Summer School Assignment -1
Deep Learning course

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Qn1:

Code:

```
%%time
import numpy as np
print('Enter the n value','\n')
n=int(input())
ycap=np.random.rand(n)
print("ycap value is",ycap,'\n')
y=np.random.randint(0,2,n)
print('y value is',y,'\n')
E=y*np.log2(ycap)+(1-y)*np.log2(1-ycap)
O=-1/n*np.sum(E)
print("Value of expression O is",O)
```

Output:

```
Enter the n value
100
ycap value is [0.88589844 0.96038515 0.53550766 0.46291647 0.66188571 0.67902161
 0.7602621  0.32984566 0.86510091 0.51968664 0.19523637 0.46398329
 0.64776083 0.57772781 0.75985597 0.98953025 0.32054703 0.1468786
 0.43963405 0.92351161 0.38356345 0.21211079 0.14342851 0.408452
 0.48115175 0.66581396 0.87486916 0.01695706 0.7629061  0.7873841
 0.39215237 0.20532875 0.43353483 0.5530575  0.99139463 0.48527077
 0.35353184 0.04717574 0.29737892 0.09291933 0.01186136 0.14566898
 0.04883514 0.39809165 0.14714145 0.95534425 0.59427184 0.07695584
 0.5565149  0.22297526 0.94685458 0.590914   0.10175124 0.71909851
 0.13342212 0.34291312 0.01707658 0.72953278 0.50684487 0.41343277
 0.83277872 0.06925423 0.74102498 0.80063681 0.69672955 0.90443558
 0.15504098 0.15891861 0.68082432 0.13125236 0.26643116 0.60224876
 0.87489575 0.3128648  0.7451687  0.8869366  0.30903734 0.72459065
 0.52450066 0.36183252 0.24548062 0.2001612  0.03777262 0.37661462
 0.94227203 0.45109381 0.31351072 0.97342485 0.81004086 0.42800702
 0.51559156 0.41708296 0.45851024 0.72195118 0.85886098 0.37175526
 0.22252902 0.63250458 0.28332911 0.38578427]

y value is [0 1 1 0 1 1 1 0 0 0 0 0 1 1 1 0 0 1 1 1 1 1 0 0 1 0 0 0 0 1 1 0 0 1 0 0
1
 0 1 0 1 0 1 0 1 1 1 1 1 1 1 0 1 1 1 0 1 0 0 0 0 0 0 1 1 0 1 1 1 0 0 0 1 0
 1 0 0 0 1 1 0 1 1 0 1 1 1 1 0 0 0 1 0 0 0 0 0 1 1 1]

Value of expression O is 1.4568535654527879
CPU times: user 23.3 ms, sys: 11.9 ms, total: 35.2 ms
Wall time: 2.61 s
```

Qn2:

Code:

```
import numpy as np
class splnos:
 solns={}
 def __init__(self,arr,len,target):
  self.arr=arr
  self.len=len
  self.target=target
 def find(self):
  flag=1
  for i in range(self.len):
   for j in range(self.len):
    if (target==(self.arr[i]+self.arr[j])):
     d={flag:[i,j]}
     self.solns.update(d)
     flag+=1
 def showsoln(self):
   print(self.solns)

lst=[]
n=int(input("Enter array size\n"))
print("Enter the numbers")
for i in range(n):
    x=int(input())
    lst.append(x)
print(lst)
target=int(input("Enter the target\n"))
mynos=splnos(lst,n,target)
mynos.find()
mynos.showsoln()
```

Output:

```
Enter array size
7
Enter the numbers
10
20
10
40
50
60
70
[10, 20, 10, 40, 50, 60, 70]
Enter the target
50
{1: [0, 3], 2: [2, 3], 3: [3, 0], 4: [3, 2]}
```