

1)

Write a python program to check Armstrong number

$$371 = 3^3 + 7^3 + 1^3$$

$n = \text{input} ("Enter n:")$

$a = n$

$c = 0$

$\text{while } (a > 0):$

$$r = a \% 10$$

$$c += 1$$

$$a /= 10$$

$a = n$

$k = 1$

$c1 = c$

$sum = 0$

$\text{while } (a > 0):$

$$r = a \% 10$$

$\text{while } (r > 0):$

$$k *= r$$

$$c1 = c1 - 1$$

$$sum += k$$

$k = 1$

$$a /= 10$$

$c1 = c$

$\text{if } (sum == n):$

$\text{print} ("Armstrong Number")$

else:

$\text{print} ("not Armstrong Number")$

OUTPUT:

Enter n: 371

~~Armstrong~~ Number

Enter n: 370

~~Armstrong~~ not Armstrong Number.

2) Write a python program to check perfect number
i.e equal to sum of its proper positive divisor

$n = \text{input}(\text{"Enter } n\text{:")}$

$a = 0$

for i in range ($1, n/2 + 1$):

if ($n \% i == 0$):

$a += i$

if ($a == n$):

print "Perfect Number"

else:

print "Not perfect Number"

4.

3) OUTPUT:

Enter n : 6

Perfect Number

Enter n : 5

Not perfect Number

3. Write a python program to check Strong Number

[i.e sum of factorial of digits is equal to the original number]

from math import factorial

$n = \text{input}(\text{"Enter } n\text{:")}$

$a = n$

$a = 0$

while ($a > 0$):

$r = a \% 10$

$a = \text{factorial}(r)$

$a /= 10$

if ($a == n$):

print "Strong Number"

else:

print "Not Strong Number"

OUTPUT:

Enter n: 145

Strong Number.

Enter n: 150

Not Strong Number.

4. The US census human population based on the following assumptions

one birth every 7 seconds

one death every 13 seconds

one new immigrant every 45 seconds

NPP to display the population for each of the next 5 years. Assume current population is 312032486 and 1 year has 365 days.

Note: In python, you can use integer division operator // to perform division. The result is an integer.

Number

$$nuc = 312032486$$

The

$$nogac = 31536000$$

$$\text{birthrate} = \text{nogac} / 7$$

$$\text{deathrate} = \text{nogac} / 13$$

$$\text{immigrant} = \text{nogac} / 45$$

$$J = \text{birthrate} + \text{immigrant} - \text{deathrate}$$

$$fyear = nuc$$

for i in range (156):

$$fyear = fyear + J$$

print fyear

OUTPUT: population for each of next 5 years

314812582

317592678

320372474

323152870

325932966

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5. Write a python program to replace all occurrences of 'a' with '\$' in a string

6. Write a

```
str = input("Enter a string :")  
print(str.replace("a", "$"))
```

Output:

Enter a string: abala
\$lele\$

6. Write a python program to form a new string where the first and last character of the string is exchanged

```
str = input("Enter a string :")  
a = str[-1] + str[1:-1] + str[0]  
print(a)
```

Output:

Enter a string: ashwin
ishwini

7. Write a python program to count the number of vowels in the string.

c=0

```
str = input("Enter a string :")
```

```
str = str.lower()
```

```
for i in range(len(str)):
```

```
    if (str[i] == 'a' or str[i] == 'e' or str[i] == 'i' or  
        str[i] == 'o' or str[i] == 'u')
```

c+=1

9

```
print ("Number of words is ", x)
```

Output

Enter a string : ashwin Adhikari

Number of words is 7

8. Write a python program to take a string and replace every blank space with '-'

```
str = input ("Enter a string : ")
```

```
print ("String with space replaced by - :")
```

```
print (str.replace(" ", "-"))
```

Output

Enter a string : a s h w i n i

String with space replaced by - :

a-s-h-w-i-n-i

9. Write a python program to calculate length of a string without using library functions

```
str = input ("Enter a string : ")
```

l = 0

```
for i in str:
```

l+=1

```
print ("length of string is ", l)
```

Output :

Enter a string : ashwin

length of string is 7

10. write a python program to remove the characters at odd index value in a string

str = input("Enter a string: ")

l = " "

for i in range(0, len(str), 2):

l += str[i]

print("String without odd index characters is ", l)

Output:

Enter a string : ashwin

String without odd index characters is ahii

11. Write a python program to take 2 strings and display the longer string without using built in functions

l1 = 0

a = input("Enter first string: ")

b = input("Enter second string: ")

l = 0

for i in a:

l += 1

for i in b:

l1 += 1

if (l > l1):

print("Greater of the 2 strings is ", end=" ")

if (l > l1):

print(a)

else:

print(b)

Output:

