

# 25 HARD

#### DAY 1

Introduction To Python and Installation

Link -: Python Tutorial for Beginners with VS Code

#### Day 2

Introduction To Python Basics
Link -: Python Basics for Beginners | Python tutorial

#### Day 3

Operator and type of Operators in Python
Link -: <u>Python Operators for Beginners | Python tutorial</u>
Assignment -:

- 1. Input a year and find whether it is a leap year or not.
- 2. Take two numbers and print the sum of both.
- 3. Take a number as input and print the multiplication table for it.

# Day 4

**Data Types in Python** 

Link -: <u>Python Data Types for Beginners | Python tutorial</u> Assignment -:

- 1. Try guessing the type of the variable and verify using the type keyword
- 2. Write a program to concatenate two strings of first and last name





Input Control and Conditional Flow

Link -: Python User Input & Control Flow | Python tutorial

#### Assignment -:

- 1. Write a program to accept two numbers from the user and calculate multiplication
- 2. Display three string "Name", "Is", "James" as "Name\*\*Is\*\*James"

#### Day 6

If Else Condition

Link:-#19 Python Tutorial for Beginners | If Elif Else Statement in Python Assignment -:

- 1. Write a program to print whether a number is even or odd, also take input from the user.
- 2. Take name as input and print a greeting message for that particular name.
- 3. Take in two numbers and an operator (+, -, \*, /) and calculate the value. (Use if conditions)
- 4. Take 2 numbers as input and print the largest number.
- 5. To find out whether the given String is Palindrome or not.

#### Day 7

While and For Loops

Link -: <u>Python While Loops & For Loops | Python tutorial for Beginners</u>
Assignment -:

- 1. Area Of Circle Java Program
- 2. Area Of Triangle
- 3. Area Of Rectangle Program
- 4. Area Of Isosceles Triangle
- 5. Volume Of Cylinder





# **Day 8**Print these patterns using loops:

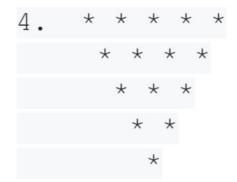
6.	*
	**
	***
	****
	****

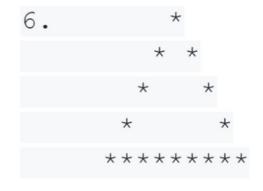


7.	****
	***
	***
	**
	*



1.	*
	* * *
	****
	*****
	*****



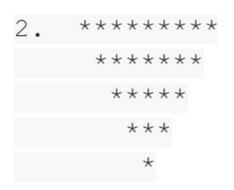


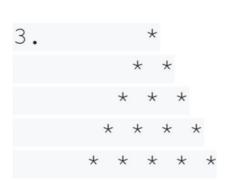
\*

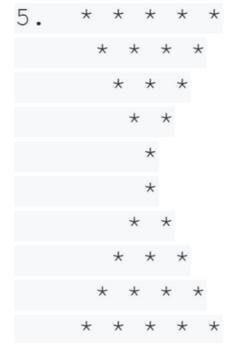
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01.					1				
				1		1			
			1		2		1		
		1		3		3		1	
	1		4		6		4		1

02.	1
	212
	32123
	4321234
	32123
	212
	1

03.	****	***
	****	***
	***	* * *
	**	**
	*	*
	*	*
	**	* *
	***	* * *
	***	***
	*****	***

*	*
* *	* *
***	* *
****	* *
*****	* *
****	* *
***	* *
**	* *
*	*
	**  **  **  **  **  **  **  **  **  **

05.	***	*
	*	*
	*	*
	*	*
	***	*





01.	1				
	2	3			
	4	5	6		
	7	8	9	10	
	11	12	13	14	15

02.	1				
	0	1			
	1	0	1		
	0	1	0	1	
	1	0	1	0	1

03.					1				
				2	1	2			
			3	2	1	2	3		
		4	3	2	1	2	3	4	
	5	4	3	2	1	2	3	4	5

04.	4	4	4	4	4	4	4
	4	3	3	3	3	3	4
	4	3	2	2	2	3	4
	4	3	2	1	2	3	4
	4	3	2	2	2	3	4
	4	3	3	3	3	3	4
	4	4	4	4	4	4	4

05.	E				
	D	Ε			
	С	D	Ε		
	В	С	D	E	
	А	В	С	D	E

06.	1	1	1	1	1	1
	2	2	2	2	2	
	3	3	3	3		
	4	4	4			
	5	5				
	6					

07.	a				
	В	С			
	D	е	F		
	g	Н	i	J	
	k	L	m	N	0





**Python List and Tuples** 

Link: Python Lists & Tuples for Beginners | Python tutorial

#### **Assignment:**

- 1. Write a Python program to create a tuple.
- 2. Write a Python program to create a tuple with different data types.
- 3. Write a Python program to unpack a tuple into several variables.
- 4. Write a Python program to reverse a tuple.

