

CSE 3024

Web Mining

LAB ASSESSMENT - 3

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1. Create a Python programme that performs Elias Gamma Encoding and Decoding for even numbers ranging from 1 to 20.

Ans 1.

HANDWRITTEN CODE:

from math suport log inport math log 2 = lambda x: log(n,2) del Unery (n): setter (n-1)*'0'+'1' ole Binery (n, l=1) & 2 = '10:0'sabj' % l settern s.format(n) del Eleas-Gamena(n): yettern '0' n = 1+ Ent (log 2(n)) b = n - 2** (int (log 2(n))) l = int (log 2(n)) settern Unery (n) + Binery (b, l) def Elies - Gamena - Decooling (n): n = list(n) k = 0 while Fouce: frusk K = k+1	PI) VIBHU KUMAR SINGH	19BCE0215
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n=list(n) K=0 while Foure: The not a [k]=='0': break	l = int (log 2 (n)) return Unerry (n) + Bira	ry (b,l)
while Foure: To not a [k]=='0': 6reak	- n = list(n)	g (n):
6 rusk K = k+1	while Force:	/b/:
N=n[k:2*k+1]		

CODE:

```
from math import log
import math
log2 = lambda x: log(x, 2)
def Unary(x):
    return (x-1)*'0'+'1'
def Binary(x, l = 1):
    s = '{0:0\%db}' \% 1
    return s.format(x)
def Elias_Gamma(x):
    if(x == 0):
        return '0'
    n = 1 + int(log2(x))
    b = x - 2**(int(log2(x)))
    1 = int(log2(x))
    return Unary(n) + Binary(b, 1)
def Elias_Gamma_Decoding(x):
    x = list(x)
    K = 0
    while True:
        if not x[K] == '0':
            break
        K = K + 1
    x = x[K:2*K+1]
    n = 0
    x.reverse()
```

CODE SCREENSHOT:

```
\label{lem:c:web} C:\Users\Vibhu\OneDrive - vit.ac.in\Desktop\Winter Semester 21-22\Web Mining\ELA\LAB-3\EliasGamma.py \\
EliasGamma.py X
             from math import log
            import math
            log2 = lambda x: log(x, 2)
          ▼ def Unary(x):
                  return (x-1)*'0'+'1'
        ▼ def Binary(x, l = 1):

s = '{0:0%db}' % l

return s.format(x)
         ▼ def Elias_Gamma(x):
               if(x == 0):
                   n = 1 + int(log2(x))
                   b = x - 2**(int(log2(x)))
                  1 = int(log2(x))
                  return Unary(n) + Binary(b, 1)
         ▼ def Elias_Gamma_Decoding(x):
                  x = list(x)
                  K = 0
                  while True:
                   if not x[K] == '0':
                  x = x[K:2*K+1]
                  x.reverse()
                  for i in range(len(x)):
    if x[i] == '1':
                           n = n+math.pow(2, i)
         print("Elias - Gamma Encoding and Decoding:\n")
heading = '{:<20} {:<12} {:<8} .format("x(ranging[1-20])", "Encoding", "Decoding")
print("\033[4m"+heading+"\033[0m")

* for x in range(2,21,2):
    string = str(Elias_Gamma(x))
    line_new = '{:<20} {:<12} {:>8}'.format("For x = " + str(x), string, Elias_Gamma_Decoding(string))
                   print(line_new)
```

OUTPUT:

Elias - Gamma Encoding and Decoding:

x(ranging[1-20])	Encoding	Decoding
For $x = 2$	010	2
For $x = 4$	00100	4
For $x = 6$	00110	6
For $x = 8$	0001000	8
For $x = 10$	0001010	10
For $x = 12$	0001100	12
For $x = 14$	0001110	14
For $x = 16$	000010000	16
For $x = 18$	000010010	18
For $x = 20$	000010100	20

OUTPUT SCREENSHOT:

```
In [1]: runfile('C:/Users/Vibhu/OneDrive - vit.ac.in/Desktop/Winter Semester 21-22/
Web Mining/ELA/LAB-3/EliasGamma.py', wdir='C:/Users/Vibhu/OneDrive - vit.ac.in/
Desktop/Winter Semester 21-22/Web Mining/ELA/LAB-3')
Elias - Gamma Encoding and Decoding:
x(ranging[1-20])
                        Encoding
                                      Decoding
For x = 2
                        010
                                                4
For x = 4
                        00100
For x = 6
                        00110
                                                6
For x = 8
                        0001000
For x = 10
                        0001010
                                               10
For x = 12
                        0001100
                                               12
For x = 14
                        0001110
                                               14
For x = 16
                        000010000
                                               16
For x = 18
                        000010010
                                               18
For x = 20
                        000010100
                                               20
```