Advanced Programming Lab (CS6140)

HW 1

1. Write the recursive relation for the problem "Jumping Kangaroo – 1".

   - T(n) = T(n-1) + T(n-2) + T(n-3)   when n>0
         = 1   when n=0
         = 0   when n<0

2. For the problem "Jumping Kangaroo with M coins" you must have used iterative approach to solve it. Derive the recursive relation to determine C(N, M).

   - C(n,m) = C(n-1,m-1) + C(n-2,m-1) + C(n-3,m-1)   for n>=1 and m>=2
   - C(n,1) = 0   if n>3
           = 1   if n = 1,2,3

3. For varying values of N, determine time taken by your solution for "Jumping Kangaroo – 1" and "Jumping Kangaroo – 2" :

Jumping Kangaroo – 1

n	Execution time
11	15623
12	31247
13	43306
15	171863
16	296838
18	1022189
20	3352912
22	11340979
25	75527339
27	253401922

- Average : 34520421.8
- Median : 659513.5

Jumping Kangaroo – 2

n	Execution time
11	0
12	0
13	0
15	0
16	0
18	0
20	0
22	0

25	0
27	0

- Average : 0
- Median : 0
- Standard deviation : 0