Data Science & AI
&
NIC - Param

Python-For Data Science

Flow Control Statements

Lecture No.- 03

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Recap of Previous Lecture

Topic Control Flow Statement - 02

Topics to be Covered

Topic Control Flow Statement - 03

Topic : Control Flow Statements

factorial

```
Prod = 1
for i in range(1, n+1):
    Prod = Prod * i
```

n ⇒ 145

```
n = int(input())
a = n
sum = 0
while n != 0 :

    last = n % 10

    Prod = 1
    for i in range(1, last+1):
        Prod = Prod * i

    sum = sum + Prod

    n = n//10

if sum == a :
    print("Strong")
else
    print("Not")
```

factorial of last

n is already 0

145

last = 5

Prod = 120

sum = 0 + 120 = 120

14

$b \geq 0$ a^b

$3^4 \Rightarrow 3 \times 3 \times 3 \times 3$

$1 \times 2 \times 3 \times 4 \Rightarrow$ code

Logic

a^4

```
Prod = 1
for i in range(1,4+1):
    Prod = Prod x a
```

```
Prod = 1
for i in range(1,4+1):
    Prod = Prod x 3
```

3^4

a^8

```
Prod = 1
for i in range(1,8+1):
    Prod = Prod x a
```

7^4

```
Prod = 1
for i in range(1,4+1):
    Prod = Prod x 7
```

a^b

```
Prod = 1
for i in range(1,b+1):
    Prod = Prod x a
```

Armstrong Number

for kids

original ✓

$n = d_1 d_2 d_3 d_4$

$d_1^3 + d_2^3 + d_3^3 + d_4^3 = n$

$n = d_1 d_2 d_3$

$d_1^3 + d_2^3 + d_3^3 = n$

153

```
n = int(input())
a = n
sum = 0
while n != 0 :
    last = n % 10
    cube = last * last * last
    sum = sum + cube
    n = n//10
if sum == a :
    print("Armstrong")
else :
    print("Not Armstrong")
```

