KARANJOT SINGH

In [5]:

```
import math
```

In [6]:

```
def information_gain(n,positive,negative,a_one,a_one_positive,a_one_negative,a_two,a_two_negative,a_two_positive):
    a = -((a_one_negative/a_one)*math.log2(a_one_negative/a_one)+(a_one_positive/a_one)*math.log2(a_one_positive/a_one))
    b = -((a_two_negative/a_two)*math.log2(a_two_negative/a_two)+(a_two_positive/a_two)*math.log2(a_two_positive/a_two))
    target = -((positive/n)*math.log2(positive/n)+(negative/n)*math.log2(negative/n))
    ig = target-((a_one/n)*a + (a_two/n)*b)
    return ig
```

In [7]:

```
def Gini_index(n,a_one,a_one_positive,a_one_negative,a_two,a_two_negative,a_two_positive):
    a = 1 - ((a_one_positive/a_one)**2+(a_one_negative/a_one)**2)
    b = 1 - ((a_two_positive/a_two)**2+(a_two_negative/a_two)**2)
    gi = (a_one/n)*a + (a_two/n)*b
    return gi
```

In [8]:

```
n =int(input("Enter the Length Of Data Set:"))# 30
positive = int(input("Enter the Number of Positive Values:")) #14
negative = int(input("Enter the Number of Negative Values:"))#16
a_one = int(input("Enter the length of First Partition:"))#17
a_one_negative = int(input("Enter the length of First Partition Negative Values:"))#4
a_one_positive = int(input("Enter the length of First Partition Positive Values:"))#13
a_two = int(input("Enter the length of Second Partition:"))#13
a_two_negative = int(input("Enter the length of Second Partition Negative Values:"))#12
a_two_positive = int(input("Enter the length of Second Partition Positive Values: "))#1
print("Information Gain:",information_gain(n,positive,negative,a_one,a_one_positive,a_one_negative,a_two,a_two_negative,a_two_positive))
print("Gini Index:",Gini_index(n,a_one,a_one_positive,a_one_negative,a_two,a_two_negative,a_two_positive))
```

```
Enter the Length Of Data Set:14
Enter the Number of Positive Values:9
Enter the Number of Negative Values:5
Enter the length of First Partition:6
Enter the length of First Partition Negative Values:3
Enter the length of First Partition Positive Values:3
Enter the length of Second Partition:8
Enter the length of Second Partition Negative Values:6
Enter the length of Second Partition Positive Values: 2
Information Gain: 0.04812703040826949
Gini Index: 0.42857142857142855
```