Day Objectives:

- Problem Set:
- Function to print all numbers divisible by 6 and not a factor of 100 in a given range(lb, ub) inclusive
- Function to find the average of cubes of all even numbers in a given range(lb, ub) inclusive
- Function to generate the list of factors for a given number
- Function to calculate the factorial of a given number
- Function to check if a given number is Prime
- Function to calculate the average first N Prime numbers
- Function to generate all Perfect numbers in a given range
- Advanced Problem Set(Optional) :
- Function to calculate the average of all factorials in a given range
- Function to generate N odd Armstrong numbers
- Function to generate Multiplication table for a number in a given range 10 in the range(100, 102) inclusive 10 x 100 = 1000 10 x 101 = 1010 10 x 102 = 1020
- Problems That needs a Try :
- You are given a string and your task is to swap cases. In other words, convert all lowercase letters to uppercase letters and vice versa. (The String may contain special characters).
- Given an integer, 'n' , perform the following conditional actions: If 'n' is odd, print Weird If 'n' is even and in the inclusive range of 2 to 5, print Not Weird If 'n' is even and in the inclusive range of 6 to 20 , print Weird If 'n' is even and greater than 20, print Not Weird
- Given the participants 'n' score sheet for your University Sports Day, you are required to find the runner-up score. You are given scores. Store them in a list and find the score of the runner-up. (there can be multiple winners - if their scores match).

```
1
```

- 1. You are given a string and your task is to swap cases. In other words, convert all lowercase letters to uppercase letters and vice versa. (The String may contain special characters).

In [7]:
```
1 s=input()
2 m=s.swapcase()
3 print(m)
```

```
gKDXldc23ecf
GkdxLDC23ECF
```

```
1
```

- 2. Given an integer, 'n' , perform the following conditional actions:
  - If 'n' is odd, print Weird
  - If 'n' is even and in the inclusive range of 2 to 5, print Not Weird
  - If 'n' is even and in the inclusive range of 6 to 20 , print Weird
  - If 'n' is even and greater than 20, print Not Weird

In [24]:
```
n=int(input())
#m=int(input())
if n%2==0 and n in range(2,6):
    print("Not Weird")
elif n%2==0 and n in range(6,21):
    print("Weird")
elif n%2==0 and n>20:
    print("Not Weird")
else:
    print("Weird")
```

```
14
Weird
```

```

```

- 3. Given the participants 'n' score sheet for your University Sports Day, you are required to find the runner-up score. You are given scores. Store them in a list and find the score of the runner-up. (there can be multiple winners - if their scores match).

In [7]:
```
#Read the number of participants

n=int(input())
scores = []
for i in range(n):
    s = int(input())
    scores.append(s)
scores=sorted(scores,reverse = True)
#scores[1]
max_score = max(scores)
runner_up_score = scores[1]
try:
    for i in range(1,n):
        if max_score == scores[i]:
            runner_up_score = scores[i+1]
    print("The runner up score is: ",runner_up_score)
except:
    print("Sorry there is no runner up score")

```

```
5
12
11
1
11
11
The runner up score is:  11
```

```

```

Problem Set:

- 1. Function to print all numbers divisible by 6 and not a factor of 100 in a given range(lb, ub) inclusive

In [2]:
```
def divisibleby6not100(lb,ub):
    for i in range(lb,ub+1):
        if i%6==0 and i%100!=0:
            print(i,end=" ")
lb=int(input("Enter the Lower Bound : "))
ub=int(input("Enter the Upper Bound : "))
divisibleby6not100(lb,ub)
```

```
Enter the Lower Bound : 1
Enter the Upper Bound : 50
6 12 18 24 30 36 42 48
```

```

```

- 2. Function to find the average of cubes of all even numbers in a given range(lb, ub) inclusive

In [9]:
```
def avgEvenNums(lb,ub):
    s=0
    c=0
    a=0
    for i in range(lb,ub+1):
        if i%2==0:
            m=i**3
            s=s+m
            c=c+1
    a=s//c
    print("Average is : ",a)
    #m=a**3
    #print(m)

lb=int(input("Enter the Lower Bound : "))
ub=int(input("Enter the Upper Bound : "))
avgEvenNums(lb,ub)


```

```
Enter the Lower Bound : 1
Enter the Upper Bound : 5
Average is :  36
```

In [ ]:
```

```

```

```

In [ ]:
```

```

- 3. Function to generate the list of factors for a given number

In [53]:
```
def factorsOfNum(n):
    for i in range(1,n+1):
        if n%i==0:
            print(i,end=" ")
n=int(input())
factorsOfNum(n)
```

```
25
1 5 25
```

```
1
```

- 4. Function to calculate the factorial of a given number

In [56]:
```
def factorial(n):
    fact=1
    for i in range(1,n+1):
        fact=fact*i
    print(fact)

n=int(input())
factorial(n)

```

```
10
3628800
```

```
1
```

- 5. Function to check if a given number is Prime

In [17]:
```
def isPrime(n):
    if n>1:
        for i in range(2,n):
            if n%i==0:
                print("Not a Prime Number")
        else:
            print("Prime Number")
    else:
        print("Not a Prime")
n=int(input())
isPrime(n)
```

```
5
Prime Number
```

```
#### - 6. Function to calculate the average first N Prime numbers

```

```
1
```

In [24]:
```
# To find first 'N' prime numbers
def prime(x):
    i=1

    for k in range (1, (x+1), 1):
        c=0
        s=0
        count=0
        for j in range (1, (i+1), 1):
            a = i%j
            if (a==0):
                c = c+1

        if (c==2):
            print (i,end=" ")

        else:
            k = k-1
        i=i+1
x = int(input("Enter the number:"))
#prime(x)


def avgPrime(n):
    s=0
    c=0
    if prime(x):
        for j in range(1,x):
            s+=j
            c+=1
        print(s//c)
n=int(input())
avgPrime(n)
```

```
Enter the number:9
9
2 3 5 7
```

```
1
```

- 7. Function to generate all Perfect numbers in a given range

In [34]:

```
def isPerfect( n ):
    sum = 1
    i = 2
    while i * i <= n:
        if n % i == 0:
            sum = sum + i + n/i
        i += 1
    return (True if sum == n and n!=1 else False)

limit = int(input("Enter a number"))
print("Below are all perfect numbers till 10000")
n = 2
for n in range (limit):
    if isPerfect (n):
        print(n , " is a perfect number")
```

```
Enter a number500
Below are all perfect numbers till 10000
6  is a perfect number
28  is a perfect number
496  is a perfect number
```

```
1
```