

```
In [71]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#2
z=""
for row in range(0,7):
    for column in range(0,7):
        if row == 0 or row == 6:
            if column >= 0 and column <= 6:
                z+=" "
            elif row+column==6:
                z+="*"
            else:
                z+=" "
        z+="\n"
print(z)
```

```
Date: 2020-06-27 20:35:08.376627
UserName: jovyan
*****
      *
     *
    *
   *
  *
 *
*****
```

```
In [74]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#3

l1 = []
l2 = []
l3 = []

for k in range(6):
    l1.append('*')
for j in range(4):
    l2.append(l1)
for i in range(3):
    l3.append(l2)

print(l3)
```

```
Date: 2020-06-27 20:40:51.209059
UserName: jovyan
[[['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*', '*', '*'], ['*', '*',
 '*', '*', '*'], [['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*', '*'], ['*', '*', '*', '*',
 '*', '*'], ['*', '*', '*', '*', '*', '*'], [['*', '*', '*', '*', '*', '*'], [['*', '*', '*', '*',
 '*', '*'], ['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*',
 '*', '*'], ['*', '*', '*', '*', '*', '*'], ['*', '*', '*', '*', '*', '*']]]
```

```
In [9]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))

#4
def volume(l = 1.0,b = 1.0,h =1.0):
    return(l*b*h)
l = float(input('Length of the Box'))
b = float(input('Width of the Box'))
h = float(input('Height of the Box'))
volume(l,b,h)
```

```
Date: 2020-06-27 19:41:19.871500
UserName: jovyan
Length of the Box2
Width of the Box3
Height of the Box5
```

Out[9]: 30.0

```
In [12]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#5a
def cube(a = ""):
    if a == "":
        return(2**3)
    else:
        return(a**3)

a = int(input('Please enter the first value '))
cube(a)
```

Date: 2020-06-27 19:42:20.655434
UserName: jovyan
Please enter the first value 7

Out[12]: 343

```
In [13]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#5b
def equality(h,k):
    if h == k:
        return True
    else:
        return False
h = input('Please enter the first value ')
k = input('Please enter the first value ')
equality(h,k)
```

Date: 2020-06-27 19:42:32.272443
UserName: jovyan
Please enter the first value hero
Please enter the first value hero

Out[13]: True

```
In [17]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#6
def factors(x):
    l1 = []
    sm = 0
    for i in range(1,round(x/2)+1):
        if x%i == 0:
            l1.append(i)
    for i in l1:
        sm +=i
    if sm == x:
        print('Perfect Number')
    else :
        print('Not a Perfect Number')
x = int(input('Enter a number to check whether it is Perfect or not '))
factors(x)
```

Date: 2020-06-27 19:44:30.863069
UserName: jovyan
Enter a number to check whether it is Perfect or not 6
Perfect Number

```
In [55]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#7
def execute(s):
    try:
        x = exec(s)
    except Exception as e:
        print("Error:", e)

stg = str(input('Enter the code which you want to execute'))
execute(stg)

Date: 2020-06-27 20:12:01.707308
UserName: jovyan
Enter the code which you want to executeprint('Hello World')
Hello World
```

```
In [69]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
import random

#8
def digit(n):
    try :
        range_start = 10**(n-1)
        range_end = (10**n)-1
        return random.randint(range_start, range_end)
    except Exception as SyntaxError:
        print("Numbers can't start with 0 ")

    print("The number of digits in the number are:",count)
n = int(input('Enter the number of digits '))
digit(n)
```

Date: 2020-06-27 20:25:44.526651
UserName: jovyan
Enter the number of digits 5

Out[69]: 60891

```
In [64]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#9
def series(a,b):
    diff = (a+b)/4
    return (a, a+diff, b-diff, b)

t = int(input('enter your first number of the series'))
k = int(input('enter your last number of the series'))
series(t,k)
```

Date: 2020-06-27 20:22:34.968847
UserName: jovyan
enter your first number of the series1
enter your last number of the series7

Out[64]: (1, 3.0, 5.0, 7)

```
In [31]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#10
def prime(p):
    for i in range(2,round(p/2)):
        if p %i == 0:
            print("Not prime")

        else:
            print('Prime')
            break

p = int(input("Enter the number to test primality "))
prime(p)
```

Date: 2020-06-27 19:52:01.774155
UserName: jovyan
Enter the number to test primality 7
Prime

```
In [36]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#11
def Isprime(N,a=2):
    if N == 1:
        print('Neither Prime nor composite')
    elif N == 2:
        return False
    elif N%2 == 0:
        return False
    elif a>=N :
        return True

    else:
        return Isprime(N,a+1)

N = int(input('Enter number to test primality '))
Isprime(N)
```

Date: 2020-06-27 19:54:26.261618
UserName: jovyan
Enter number to test primality 7

Out[36]: True

```
In [72]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))

def prdt(a,b):
    if b == 1:
        return a
    elif b ==0:
        return 0
    else:
        return a + prdt(a,b-1)

a = int(input('1st number '))
b = int(input('2nd number '))
prdt(a,b)
```

Date: 2020-06-27 20:37:34.639046
UserName: jovyan
1st number 3
2nd number 4

Out[72]: 12

```
In [48]: ▶ from datetime import datetime
import getpass
print("Date: ",datetime.now( ))
print("UserName: ",getpass.getuser( ))
#13
l2=[]
def hailstone(n):
    if n == 1:
        l2.append(1)
        print(l2)
    elif n == 0:
        return 0
    elif n%2 == 0:
        l2.append(n)
        n = (n/2)
        hailstone(n)
    elif n%2 != 0:
        l2.append(n)
        n = 3*n +1
        hailstone(n)

n = int(input('Plase enter the number to start the sequence'))
hailstone(n)
```

Date: 2020-06-27 20:05:09.821940

UserName: jovyan

Plase enter the number to start the sequence5

[5, 16, 8.0, 4.0, 2.0, 1]

In []: ▶