Source code:

```python
def numDigits(n) :
    if (n < 10):
        return 1
    return 1 + numDigits(n / 10)



def rotated_number(a,n):
    divide_by = pow(10,n - 1)
    e = a%10
    f = a/10
    rotated_number = e * divide_by + f
    return rotated_number;

def sq_sum(rpm):
    num=rpm
    sq=0
    while(num!=0):
        digit=int(num%10)
        sq+=digit*digit
        num=int(num/10)
    return sq


rpm=int(input("Enter RPM"))
max_rpm = rpm * 8;
n=0

while(rpm<max_rpm):
    n=n+1

    sq=sq_sum(rpm)

    sqm=sq*323

    print(sqm)

    rot_num=int(rotated_number(rpm,numDigits(rpm)))%100
    print(rot_num)

    new_rpm = sqm + rot_num
    print(new_rpm,"After",n,"years")

    rpm=new_rpm
```
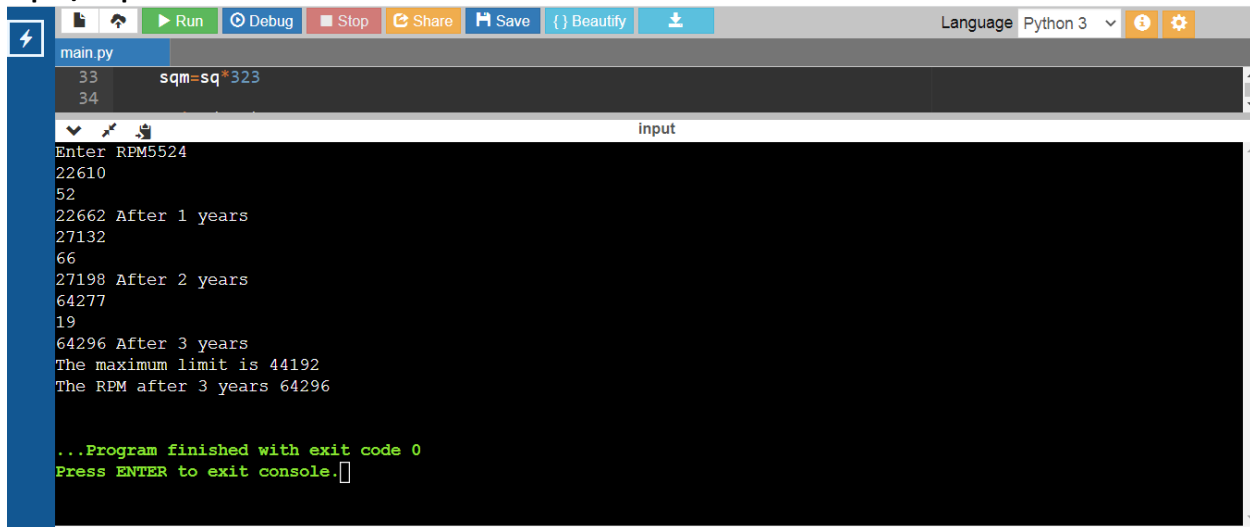
```
print("The maximum limit is", max_rpm)
print("The RPM after",n,"years",rpm)
```

Input/Ouput:

