Vaibhav Agarwal
XII-D
Q5
Code

```
def base_convert(i,base):
    if i < base:
        if i > 9:
            return chr(ord('A')+i%10)
        else:
            return i
    else:
        if i % base<10:
            return str(base_convert(i//base,base))+str(i%base)
        else:
            return str(base_convert(i//base,base))+chr(ord('A')+(i%base)%10)
num=int(input('Enter Number in Decimal: '))
base=input('Desired Base (B for Binary, O for Octal, H for Hexadecimal): ')

d={'b':2,'o':8,'h':16}
try:
    base = d[base.lower()]
except:
    base=int(base)

print(base_convert(num,base))
```

Output

```
Enter Number in Decimal: 12

Desired Base (B for Binary, O for Octal, H for Hexadecimal): B
1100
```

```
Enter Number in Decimal: 123124

Desired Base (B for Binary, O for Octal, H for Hexadecimal): H
1E0F4
```

```
Enter Number in Decimal: 65

Desired Base (B for Binary, O for Octal, H for Hexadecimal): O
101
```

Q8

Code

```
l1=[int(x) for x in input("Enter number: ").split(",") if x.isdigit()]
l2=[int(x) for x in input("Enter number: ").split(",") if x.isdigit()]

def merge(list1,list2, distinct = False):
    list3 = list1 + list2
    new_list=[]
    for i in list3:
        if (i not in new_list) or not(distinct):
            for j in range(len(new_list)):
                if new_list[j] < i:
                    pass
                else:
                    new_list.insert(j,i)
                    break
            else:
                new_list.append(i)
    return new_list

def commonSum(list1, list2):
    sum = 0
    for i in merge(list1,list2,distinct=True):
        if merge(list1,list2).count(i)>1:
            sum+=i
    return sum

def isCircular(list1,list2):
    cond=False
    for i in range(0,len(list1)):
        if list1[i:]+list1[0:i] == list2:
            cond=True
            break
    return cond

print("Merged list:", merge(l1,l2))
print("Sum of common elements:", commonSum(l1,l2))
print("Circularly identical:", isCircular(l1,l2))
```

Output

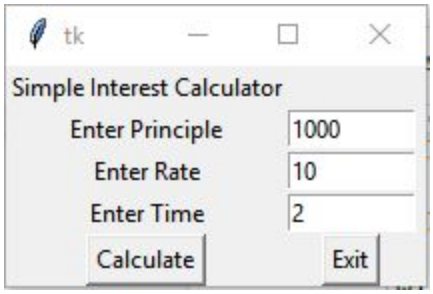
```
Enter number: 1,2,3,4

Enter number: 3,4,1,2
Merged list: [1, 1, 2, 2, 3, 3, 4, 4]
Sum of common elements: 10
Circularly identical: True
```

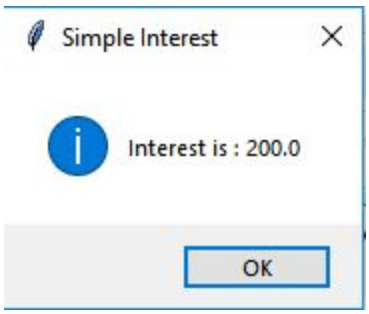
```
Enter number: 1,3,12,14,16

Enter number: 98,1,4
Merged list: [1, 1, 3, 4, 12, 14, 16, 98]
Sum of common elements: 1
Circularly identical: False
```

Vaibhav Agarwal
XII-D
Q10
Code

```
from tkinter import*
from tkinter import messagebox

window=Tk()
p=IntVar()
r=IntVar()
t=IntVar()

window.geometry('210x110')

Label(window,text='Simple Interest Calculator').grid(column=0,row=0)
Label(window,text='Enter Principle').grid(column=0,row=1)
Entry(window,width=10,textvariable=p).grid(column=1,row=1)

Label(window,text='Enter Rate').grid(column=0,row=2)
Entry(window,width=10,textvariable=r).grid(column=1,row=2)

Label(window,text='Enter Time').grid(column=0,row=3)
Entry(window,width=10,textvariable=t).grid(column=1,row=3)

def clicked():
    global p,r,t
    interest = p.get()*r.get()*t.get()/100
    messagebox.showinfo('Simple Interest','Interest is : '+ str(interest))

Button(window,text='Calculate', command = clicked).grid(column=0,row=4)

Button(window,text='Exit', command = window.destroy).grid(column=1 , row=4)

window.mainloop()
```

Output





Vaibhav Agarwal
XII-D
Q9
Code

```
import numpy as np

array= (np.random.random(25)*5).round(1)
print(array.reshape((5,5)))
max=0
for i in array:
    if list(array).count(i)> max:
        max=i
print("Most frequently occuring:", max)
print('Maximum value is: ',np.max(array))
print('Minimum value is: ',np.min(array))

scaler=int(input('Enter Number: '))
closest=np.argmin(np.absolute(array-scaler))
print('CLosest element is: ',array[closest])
```

Output

```
[[4.9 3.4 4.6 1.4 3.4]
 [4.3 2.5 0.7 4.9 1.2]
 [4.7 0.8 1.2 0.9 4. ]
 [2.6 1.  4.9 0.1 3.5]
 [4.2 3.8 4.2 0.3 0.3]]
Most frequently occuring: 4.9
Maximum value is:  4.9
Minimum value is:  0.1

Enter Number: 3
CLosest element is:  3.4


[[0.7 4.4 4.5 1.4 0.9]
 [3.6 1.2 2.6 4.  1.3]
 [4.4 1.4 0.8 0.2 1.2]
 [4.9 1.9 3.3 4.2 2.7]
 [1.1 1.  4.4 1.8 2.1]]
Most frequently occuring: 4.4
Maximum value is:  4.9
Minimum value is:  0.2

Enter Number: 2
CLosest element is:  1.9
```