#### **Day 13**

#### **Assignment:**

- 1. Write a Python program to convert a given string list to a tuple.
- 2. Write a Python program to calculate the product, multiplying all the numbers in a given tuple.
- 3. Write a Python program to check if a specified element appears in a tuple of tuples.

#### **Day 14**

# Assignment:

- 1. Write a Python program to get the 4th element from the last element of a tuple.
- 2. Write a Python program to create the colon of a tuple.
- 3. Write a Python program to slice a tuple.





**Dictionaries and Sets** 

Link -: <u>Python Dictionaries and Sets for Beginners | Python tutorial</u>
Assignment -:

- 1.Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are the square of the keys.
- 2. Write a Python program to merge two Python dictionaries.
- 3. Write a Python program to sum all the items in a dictionary.
- 4. Write a Python program to find the maximum and minimum values in a set.
- 5. Write a Python program to remove all duplicates from a given list of strings and return a list of unique strings. Use the Python set data type.

#### **Day 16**

**Functions** 

Link -: Python Functions for Beginners | Python tutorial

Assignment -:

- 1. Define two methods to print the maximum and the minimum number respectively among three numbers entered by the user.
- 2. Define a program to find out whether a given number is even or odd.
- 3.A person is eligible to vote if his/her age is greater than or equal to 18. Define a method to find out if he/she is eligible to vote.
- 4. Write a program to print the sum of two numbers entered by the user by defining your own method.





Lambda, map, filter

Link:- <u>Python lambda, map, filter, & reduce - Higher Order Functions for Beginners</u>

i. Write a program that will ask the user to enter his/her marks (out of 100). Define a method that will display grades according to the marks entered as below:

**Marks Grade** 

91-100 AA

81-90 AB

71-80 BB

61-70 BC

51-60 CD

41-50 DD

<=40 Fail

ii. Write a program to print the factorial of a number by defining a method named 'Factorial'. Factorial of any number n is represented by n! and is equal to 1 \* 2 \* 3 \* .... \* (n-1) \*n. E.g.-

Also.

1! = 1

0! = 1





**Python Lists Part 2** 

Link 1: #26 Python Tutorial for Beginners | Array in Python

Link 2: #27 Python Tutorial for Beginners | Array values from User in Python | Search in Array

#### **Assignment:**

- 1. Write a function that returns all prime numbers between two given numbers.
- 2. Write a function that returns the sum of first n natural numbers.

#### **Day 19**

Python Classes and objects Part 1

Video 1: #48 Python Tutorial for Beginners | Object Oriented Programming | Introduction

Video 2: #49 Python Tutorial for Beginners | Class and Object

#### **Day 20**

Python Classes and objects Part 2

Video 1: #50 Python Tutorial for Beginners | \_\_init\_\_ method

Video 2: <u>#51 Python Tutorial for Beginners | Constructor, Self and Comparing Objects</u>





#### Assignment:-

- 1. Build Array from Permutation
- 2. Concatenation of Array
- 3. Running Sum of 1d Array
- 4. Shuffle the Array
- 5. <u>Transpose Matrix</u>
- 6.Two Sum
- 7. Palindrome Number

#### **Day 22**

#### **Assignment:-**

- 1. Maximum Population Year
- 2. <u>Determine Whether Matrix Can Be Obtained By Rotation</u>
- 3. Maximum Subarray
- 4. Reshape the Matrix
- 5. Add to Array-Form of Integer

#### **Day 23**

# **Assignment:-**

- 1. Flipping an Image
- 2. Cells with Odd Values in a Matrix
- 3. Matrix Diagonal Sum
- 4. Find Numbers with Even Number of Digits





#### **Assignment:**

- 1. <u>Spiral Matrix</u>
- 2. Spiral Matrix II
- 3. Spiral Matrix III
- 4. Set Matrix Zeroes

### **Day 25**

# **Assignment:-**

- 1. Product of Array Except Self
- 2. Find First and Last Position of Element in Sorted Array
- 3. Jump Game
- 4. Rotate Array
- 5. Sort Colors
- 6. House Robber