Cube of last digit & then update the sum & then update n

cube = last**3

Rohit →

$1234 = 1200 + 34$

$= (12 \times 100 + 34)$

$1234 \,/\!/\, 100 \Rightarrow (34)$

$1234 = 1230 + 4$

$= (123 \times 10 + 4)$

⇓

divide this no. by 10

$10 \overline{)\,1234\,} \; 123$

1230

4 ←

$$n = a_1 a_2 a_3 a_4$$

$$a_1^4 + a_2^4 + a_3^4 + a_4^4 = n$$

$$n = a_1 a_2 a_3$$

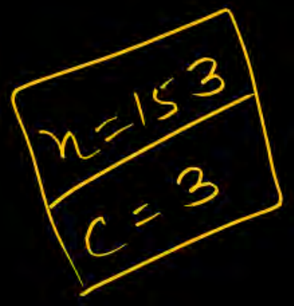
$$a_1^3 + a_2^3 + a_3^3 = n$$

$$n = a_1 a_2 a_3 \cdots a_k$$

$$a_1^k + a_2^k + a_3^k + \cdots + a_k^k = n$$

$$n = a_1 a_2 a_3 a_4 a_5$$

$$a_1^5 + a_2^5 + a_3^5 + a_4^5 + a_5^5 = n$$



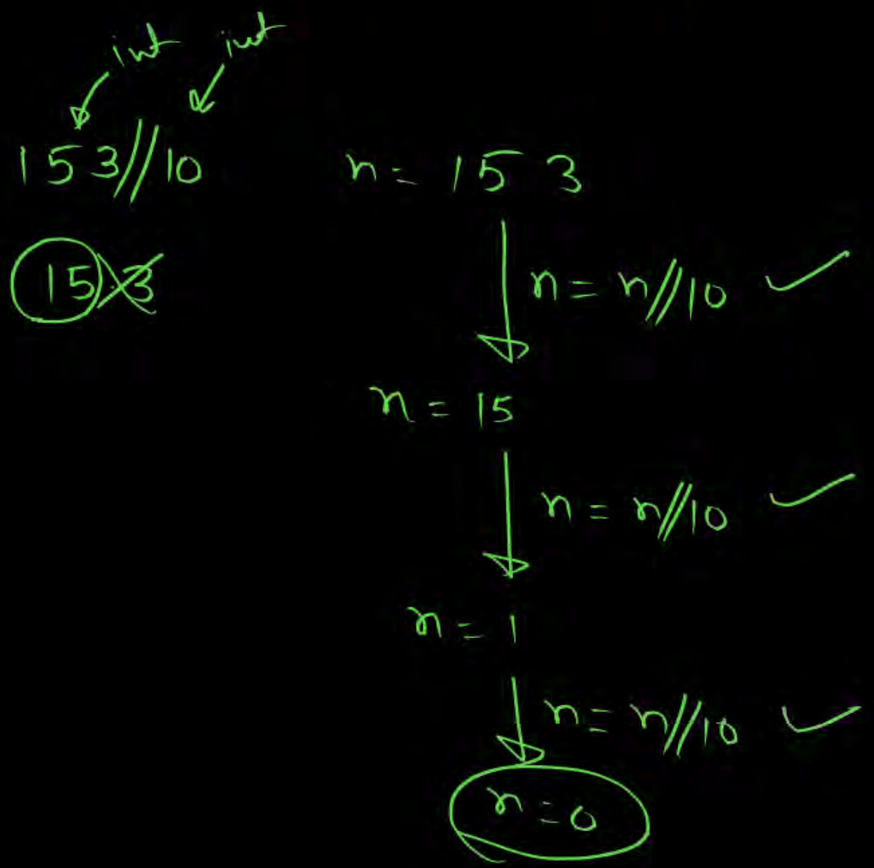
① Find the no. of digits in n

```
n = int(input())
b,a = n,n
c = 0
while n != 0:
    n = n//10
    c = c+1
sum = 0
while a != 0:
    last = a%10
    sum = sum + last ** c
    a = a//10
if sum == b:
    print("Armstrong")
else:
    print("Not Armstrong")
```

c → No. of digits in n

n = 153
c = 3

① Find the no. of digits in n




```
n = int(input())
b,a = n,n
c = 0
while n != 0 :
    n = n//10
    c = c+1
sum = 0
while a != 0 :
    last = a % 10
    sum = sum + last ** c
    a = a//10
if sum == b :
    print("Armstrong")
else :
    print("Not Armstrong")
```

c → No. of digits in n

1634

c=4

$1^4 = 1$

$6^4 = 1296$

$3^4 = 81$

$4^4 = 256$

$$\begin{array}{r} 2\,1 \\ 1\,2\,9\,6 \\ 2\,5\,6 \\ \quad 8\,1 \\ \quad\quad 1 \\ \hline 1\,6\,3\,4 \end{array}$$