Practical: 2

Source code:

```
def increasing(profit):
    for i in range(len(profit)-1):
        if profit[i]>profit[i+1]:
            return False
    return True
def decreasing(profit):
    for i in range(len(profit)-1):
        if profit[i]<profit[i+1]:
            return False
    return True
def mountain(profit):
    for i in range(11):
        if increasing(profit[0:i+1]) and decreasing(profit[i:11]):
            return True
    return False
def valley(profit):
    for i in range(11):
        if decreasing(profit[0:i+1]) and increasing(profit[i: 11]):
            return True
    return False
print("Welcome to Profit Trends Analyser")
print("Enter the profits of  months")
profit=list()
for i in range(12):
    temp=int(input("Enter the profit"))
```
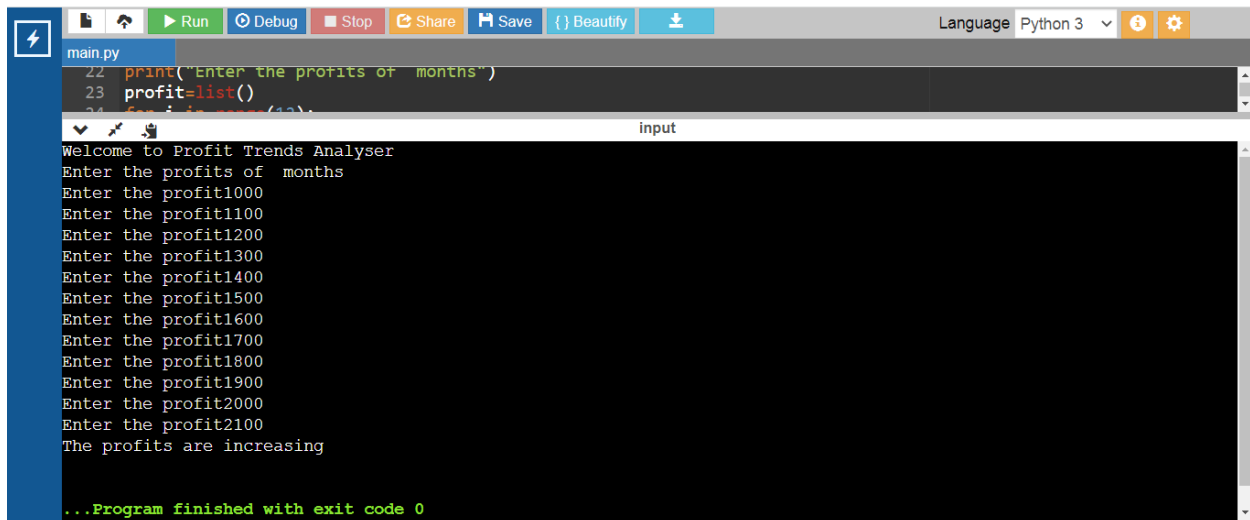
```
    profit.append(temp)
if increasing(profit)==True:
    print("The profits are increasing")
elif decreasing(profit)==True:
    print("The profits are decreasing")
elif mountain(profit):
    print("The profits are in form of mountain")
elif valley(profit):
    print("The profits are in form of valley")
else:
    print("The profits are random")
```

Input/Ouput:

Practical: 3

Source code:

```
marks={}
while(1):
    subjectwise = {}
    name = input("Enter the name of Student:")
    if name=='None':
```

```python
        break
    phy=int(input("Enter the marks in physics:"))
    chem=int(input("Enter the marks in chemistry:"))
    math=int(input("Enter the marks in mathematics:"))
    print(phy)
    print(chem)
    print(math)
    subjectwise['physics']=phy
    subjectwise['chemistry']=chem
    subjectwise['mathematics']=math

    print(subjectwise)
    marks[name]=subjectwise

    total=phy+chem+math
    per=total/3

    marks[name]=per

    print("The student",name,"scored percentage marks of",per)
    print(total)
    print(per)

keymax=max(marks,key=marks.get)
#allvalue=marks.values
#maxvalue=max(allvalue)
print("The student with highest percentage marks",keymax)
```

Input/Ouput:


```
Enter the name of Student:Ram
Enter the marks in physics:90
Enter the marks in chemistry:91
Enter the marks in mathematics:92
90
91
92
{'physics': 90, 'chemistry': 91, 'mathematics': 92}
The student Ram scored percentage marks of 91.0
273
91.0
```

Enter the name of Student:Sham
Enter the marks in physics:80
Enter the marks in chemistry:81
Enter the marks in mathematics:82
80
81
82
{'physics': 80, 'chemistry': 81, 'mathematics': 82}
The student Sham scored percentage marks of 81.0
243
81.0
Enter the name of Student:None
The student with highest percentage marks Ram