Enter first string : ashwin

Enter second string: ash

Greater of the 2 strings is ashwin

20-08-18

12. Write a Python program to check if given string
is Palindrome or not.

```
a = "madam"
```

```
l = len(a)
```

```
for i in range (l//2):
```

```
if (a[i] != a[-1-i]):
```

```
print "not palindrome"
```

```
break
```

~~Break~~

~~Print~~

else:

```
print "Palindrome"
```

OUTPUT:

Palindrome

13. Write a Python program to count no of vowels
(display each vowel) in string

```
a = "Hello"
```

```
vowels = vowels = counti = counto = countu = 0
```

```
a = a.lower()
```

```
for i in a:
```

```
if (i == 'a'):
```

```
vowels += 1
```

```
elif (i == 'e'):
```

```
vowels += 1
```

```
elif (i == 'i'):
```

```
vowels += 1
```

```
elif (i == 'o'):
```

```
vowels += 1
```

```
elif (i == 'u'):
```

```
vowels += 1
```

15.

```
print "Number of vowels = " + (counta+counte+counti)+counto+countu
print "Number of o's", counta
print "Number of e's", counte
print "Number of i's", counti
print "Number of u's", countu
print "Number of a's", counta
```

OUTPUT:

Number of vowels = 2

Number of o's = 0

Number of e's = 1

Number of i's = 0

Number of u's = 1

Number of a's = 0

16. 17. 14. Write a python program to count no of lines, words and characters which are present in a file

```
fp = open ("foo.txt", "rt")
```

```
countline = countword = countchar = 0
```

```
for lines in fp.readlines () :
```

```
    countline += 1
```

```
    for words in lines .split (" ") :
```

```
        countword += 1
```

```
    for chars in words :
```

```
        countchar += 1
```

```
print "No. of lines:", countline
```

```
print "No. of words:", countword
```

```
print "No. of characters:", countchar
```

```
fp. close()
```

OUTPUT

No. of lines : 4

No. of words : 12

No. of characters : 48

foo.txt

Huy1 Huy2 Huy3 Huy4

Huy5 Huy6 Huy7 Huy8

Huy9 Huy10 Huy11 Huy12

15. `fp = open ("f.txt", "w+")`
`print ("File operation")`
`fp.close()`

O/P:

File operation

16. `fp = open ("f.txt", "w+")`
`str = "hey, how are you"`
`fp.write(str)`
`fp.close()`

O/P:

f.txt

hey, how are you

17. `from ast import str`
`fp = open ("f.txt", "r+")`
`str = fp.read()`
`print(str)`
`fp.close()`

`fp = open ("f.txt", "r+")`

`str = fp.read(5)`

`print(str)`

`print ("file name:", fp.name)`

`print ("file mode:", fp.mode)`

`print ("file closed:", fp.closed)`

`fp.close()`

O/P

hey how are you

hey h

file name : f.txt

file mode : r+

file closed: False

18. $fp = \text{open}("f.txt", "rt")$
 $i = 0$

for i in $fp.readlines()$:
print(i)
 $c += 1$
print(c)
 $fp.close()$

~~Ques~~

f.txt

how are you

O/P

how

are

you

11

19. $fp = \text{open}("f.txt", "rt")$
 $i = 0$

for i in $fp.readlines()$:
print(i)

$c += 1$

print(c)

$fp.close()$

O/P: f.txt
how

are

you

O/P: how

are

you

3

27-08-18

20 NPP To count the number of lines in a file, and display
lines and total count

$fp = \text{open}("a.txt", "rt")$
 $i = 0$

print("The content of file")

for line in $fp.readlines()$:
 $i += 1$

print(line)

print ("Number of lines = ", c)

OUTPUT

The content of file

hey how are you ??

hi

hello

I am here.

Number of lines = 4

- a) Write a python program to search and print all the lines starting with a specific word

```
fp = open ("a.txt", "rt")
a = input ("Enter a word : ")
for lines in fp.readlines():
    for words in lines.split (" "):
        if (words) == a:
            print (lines)
            break
```

Output:

Enter a word : hey

hey how are you ??

hey I am here.

- a) Write a python program to extract a string from a file but the string should start with uppercase and end with digit

$fp = \text{open} ("a.txt", "r+")$
 $a = \text{input} ("Enter an upper case letter: ")$
 $d = \text{input} ("Enter a digit: ")$
 for lines in fp:
 for words in lines.split(" "):
 if (words[0] == a) and word[-1] == d:
 print words.

OUTPUT

feb 2020
Hey 8

Enter an upper case letter: H

Hello 7

Enter a digit: 8

Hello 8

Hey 8

Hello 8

23 Write a python program that reads integers, finds the maximum and counts its occurrence. Assume that the input ends with 0. Suppose you entered 35 2 5 5 5 0. The program finds the largest number as 5 and its occurrence count for 5 is 4.