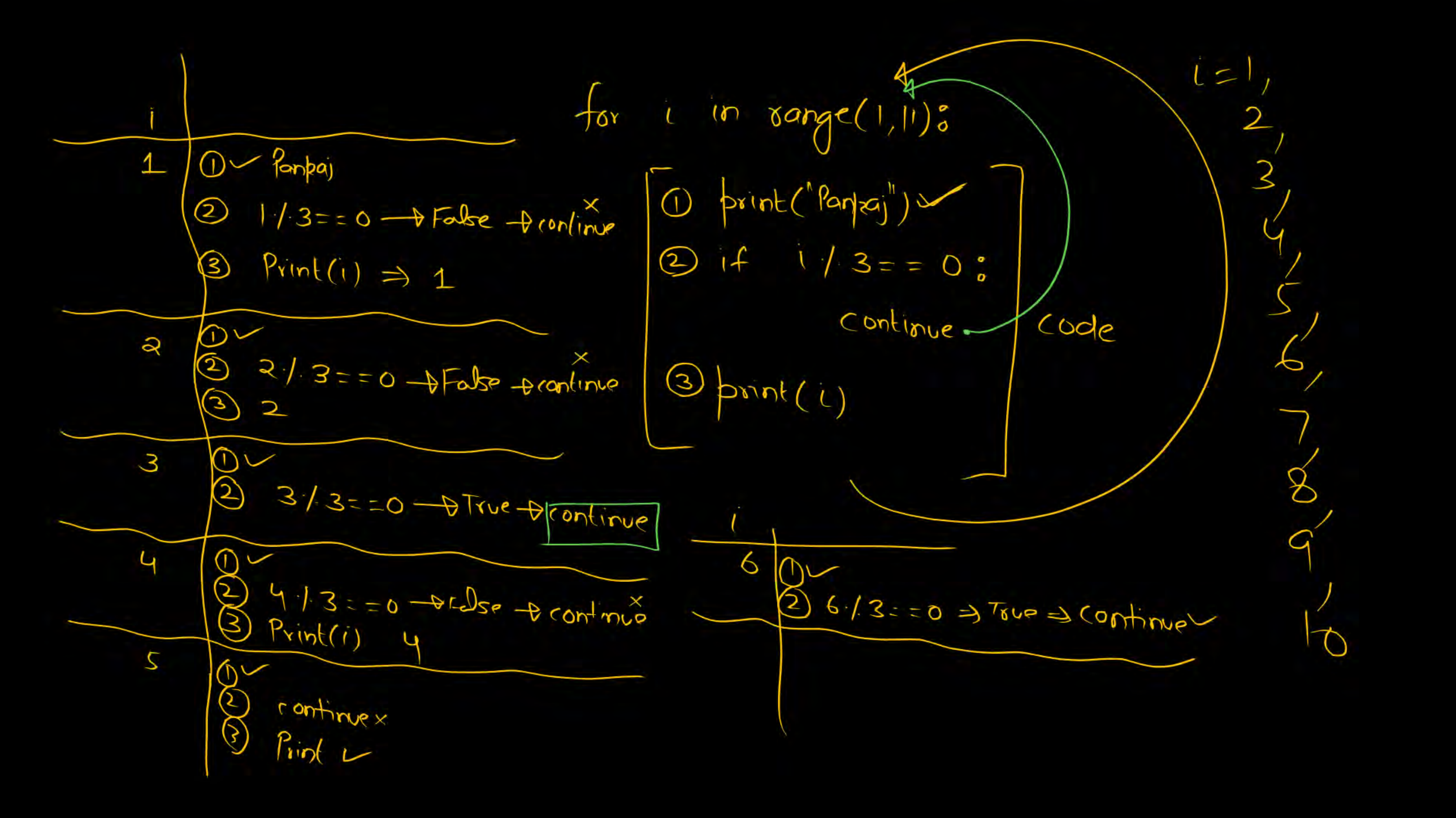
continue → Jupyter notebook ⇒

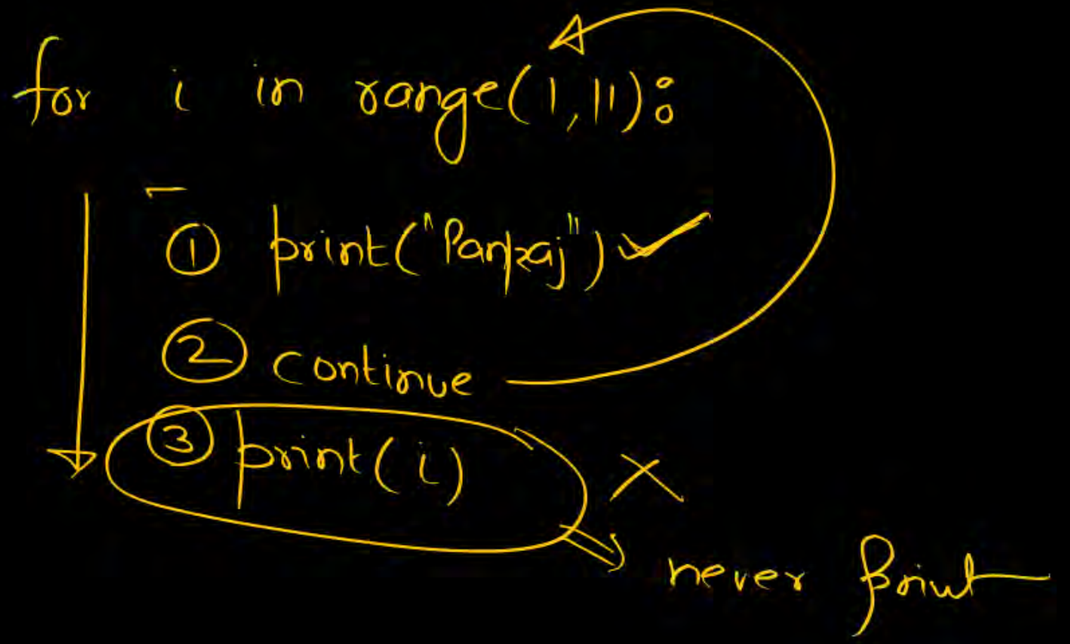
```
for i in range(1,11):
    print(i)
```

```
1
2
3
.
.
.
11
```

