

PYTHON INTERNSHIP TASK – ASSESSMENT 1

1) write a single program to handle the following arithmetic operations for addition, subtraction, multiplication , division, floor division, modulus and Exponentiation.

2)Write a program to check the validity of a password. Primary conditions for password validation:

- minimum 8 characters
- The alphabet must be between [a-z]
- At least one alphabet should be of Upper Case [A-Z]
- At least 1 number or digit between [0-9].
- At least 1 character from [_ or @ or \$].

Examples:

Input : R@m@_f0rtu9e\$

Output : Valid Password

Input : Rama_fortune\$

Output : Invalid Password

Explanation: Number is missing

Input : Rama#fortu9e

Output : Invalid Password

Explanation: Must consist from _ or @ or \$

3) print the following patterns:

a)

0

0 0

0 0 0

0 0 0 0

b)

```
      *  
  
    * * *  
  
  * * * * *  
  
* * * * * *
```

c)

```
0  
  
1 1  
  
2 2 2  
  
3 3 3 3  
  
4 4 4 4 4  
  
5 5 5 5 5 5
```

d)

```
1  
  
1 2  
  
1 2 3  
  
1 2 3 4  
  
1 2 3 4 5
```

e)

```
* * * * * *  
  
* * * * *  
  
* * * *  
  
* * *  
  
* *  
  
*
```

f)

@ @ @ @ @ @ @

@ @ @ @ @ @ @

@ @ @ @ @ @ @

@ @ @ @ @ @ @

4) Write a Python program to perform matrix multiplication using lists of lists.

5) Write a Python program to implement a stack using a list.(push and pop)

6) Write a Python program to implement a queue using a list.(enqueue and dequeue)

7) Write a Python program to implement a binary search on a sorted list.

8) Write a Python program to reverse a list.

9) Write a Python program to count the occurrences of an element in a list.

10) Write a Python program to remove duplicates from a list.

11) Write a Python program to find the intersection of two lists.

12) Write a Python program to flatten a nested list.([1, [2, 3], [4, [5, 6]]] --> [1, 2, 3, 4, 5, 6])

13) Write a Python program to check if a string contains only digits.("12345" -->True)

14) Write a Python program to check if a given year is a leap year.

15) Write a Python program to check if a string is an anagram of another string.("listen", "silent")

- 16) Write a Python program to merge two sorted lists into a single sorted list.
- 17) Write a Python program to find the sum of all even numbers in a list.
- 18) Write a Python program to find the second largest number in a list.
- 19) Write a Python program to count the number of vowels in a string.
- 20) Write a Python program to remove all occurrences of a given element from a list.
- 21) Write a Python program to remove all whitespace characters from a string.
- 22) Write a Python program to check if a given number is a perfect number.
- 23) Write a Python program to find the GCD (Greatest Common Divisor) of two numbers.(gcd(48, 60)=12)
- 24) Write a Python program to calculate the sum of all elements in a list recursively.
- 25) Write a Python program to count the number of occurrences of each element in a tuple.