

Assignment 2

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Q1. Calculate the complexity for the following algorithm:

```
int findElement(int arr[], int x, int n)
           // Finding block size to be jumped
           int step = sqrt(n);
           // Finding the block where element is
           // present (if it is present)
           int prev = 0;
           while (arr[min(step, n)-1] < x)
                      prev = step;
                      step += sqrt(n);
                      if (prev >= n)
                                 return -1;
           // Doing a linear search for x in block
           // beginning with prev.
           while (arr[prev] < x)
                      // If we reached next block or end of
                       // array, element is not present.
                      if (prev == min(step, n))
                                  return -1:
           // If element is found
           if (arr[prev] == x)
                      return prev;
           return -1;
```

Q2. Write a full class to implement Array list with its complete operations: initialization, insertion, delete, binary search. The class should accept any type of data (use templates). Also, write the main function to test your code.

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Question 1:

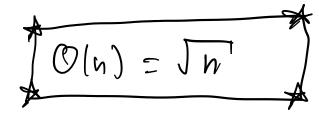
if n= 4 prav=0 X=8 0 Step=Z

$$5+ep=k^{2}$$
 will end when $\frac{3}{4}ecc[min(step_{s}n)-1]\frac{3}{5}ZX$
 $k^{2}=X$
 $k=\sqrt{X^{2}}=k=\sqrt{h}$

The same will occur for second loop

Thus
$$O(n) = O(\sqrt{n}) + O(\sqrt{n}) + O(1) + O(1)$$

 $O(n) = 70(\sqrt{n}) = \sqrt{n}$



Question 2:

-D Submitted in a cpp file