iteration

skip the remaining portion of current iteration and `continue` with next iteration


for i in range(1,11):
print("Panjaj")
if i%3==0:
continue
print(i)
code
i=1, 2, 3, 4, 5, 6, 7, 8, 9, 10
i
1
Panjaj
1%3==0 → False → continue
Print(i) ⇒ 1
2
2%3==0 → False → continue
2
3
3%3==0 → True → continue
4
4%3==0 → False → continue
Print(i) 4
5
continue
Print
i
6
6%3==0 ⇒ True ⇒ continue


for i in range(1,11):
① print("Pankaj")
② continue
③ print(i)
never print

break

Whenever break is encountered

↓

loop terminate (we came out of loop)

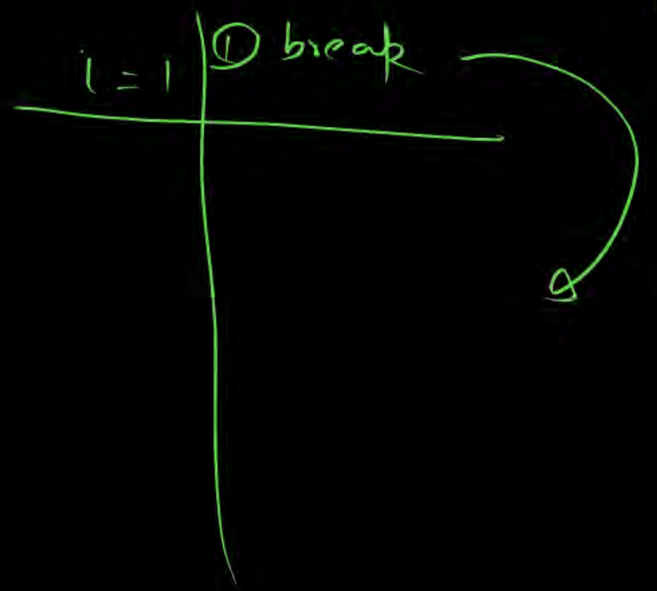
① for i in range(1,11):

① break

② print("Pankaj")

↓

No use



②

```
for i in range(1,11):
    if i%3==0:
        break
    print(i)
```

code

i	i%3==0
1	1%3==0 → False → break ✗ print(i) ⇒ 1 ✓
2	2%3==0 → False → break ✗ print(i) ⇒ 2 ✓
3	3%3==0 → True → break → exit loop

C lang.

```
if (a<b){

        }
else {

    }
```

```
if a<b :        Error

print("Khalam")
```

```
while ___ :

    Pass
```

04:00 PM ✓ done

Review

Complaint

[t.me/PWpankajsirP]

