
PS C:\Users\ganga\OneDrive> ps | sort -p ws | select -last 5
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
-----	-----	-----	-----	-----	--	--	-----
544	38	209728	245780	36.22	21860	1	chrome
2621	86	303580	253776	441.72	16764	1	chrome
538	25	304148	293488	37.34	8528	0	mcshield
509	179	400328	359404	139.14	10048	1	Teams
0	0	2020	912608		2912	0	Memory Compression

## Assignment

- Write a python script to get all the file names in the current directory
- Write a python script to get all the directory names in the current directory
- Write a python script to get all the directory and subdirectory names in the current directory
- Write a python script to get all the file name, directory and all the subdirectory names (recursively) in the current directory
- Write a python script to get all the file name, directory and all the subdirectory names (recursively) in the current drive and write it to a text file.
- Write a python script which creates four new files in the current directory using Powershell.

## Directory

Name	Status	Date modified	Type	Size
__pycache__	✓	20/02/2021 09:00 PM	File folder	
build	✓	20/02/2021 06:47 PM	File folder	
dist	✓	20/02/2021 09:00 PM	File folder	
diskdefrag	✓	20/02/2021 08:59 PM	Python File	1 KB
diskdefrag.spec	✓	20/02/2021 09:00 PM	SPEC File	1 KB
emptyRecycle	✓	20/02/2021 07:07 PM	Python File	1 KB
filereader	✓	03/03/2021 04:56 PM	Python File	1 KB
hello	✓	17/02/2021 04:40 PM	Python File	1 KB
hello.spec	✓	17/02/2021 04:38 PM	SPEC File	1 KB
lockpc	✓	17/02/2021 06:33 PM	Python File	1 KB
logger	✓	17/02/2021 06:15 PM	Python File	1 KB

### 1. Script to get all the file names in the current directory

```
filereader.py - C:/Users/ganga/OneDrive/Desktop/secure/filereader.py (3.8.4)
File Edit Format Run Options Window Help


from pathlib import Path

basepath = Path('C://Users//ganga//OneDrive//Desktop//Secure')
files_in_basepath = basepath.iterdir()
for item in files_in_basepath:
    if item.is_file():
        print(item.name)
```

### Output

```
Python 3.8.4 Shell
File Edit Shell Debug Options
Python 3.8.4 (tags/v3.8.4:8e37480, May 6 2020) on win32
Type "help", "copyright", "credits() or "help()" to get more help.
>>>
===== RESTART: C:\Users\ganga\OneDrive\Desktop\secure\
diskdefrag.py
diskdefrag.spec
emptyRecycle.py
filereader.py
hello.py
hello.spec
lockpc.py
logger.py
>>> |
```


## 2. Script to get all the directory names in the current directory

 filereader.py - C:/Users/ganga/OneDrive/Desktop/secure/filereader.py (3.8.4)  
File Edit Format Run Options Window Help  


```
import os

# List all subdirectories using os.listdir
basepath = 'C://Users//ganga//OneDrive//Desktop//Secure|'
for entry in os.listdir(basepath):
    if os.path.isdir(os.path.join(basepath, entry)):
        print(entry)
```

Output

 Python 3.8.4 Shell  
File Edit Shell De  
Python 3.8.4 (64-bit)  
[AMD64] on win32  
Type "help", "copyright", "credits()>>>  
>>>  
=====  
REST  
build  
dist  
\_\_pycache\_\_  
>>>

## 3. Script to get all the directory and subdirectory names in the current directory

 filereader.py - C:/Users/ganga/OneDrive/Desktop/secure/filereader.py (3.8.4)  
File Edit Format Run Options Window Help  

```
import os
rootdir = 'C://Users//ganga//OneDrive//Desktop//Secure'
for rootdir, dirs, files in os.walk(rootdir):
    for subdir in dirs:
        print(os.path.join(rootdir, subdir))
```



