

***Python for Security Engineer***

**Training Assignment**

**Hanoi, mm/yyyy**

RECORD OF CHANGES

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| D:\FSOFT\SERVER GST\86.WIP\2.Template\6_Logo\Logo FA\Logo FA New-02.png | **CODE : <Assignment Code>**  **TYPE : <Type of Assignment>**  **LOC : <Lines of Code>**  **DURATION : <Duration in minutes>** |

# Day 1. Unit 1: Set up environment

Assignment 1: Install Python 3.10

<Detail description of the assignment; can be in the following form:

Objectives: Install Python 3.10 on the learning machine

Assumptions: Installed Python 3.10

Technical Requirements:

* Must use Unix-based OS(Ubuntu, Arch, MacOS) or WSL2(Windows)

Questions to answer:

Estimated Time to complete: 15 mins

# Day 1. Unit 2: Mutations

Descriptions:

Read a given string, change the character at a given index and then print the modified string.

Sample Input

STDIN Function

----- --------

abracadabra s = 'abracadabra'

5 k position = 5, character = 'k'

Sample Output

abrackdabra

Technical Requirements:

* Must use Python3

# Day 2. Unit 1: 2 Sum

Descriptions:

Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to target.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Example 1:

Input: nums = [2,7,11,15], target = 9

Output: [0,1]

Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

Technical Requirements:

* Must use Python3

# Day 2. Unit 2: The Minion Game

Descriptions:

Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to target.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Example 1:

Input: nums = [2,7,11,15], target = 9

Output: [0,1]

Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

Technical Requirements:

* Must use Python3

# Day 2. Unit 3: Word Order

Descriptions:

You are given words. Some words may repeat. For each word, output its number of occurrences. The output order should correspond with the input order of appearance of the word. See the sample input/output for clarification.

Sample Input

4

bcdef

abcdefg

bcde

bcdef

Sample Output

3

2 1 1

Technical Requirements:

* Must use Python3

# Day 3. Unit 1: Validating Credit Card Numbers

Descriptions:

You and Fredrick are good friends. Yesterday, Fredrick received credit cards from ABCD Bank. He wants to verify whether his credit card numbers are valid or not. You happen to be great at regex so he is asking for your help!

A valid credit card from ABCD Bank has the following characteristics:

► It must start with a 4, 5 or 6.

► It must contain exactly 16 digits.

► It must only consist of digits (0-9).

► It may have digits in groups of 4, separated by one hyphen "-".

► It must NOT use any other separator like ' ' , '\_', etc.

► It must NOT have 4 or more consecutive repeated digits.

****Examples****:

****Valid Credit Card Numbers****

4253625879615786

4424424424442444

5122-2368-7954-3214

****Invalid Credit Card Numbers****

42536258796157867 #17 digits in card number → Invalid

4424444424442444 #Consecutive digits are repeating 4 or more times → Invalid

5122-2368-7954 - 3214 #Separators other than '-' are used → Invalid

44244x4424442444 #Contains non digit characters → Invalid

0525362587961578 #Doesn't start with 4, 5 or 6 → Invalid

Technical Requirements:

* Must use Python3

# Day 3. Unit 2: Find The Flag

Descriptions:

Given a folder that contains some file that has a character of a flag and others do not. Find the flag

Example:

Not a flag: 0Not0 0this0 0file0

Contains the character “}”: } 81This81 81file81

Technical Requirements:

* Must use Python3
* Must use os.path module
* Must use re module

# Day 4. Unit 1: Get all the image

Descriptions:

Write a program to get and download all the image in <https://en.wikipedia.org/wiki/Tenterfield,_New_South_Wales>.

Technical Requirements:

* Must use Python3

# Day 4. Unit 2: Get all the alerts

Descriptions:

Write a Python program get the number of security alerts issued by US-CERT in the current year.

Source: <https://www.us-cert.gov/ncas/alerts>

Technical Requirements:

* Must use Python3

# Day 5. Unit 1: Get all the alerts (continue)

Descriptions:

Write a Python program get alerts issued by US-CERT in the current year and write output to CSV and Excel file.

Source: <https://www.us-cert.gov/ncas/alerts>

Output fields: Alert ID, Alert Name, Release Date, Last revised, Tips, Alert Link

Technical Requirements:

* Must use Python3

# Day 5. Unit 2: File format convert

Descriptions:

Write a Python program to change from json or yaml format to csv and Excel(XLSX) and vise-versa.Using

Sample command:

python3 convert\_type.py --input test.csv --output test.json

Technical Requirements:

* Must use Python3
* Must use argparse module

# Day 6. Unit 1: Base convert

Descriptions:

Get the flag from this text:

