1. How many number of binary sequences of length n without consecutive 0’s?

* If the first position is 0, then the second must be 1. So, two position are gone. The remaining positions are (n-2)
* If the first position is 1, then the second position can be anything. So, the remaining positions become (n-1)
* There total ways to get the sequence is
  + T(n) = T(n-1) + T(n-2)
* To find base cases:
  + For n = 2, the ways are:
    - 1,0
    - 0,1
    - 1,1
    - Not 0,0 because it is consecutive zero.
    - So, total ways is 3.
  + For n = 1, the ways are:
    - 1
    - 0
    - We can put either 1 or 0. So, total ways are 2.
  + Therefore, the base cases are: T(1) = 2 and T(2) = 3.

1. How to compute max element using recursion?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 2 | 3 | 7 | 4 | 9 | 6 |

* 1. Int max (int lower, int upper, int[] a)

{

If(lower>upper)

{

Exit program;

}

If(lower == upper)

{

Return a[lower];

}

Else

{

Int mid = (lower+upper)/2;

Int max1 = Max(lower,mid);

Int max2 = Max(mid+1, upper);

If(max1>max2)

{

Return max1;

}

Return max2;

}

}