## Output

```
Python 3.8.4 Shell
File Edit Shell Debug Options Window Help
Python 3.8.4 (tags/v3.8.4:dfa645a, Jul 13 2020, 16:46:45) [MSC v.
D64] on win32
Type "help", "copyright", "credits" or "license()" for more infor
>>>
===== RESTART: C:/Users/ganga/OneDrive/Desktop/secure/fileread
C://Users//ganga//OneDrive//Desktop//Secure\build
C://Users//ganga//OneDrive//Desktop//Secure\dist
C://Users//ganga//OneDrive//Desktop//Secure\__pycache__
C://Users//ganga//OneDrive//Desktop//Secure\build\diskdefrag
C://Users//ganga//OneDrive//Desktop//Secure\build\hello
>>> |
```

4. Script to get all the file name, directory and all the subdirectory names (recursively) in the current directory

```
filereader.py - C:/Users/ganga/OneDrive/Desktop/secure/filereader.py (3.8.4)
File Edit Format Run Options Window Help
import os
from pathlib import Path
rootdir = 'C://Users//ganga//OneDrive//Desktop//Secure'
for rootdir, dirs, files in os.walk(rootdir):
    for subdir in dirs:
        print(os.path.join(rootdir, subdir))

basepath = Path('C://Users//ganga//OneDrive//Desktop//Secure')
files_in_basepath = basepath.iterdir()
for item in files_in_basepath:
    if item.is_file():
        print(item.name)
```

## Output

```
===== RESTART: C:/Users/ganga/OneDrive/Desktop/secure/11
C://Users//ganga//OneDrive//Desktop//Secure\build
C://Users//ganga//OneDrive//Desktop//Secure\dist
C://Users//ganga//OneDrive//Desktop//Secure\__pycache__
C://Users//ganga//OneDrive//Desktop//Secure\build\diskdefrag
C://Users//ganga//OneDrive//Desktop//Secure\build\hello
diskdefrag.py
diskdefrag.spec
emptyRecycle.py
filereader.py
hello.py
hello.spec
lockpc.py
logger.py
>>> |
```

5. Script to get all the file name, directory and all the subdirectory names (recursively) in the current drive and write it to a text file.

```
filereader.py - C:/Users/ganga/OneDrive/Desktop/secure/filereader.py (3.8.4)
File Edit Format Run Options Window Help

import os
from pathlib import Path
rootdir = 'C://Users//ganga//OneDrive//Desktop//Secure'
f = open("result.txt", "a+")
for rootdir, dirs, files in os.walk(rootdir):
    for subdir in dirs:
        print(os.path.join(rootdir, subdir))
        f.write(os.path.join(rootdir, subdir)+'\n')

basepath = Path('C://Users//ganga//OneDrive//Desktop//Secure')
files_in_basepath = basepath.iterdir()
for item in files_in_basepath:
    if item.is_file():
        print(item.name)
        f.write(item.name+'\n')
f.close()
```

## Output









```
result - Notepad
File Edit Format View Help
C://Users//ganga//OneDrive//Desktop//Secure\build
C://Users//ganga//OneDrive//Desktop//Secure\dist
C://Users//ganga//OneDrive//Desktop//Secure\__pycache__
C://Users//ganga//OneDrive//Desktop//Secure\build\diskdefrag
C://Users//ganga//OneDrive//Desktop//Secure\build\hello
diskdefrag.py
diskdefrag.spec
emptyRecycle.py
filereader.py
hello.py
hello.spec
lockpc.py
logger.py
result.txt
```

## 6.Script which creates four new files in the current directory using Powershell

```
powershell.py - C:/Users/ganga/OneDrive/Desktop/secure/powershell.py (3.8.4)
File Edit Format Run Options Window Help
import subprocess
def run( cmd):
    completed = subprocess.run(["powershell", "-Command", cmd], capture_output=True)
    return completed

for i in range(1,5):
    command="$text = 'Hello World!' | Out-File -FilePath C:\\Users\\ganga\\OneDrive\\Desktop\\secure\\test"+str(i)+"\\.txt"
    print(run(command))
```

## Output

 test1		03/03/2021 05:35 PM
 test2		03/03/2021 05:35 PM
 test3		03/03/2021 05:35 PM
 test4		03/03/2021 05:35 PM