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Lab1

Write a python program to create a dictionary which contains student's names and marks. Iterate over the dictionary and apply below conditions to print their grades: a. Marks greater than or equal to 70 – Distinction b. Marks between 60-69 – First Class c. Marks between 50-59 – Second Class d. Marks between 40-49 –Pass e. Marks less than 40 - Fail

```
students= dict()
n=int(input("Enter the number of the student: "))
m=int(input("enter the number of subjects: "))
for i in range(n):
  sname = input("Enter names of student: ")
  marks= []
  sum=0
  for j in range(m):
    mark=float(input("Enter marks :"))
    marks.append(mark)
    print(marks)
    sum=sum+marks[j]
  avg1=sum/m
  if(avg1>=90.0):
    print("Grade: A")
  elif(avg1>=80.0 and avg1<90.0):
    print("Grade: B")
  elif(avg1>=70.0 and avg1<80.0):
    print("Grade: C")
  elif(avg1>=60.0 and avg1<70.0):
    print("Grade: D")
  else:
    print("Grade: F")
    print("Average marks is ",avg1)
  students[sname] = marks
print("Dictionary of student created :")
print(students)
```

```
Enter the number of the student: 2
enter the number of subjects: 2
Enter names of student: Ram
Enter marks :45
[45.0]
Enter marks :67
[45.0, 67.0]
Grade: F
Average marks is  56.0
Enter names of student: rohan
Enter marks :87
[87.0]
Enter marks :78
[87.0, 78.0]
Grade: B
Dictionary of student created :
{'Ram': [45.0, 67.0], 'rohan': [87.0, 78.0]}
```

Write a Python Program to create a 1D array of numbers from 0 to 9

```
a=[]
for i in range(0,10):
  a.append(i)
print(a,type(a))

import numpy as np
b = np.array([0,1,2,3,4,5,6,7,8,9])
print(b,type(b))
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9] <class 'list'>
[0 1 2 3 4 5 6 7 8 9] <class 'numpy.ndarray'>
```

Write a NumPy program to create an array of all the even integers from 30 to 70

```
even=np.arange(30,70,2)
print("Even number array is: ",even,type(even))
odd=np.arange(31,70,2)
print("Odd number array is: ", odd, type(odd))
b=np.size(even)
print("Size of even array is: ", b)
c=even.reshape((4,5))
print("even array convertedto matrix (4x5):\n ",c)
e=np.size(odd)
print("Size of odd array is: ",e)
f=odd.reshape((5,4))
print("Odd array convertedto matrix (5x4): \n ", f)
```

```
Even number array is:  [30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68] <class 'numpy.ndarray'>
Odd number array is:  [31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69] <class 'numpy.ndarray'>
Size of even array is:  20
even array convertedto matrix (4x5):
  [[30 32 34 36 38]
 [40 42 44 46 48]
 [50 52 54 56 58]
 [60 62 64 66 68]]
Size of odd array is:  20
Odd array convertedto matrix (5x4):
  [[31 33 35 37]
```

Write a NumPy program to create a 3x4 matrix filled with values from 10 to 21.

```
d=np.arange(10,22).reshape((3,4))
print(d)
```

```
[[10 11 12 13]
 [14 15 16 17]
 [18 19 20 21]]
```

Write a NumPy program to compute the sum of all elements, sum of each column and sum of each row of a given array

```
add=d.sum()
print("Summation of all elements within the array is: ", add)
add1=even.sum()
print("Summation of all even elements within the array is: ", add1)
gsumall=np.sum(c)
print(gsumall)
csumeven=np.sum(c,axis=0)
print(csumeven)
rsumeven=np.sum(c,axis=1)
print(rsumeven)
```

```
Summation of all elements within the array is:  186
Summation of all even elements within the array is:  980
980
[180 188 196 204 212]
[170 220 270 320]
```