Day 8 : More on loops

In [1]:
```
n=int(input("Enter a number"))
a=n
sum=0
while n!=0 :
    last=n%10
    prod=1
    for i in range(1,last+1):
        prod=prod *i
    sum=sum +prod
    n=n//10
if sum==a :
    print("The number",a,"is strong")
else :
    print("The number",a,"is not strong")
```

```
Enter a number145
The number 145 is strong
```

In [2]:
```
n=int(input("Enter a number"))
a=n
sum=0
while n!=0 :
    last=n%10
    prod=1
    for i in range(1,last+1):
        prod=prod *i
    sum=sum +prod
    n=n//10
if sum==a :
    print("The number",a,"is strong")
else :
    print("The number",a,"is not strong")
```

```
Enter a number34
The number 34 is not strong
```

In [3]:
```
n=int(input("Enter a number"))
a=n
sum=0
while n!=0 :
    last=n%10
    prod=1
    for i in range(1,last+1):
        prod=prod *i
    sum=sum +prod
    n=n//10
if sum==a :
    print("The number",a,"is strong")
else :
    print("The number",a,"is not strong")
```

```
Enter a number1
The number 1 is strong
```

In [4]:
```
n=int(input("Enter a number"))
a=n
sum=0
while n!=0 :
    last=n%10
    prod=1
    for i in range(1,last+1):
        prod=prod *i
    sum=sum +prod
    n=n//10
if sum==a :
    print("The number",a,"is strong")
else :
    print("The number",a,"is not strong")
```

```
Enter a number2
The number 2 is strong
```

In [5]:
```
#bachho wala armstrong concept
#sum of cubes of digits of a number is equal to the number itself
n=int(input("Enter a number"))
a=n
sum=0
while n!=0:
    last=n%10
    cube=last**3
    sum=sum + cube
    n=n//10
if sum==a :
    print("The number",a,"is Bahubali")
else:
    print("The number",a,"is not Bahubali")
```

```
Enter a number12
The number 12 is not Bahubali
```

In [6]:
```
#bachho wala armstrong concept
#sum of cubes of digits of a number is equal to the number itself
n=int(input("Enter a number"))
a=n
sum=0
while n!=0:
    last=n%10
    cube=last**3
    sum=sum + cube
    n=n//10
if sum==a :
    print("The number",a,"is Bahubali")
else:
    print("The number",a,"is not Bahubali")
```

```
Enter a number153
The number 153 is Bahubali
```

In [7]:
```
#original armstrong concept
n=int(input("Enter a number"))
a,b=n,n
c=0
while n!=0:
    n=n//10
```

```
    c=c+1
#now c contains number of digits in original number n
sum=0
while a!=0:
    last=a%10
    sum=sum + last**c
    a=a//10
if sum==b:
    print("Bahubali")
else:
    print("Not bahubali")
```

```
Enter a number153
Bahubali
```

In [8]:
```
#original armstrong concept
n=int(input("Enter a number"))
a,b=n,n
c=0
while n!=0:
    n=n//10
    c=c+1
#now c contains number of digits in original number n
sum=0
while a!=0:
    last=a%10
    sum=sum + last**c
    a=a//10
if sum==b:
    print("Bahubali")
else:
    print("Not bahubali")
```

```
Enter a number13
Not bahubali
```

In [9]:
```
#original armstrong concept
n=int(input("Enter a number"))
a,b=n,n
c=0
while n!=0:
    n=n//10
    c=c+1
#now c contains number of digits in original number n
sum=0
while a!=0:
    last=a%10
    sum=sum + last**c
    a=a//10
if sum==b:
    print("Bahubali")
else:
    print("Not bahubali")
```

```
Enter a number1634
Bahubali
```

In [11]:
```
for i in range(1,11):
    print("Pankaj")
    continue
    print(i)
```

```
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
Pankaj
```

In [12]:
```
#pass
if 10<20 :


print("pankaj")
```

```
  Cell In[12], line 4
    print("pankaj")
    ^
IndentationError: expected an indented block after 'if' statement on line 2
```

In [13]:
```
if 10<20 :
    pass
print("pankaj")
```

```
pankaj
```

In [ ]:

THANK - YOU