MDAxMTAwMTEwMDExMDExMTAwMTEwMDExMDAxMTAwMTAwMDExMDAxMTAwMTExMDAwMDAxMTAwMTEwMDExMDEwMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTEwMDEwMDAxMTAwMTEwMDExMDAwMDAwMTEwMDExMDAxMTAxMDAwMDExMDAxMTAwMTExMDAwMDAxMTAwMTEwMDExMDExMTAwMTEwMDExMDAxMTAwMTAwMDExMDAxMTAwMTEwMTAwMDAxMTAwMTEwMDExMTAwMDAwMTEwMDExMDAxMTAxMTEwMDExMDAxMTAwMTEwMDExMDAxMTAwMTEwMDExMDEwMTAwMTEwMDExMDAxMTAxMDEwMDExMDAxMTAwMTEwMTExMDAxMTAwMTEwMDExMDExMDAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTEwMDAxMDAxMTAwMTEwMDExMTAwMTAwMTEwMDExMDAxMTAxMTAwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMDAwMTAwMTEwMDExMDAxMTAwMDAwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMTAwMTAwMTEwMDExMDAxMTAwMDAwMDExMDAxMTAwMTEwMTAwMDAxMTAwMTEwMDExMTAwMTAwMTEwMDExMDAxMTAxMDEwMDExMDAxMTAwMTEwMTExMDAxMTAwMTEwMDExMDAwMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMTAwMTAwMTEwMDExMDAxMTAwMDAwMDExMDAxMTAwMTExMDAwMDAxMTAwMTEwMDExMDEwMDAwMTEwMDExMDAxMTAxMDEwMDExMDAxMTAwMTEwMDExMDAxMTAwMTEwMDExMDEwMTAwMTEwMDExMDAxMTAwMDAwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMDAwMDAwMTEwMDExMDAxMTAxMDEwMDExMDAxMTAwMTEwMDAxMDAxMTAwMTEwMDExMTAwMDAwMTEwMDExMDAxMTAxMTEwMDExMDAxMTAwMTEwMTAwMDAxMTAwMTEwMDExMTAwMDAwMTEwMDExMDAxMTEwMDEwMDExMDAxMTAwMTEwMDAwMDAxMTAwMTEwMDExMDEwMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTExMDAwMDAxMTAwMTEwMDExMDExMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTEwMDAxMDAxMTAwMTEwMDExMDEwMTAwMTEwMDExMDAxMTEwMDEwMDExMDAxMTAwMTEwMDAwMDAxMTAwMTEwMDExMDAwMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMDExMTAwMTEwMDExMDAxMTAxMTAwMDExMDAxMTAwMTEwMTAwMDAxMTAwMTEwMDExMTAwMTAwMTEwMDExMDAxMTEwMDEwMDExMDAxMTAwMTEwMDAwMDAxMTAwMTEwMDExMDAwMTAwMTEwMDExMDAxMTAwMDEwMDExMDAxMTAwMTExMDAxMDAxMTAwMTEwMDExMTAwMDAwMTEwMDExMDAxMTAxMTEwMDExMDAxMTAwMTEwMTAxMDAxMTAwMTEwMDExMDExMQ

Flag format: Py4SE{FLAG}

Process to get this text:

Base64 -> ROT13 -> Decimal -> Hex -> Binary -> Base 64

Technical Requirements:

* Must use Python3

# Day 6. Unit 2: File format convert (part 2)

Descriptions:

Write a Python program to read all the file from folder and change from:

* json or yaml to csv
* csv to json

Sample command:

python3 convert\_types.py test/

Technical Requirements:

* Must use Python3
* Must use os.path module

# Day 7. Unit 1: Sandwish Store

Descriptions:

Write a program using Flask to CRUD using csv file as database and json as input and response

Technical Requirements:

* Must use Python3
* Must use Flask module

# Day 8. Unit 1: Cat search Discord bot

Descriptions:

Write a Discord bot that

- Send a cat image every 5 minus

- Search cat image with inline command

Technical Requirements:

* Must use Python3

# Day 8. Unit 2: Cat search Slack bot

Descriptions:

Write a Slack bot that

- Send a cat image every 5 minus

- Search cat image with inline command

Technical Requirements:

* Must use Python3

# Day 9. Unit 1: file

Descriptions:

Write a Python program to do everything the file command can do

Source: <https://linux.die.net/man/1/file>

Technical Requirements:

* Must use Python3

# Day 9. Unit 2: cut

Descriptions:

Write a Python program to do everything the cut command can do

Source: <https://linux.die.net/man/1/cut>

Technical Requirements:

* Must use Python3

# Day 10. Unit 1: Sigma to Excel

Descriptions:

Write a Python program pull from sigma repo and convert to Splunk and write output to Excel file every 10 minutes

Source: <https://github.com/SigmaHQ/sigma>

Output fields: File Name, Title, Description, Technique, Query

Sample command:

python3 sigma\_to\_excel.py -t streamalert -c tools/config/streamalert.yml rules/windows/process\_creation/proc\_creation\_win\_hack\_krbrelayup.yml -out test.xlsx

Technical Requirements:

* Must use Python3

**-- THE END --**