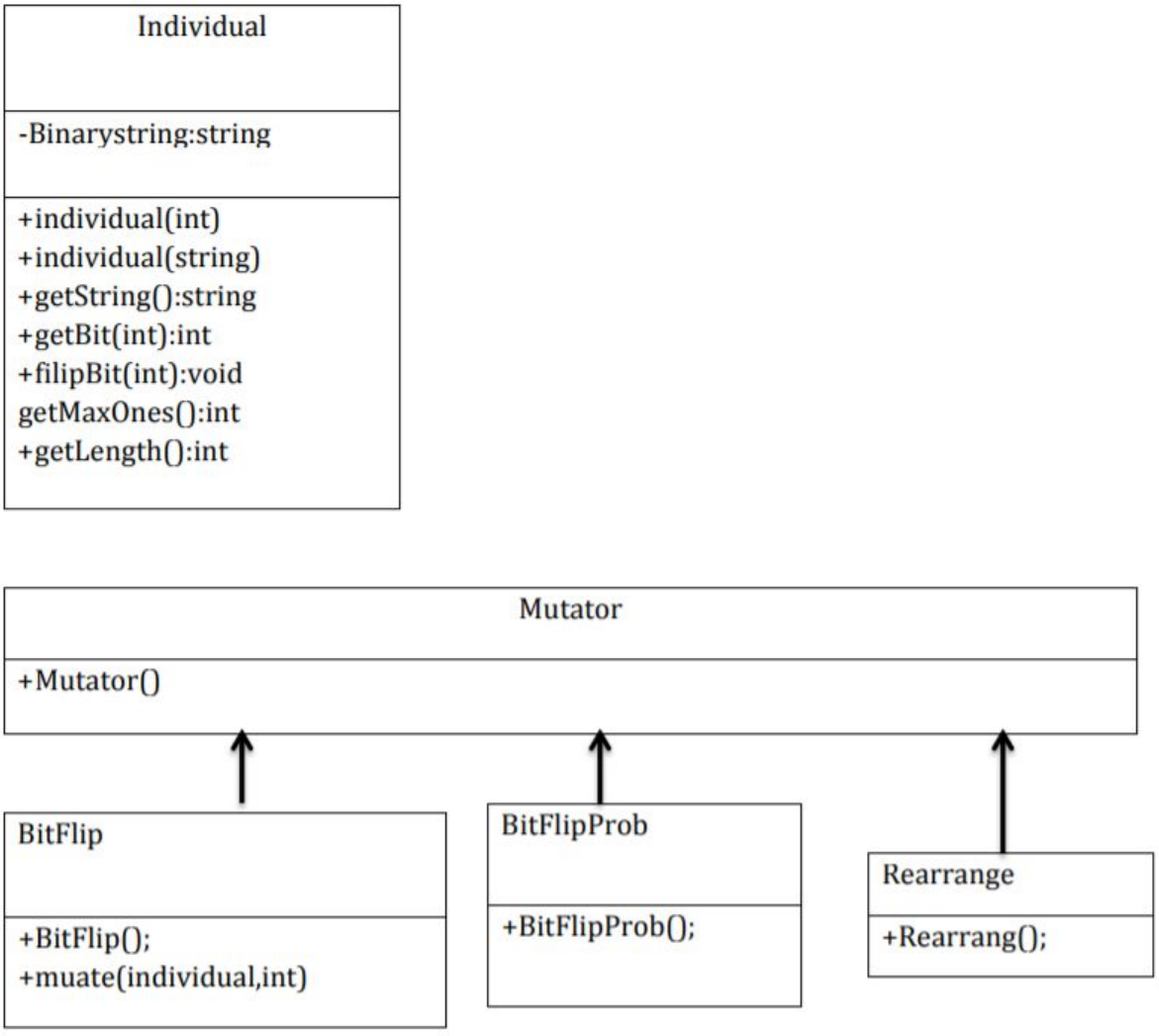
Prac 6 Design



Description:

Individual: This class generates a single DNA binary string and contains the following function:

getString(): This function outputs a binary string representation of the bit string list.

getBit(int pos): This function returns the bit value of position pos. If pos is out of range, it should return -1.

flipBit(int pos): This function accepts the position of a bit and flips the bit value.

getMaxOnes(): This function returns the longest sequence of '1' digits in the list.

getLength(): This function returns the length of the list.

Mutator: This class is the base class for mutation. It has only one virtual function, Which takes individual and integer as arguments.

BitFilp: A class that inherits from Mutator, where the mutate function is implemented to flip the kth bit and return a new single object.

BitFilpProb: A class that inherits from Mutator. This implements the mutate function to flip all bits with probability p and return a new single object.

Rearrangement: A class that inherits from Mutator, where the mutate function is Rearranged to select the kth number in the bit string (again, counted in circles).

This number and all subsequent digits (up to the end) will move to the beginning of the list.
Test
000000 2 0111 2
I expect output
010000 1110 3
Given input
001100 7 011100 3
I expect output
101100 110001 2
Given input
111111 6 010101 3
I expect output
111110 010101 1
Given input
0 2 1110 11
I expect output
1 1011 2
Given input
000000 10 011111 6
I expect output
000100 101111 4