In [10]:
```
#1a
inp=int(input("Enter the number "))
def perfect_number(n):
    sum=0
    for i in range(1,int(n/2+1)):
        if n%i==0:
#             print(i)
            sum=sum+i
    if n==sum:
        return "Is a perfect number"
    else:
        return "Not a perfect number"
perfect_number(inp)
```

```
Enter the number 28
```

Out[10]: 'Is a perfect number'

In [15]:
```
#1b
inp=[int(input("1st number ")),int(input("2nd number "))]
if inp[0]%inp[1]==0:
    print("Check divides evenly into num")
else:
    print("Check doesnt divide evenly into num")
```

```
1st number 6
2nd number 4
Check doesnt divide evenly into num
```

In [22]:
```
#2a
inp=[int(input("1st number ")),int(input("2nd number "))]
for i in range(min(inp),max(inp)+1):
    if i%7==0 and i%5!=0:
        print(i)
```

```
1st number 40
2nd number 4
7
14
21
28
```

In [26]:
```
#2b
inp=[(input("Input Sentence ")),(input("Input meta character "))]
t=inp[0].replace(" ",inp[1])
print(t)
```

```
Input Sentence Data Science on ramp
Input meta character @
Data@Science@on@ramp
```

In [31]:
```
#3a
inp=input("Input numbers ")
inp=inp.split(",")
print(inp)
inp=tuple(inp)
print(inp)
```

```
Input numbers 34,67,55,33,12,98
['34', '67', '55', '33', '12', '98']
('34', '67', '55', '33', '12', '98')
```

In [76]:
```
#3b
import sys, platform
import time

li=list(range(100000000))
tup=tuple(range(100000000))
start=time.time_ns()
for i in range(len(tup)):
    a=tup[i]
end=time.time_ns()
print("Total lookup time for tuple: ",end-start)
start=time.time_ns()
for i in range(len(li)):
    a=li[i]
end=time.time_ns()
print("Total lookup time for list: ",end-start)
```

```
Total lookup time for tuple:  31787049600
Total lookup time for list:  38178909600
```

In [77]:
```
li=["hello","world"]
tup=("hello","world")
try:
    li.append("...")
    print("Succesfully appended list")
except:
    print("Unsuccesfully appended list")
try:
    tup.append("...")
    print("Succesfully appended tuple")
except:
    print("Unsuccesfully appended tupple")
```

```
Succesfully appended list
Unsuccesfully appended tupple
```

In [33]:
```
#3c
#list take longer to traverse with respect to tuple
#List can be modified but tuple cannot be
#tuple is better in the first case
#List is better in the second case
```

In [1]:
```
#4a
inp=input("input sentence ")
v=["a","e","i","o","u","A","E","I","O","U"]
out=inp
# out=inp.replace(["a","e","i","o","u"],"")
for i in v:
    if i in out:
        out=out.replace(i,"")
print(out)

#4b
d={}
for i in v:
    if i in inp:
        d[i]=inp.count(i)
print(d)
```

```
input sentence hi how
h hw
{'i': 1, 'o': 1}
```

In [36]:
```
#5
inp=input("Enter the string ")
j=len(inp)
i=1
li=[]
while j>i:
    temp=inp[j-i:j]
    print(temp[::-1])
    j=j-i
    i=i+1
j=j-i
temp=inp[:i+j]
temp=temp[::-1]
if len(temp)!=i:
    for k in range(i-len(temp)):
        temp=temp+"$"
print(temp)
```

```
Enter the string abcdef
f
ed
cba
```

In [78]:
```
#6
import nltk
nltk.download('gutenberg')
words=nltk.corpus.gutenberg.words('shakespeare-macbeth.txt')
tokens=len(words)
types=len(set(words))
print("Number of word tokens:",tokens)
print("Number of word types:",types)
```

```
Number of word tokens: 23140
Number of word types: 4017

[nltk_data] Downloading package gutenberg to C:\Users\Aaryan
[nltk_data]     Agarwal\AppData\Roaming\nltk_data...
[nltk_data]   Package gutenberg is already up-to-date!
```

In [80]:
```
#7
import nltk
from nltk.corpus import cmudict
nltk.download('cmudict')
dict_=cmudict.dict()
def syllable_count(word):
    p=cmudict.dict().get(word)
    count=0
    if p:
        new_p=p[0]
        count = len([i for i in new_p if i[-1].isdigit()])
    return count
def text_syllable_count(text):
    words=nltk.word_tokenize(text)
    count=0
    for w in words:
        try:
            count+=syllable_count(w)
        except:
            count+=1
    return count
text = input("Enter the text ")
syllable_counts=text_syllable_count(text)
print("The text contains {} syllables.".format(syllable_counts))
```

```
[nltk_data] Downloading package cmudict to C:\Users\Aaryan
[nltk_data]     Agarwal\AppData\Roaming\nltk_data...
[nltk_data]   Package cmudict is already up-to-date!

Enter the text hi how are you
The text contains 4 syllables.
```

In [56]:
```
#8
inp=[int(input("Enter the number of lists ")),int(input("Enter the value o
li=[]
for i in range(inp[0]):
    temp=input("Enter the list number ")
    temp=temp.split(" ")
    li.append(temp)
new_li=[]
for i in li:
    temp=[]
    for j in i:
        temp.append(int(j))
    new_li.append(temp)
total=[]
for i in new_li:
    new_t=0
    for j in i:
        new_t=j*j*j+new_t
    total.append(new_t)
li=[]
for i in total:
    li.append(i%inp[1])
print(max(li))
```

```
Enter the number of lists 3
Enter the value of k 100
Enter the list number 1 2 3
Enter the list number 4 5 6 1
Enter the list number 0 0 0 10
36
```

In [70]:
```
inp=input("Enter the string ")
j=inp[0]
count=0
li=[]
for i in inp:
    if j==i:
        count=count+1
    if j!=i:
        li.append((count,j))
        j=i
        count=1
li.append((count,j))
print(li)
```

```
Enter the string aacdeeeahhhe
[(2, 'a'), (1, 'c'), (1, 'd'), (3, 'e'), (1, 'a'), (3, 'h'), (1, 'e')]
```