$n = \text{input}()$

$\max = n$

$\text{while } (1):$

$\text{if } (n > \max):$

$\max = n$

$i = 1$

$\text{elif } (n == \max):$

$i += 1$

$n = \text{input}()$

print "maximum number = ", max

print "count = ", i

OUTPUT

3

5

2

5

5

0

maximum number = 5

count = 4

24 use nested loops and display the following patterns

i)

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

```
for i in range(1, 6):  
    for j in range(1, i+1):  
        print(j, end = " ")  
    print()
```

ii)

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

```
for i in range(1, 6):  
    for j in range(5, 0, -1):  
        if(j > i):  
            print(" ", end = " ")  
        else:  
            print(j, end = " ")  
    print()
```

iii)

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

```
for i in range(5, 0, -1):  
    for j in range(1, i+1):  
        print(j, end = " ")  
    print()
```

iv)

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

```
for i in range(1, 6):  
    for j in range(1, 6-i):  
        print(" ", end = " ")  
    for j in range(1, i+1):  
        print(j, end = " ")  
    for j in range(i-1, 0, -1):  
        print(j, end = " ")  
    print()
```

= 5

25. A string with parentheses is well bracketed if all parameters parentheses are matched. Every opening parenthesis has a matching closing parenthesis and vice versa write a python program that takes a string containing parentheses and returns true if it is well bracketed and false otherwise.

str = input ("Enter a string: ")

br = " "

k = -1

f = 0

for i in str:

if (i == "("):

br += i

k += 1

elif (i == ")" and (k == -1 or br[k] != "(")):

f = 1

break

elif (i == ")" and br[k] == "("):

k -= 1

if (f == 1)

print ("False")

elif (k >= 0)

print ("True")

else:

print ("True")

OUTPUT:

Enter a string: (a+b)(c+d) ((e-f))
True

Enter a string:)(a+b))
False.

classmate
Date _____
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26. Write a python program that takes a string and returns true if the string starts with "Hello" and ends with "world".

s = "Hello world"
if (s[0:5] == "Hello" and s[-5:] == "world"):
 print ("True")
else:
 print ("False")

27. Write a function that takes a string and returns true if it contains the word "Hello" and false otherwise.

f = []
for i in s:
 if i == "H":
 f.append (i)
if f == ["H", "e", "l", "l", "o"]:
 print ("True")
else:
 print ("False")

if (f == ["H", "e", "l", "l", "o"]):
 print ("True")
else:
 print ("False")

Write a python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with (ing) then add 'ly' instead. If the string length of the given string is less than 3, leave it unchanged.

```
st = input ("Enter a string :")  
if (len(st) > 2):  
    if (st.endswith("ing")):  
        st += "ly"  
    else:  
        st += "ing"  
    print (st)  
else:  
    print ("Insufficient length")
```

OUTPUT:

Enter a string: string
stringly

Enter a string: abc
abcing

Enter a string: ab
Insufficient length

Write a python program that takes 2 lists and returns true if they have at least one common member.

```
l1 = [1, 2, 3, 4, 5, 6]  
l2 = [7, 8, 12, 0, 10, 11]  
f = 1  
for i in l1:  
    for j in l2:  
        if (i == j):  
            f = 0  
if (f == 0):  
    print ("True")  
else:  
    print ("False")
```

OUTPUT:

False .

28 Write a python program. Two remove duplicates from

$l = [1, 2, 3, 4, 5, 6]$

$l.sort()$

$i = 0$

while ($i < (len(l) - 1)$):

if ($l[i] == l[i + 1]$):

$l.remove(l[i + 1])$

$i += 1$

$i += 1$

`print(l)`

OUTPUT

$[1, 2, 3, 4, 5, 6]$

29.

A list rotation consists of taking the last k elements and moving it to front. For instance, if we do it again, we get $[4, 5, 1, 2, 3]$. Write a python program $rotate(l, k)$ that takes a list l and positive integer k and returns l unchanged. Note that your function should not change l itself, it should return the rotated list.

$ls = [1, 2, 3, 4, 5]$

$k = \text{input}("Enter a number: ")$

$l = ls[:k]$

$m = [] + ls$

\del{ls}

for i in range(l):

$j = (i + k) \% l$

~~& append(m[j])~~

$m[j] = ls[i]$

`print(m)`

OUTPUT

Enter a number
 $[5, 1, 2, 3]$

Enter a number
 $[3, 4, 5, 1, 2]$

31.

Implementation

10.

Implementation

Write a python program ~~that takes~~^{To} print first
4 last 10 items in a file.

Implement the following algorithm using list :

- 1. Linear search
- 2. Binary search
- 3. Selection sort
- 4. Bubble sort