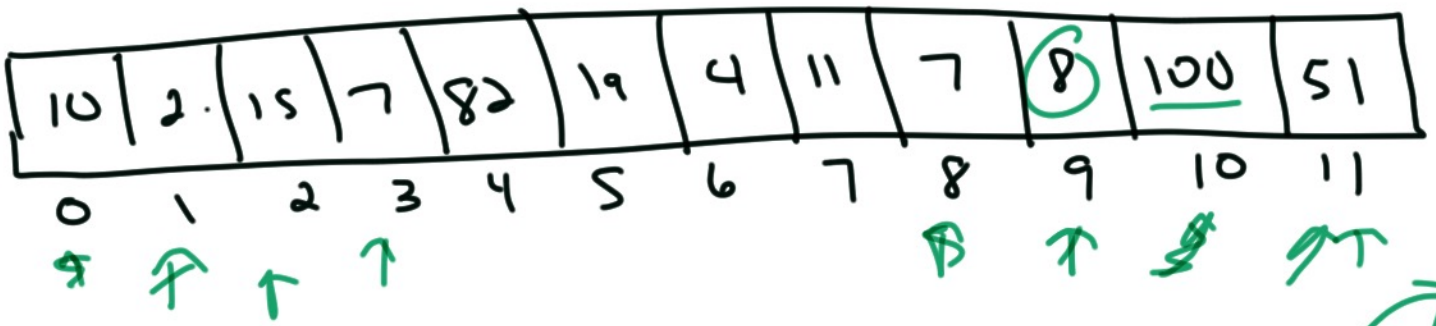
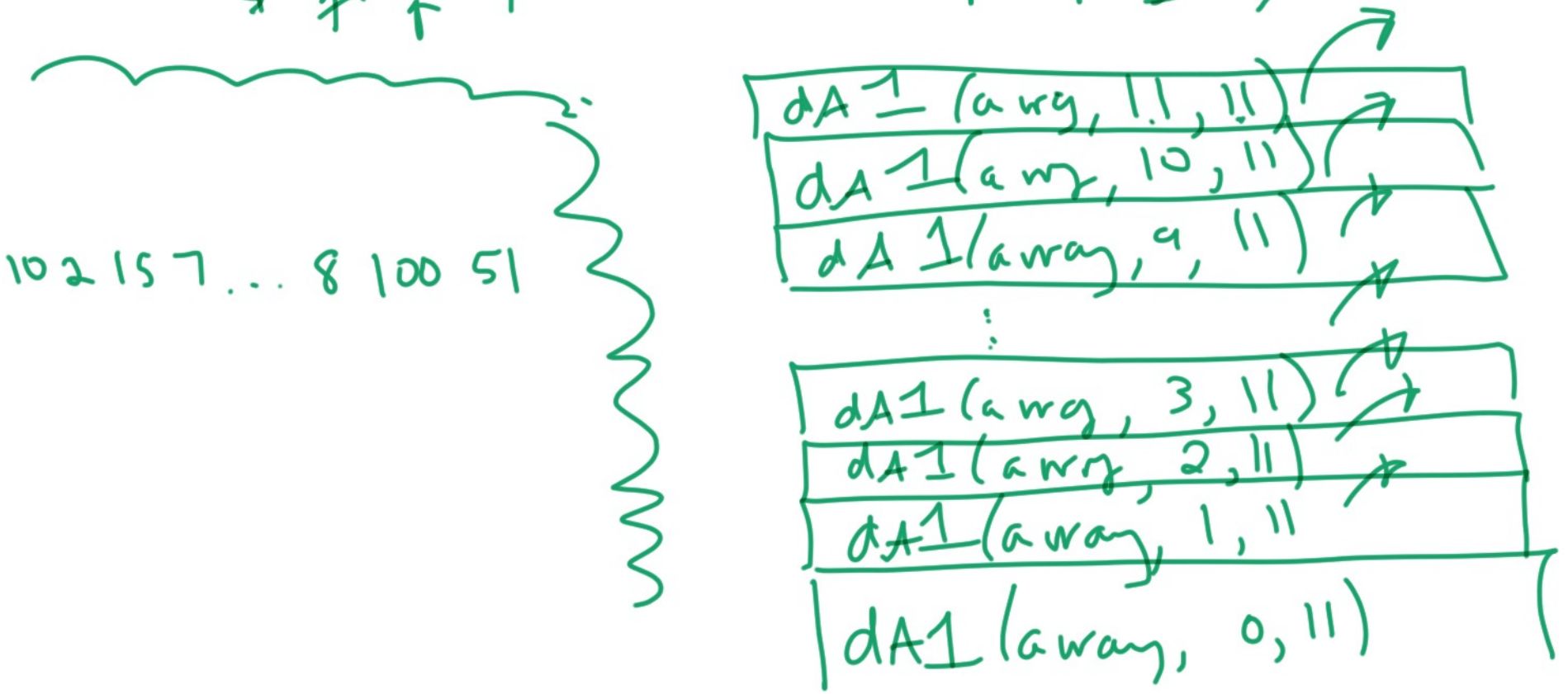
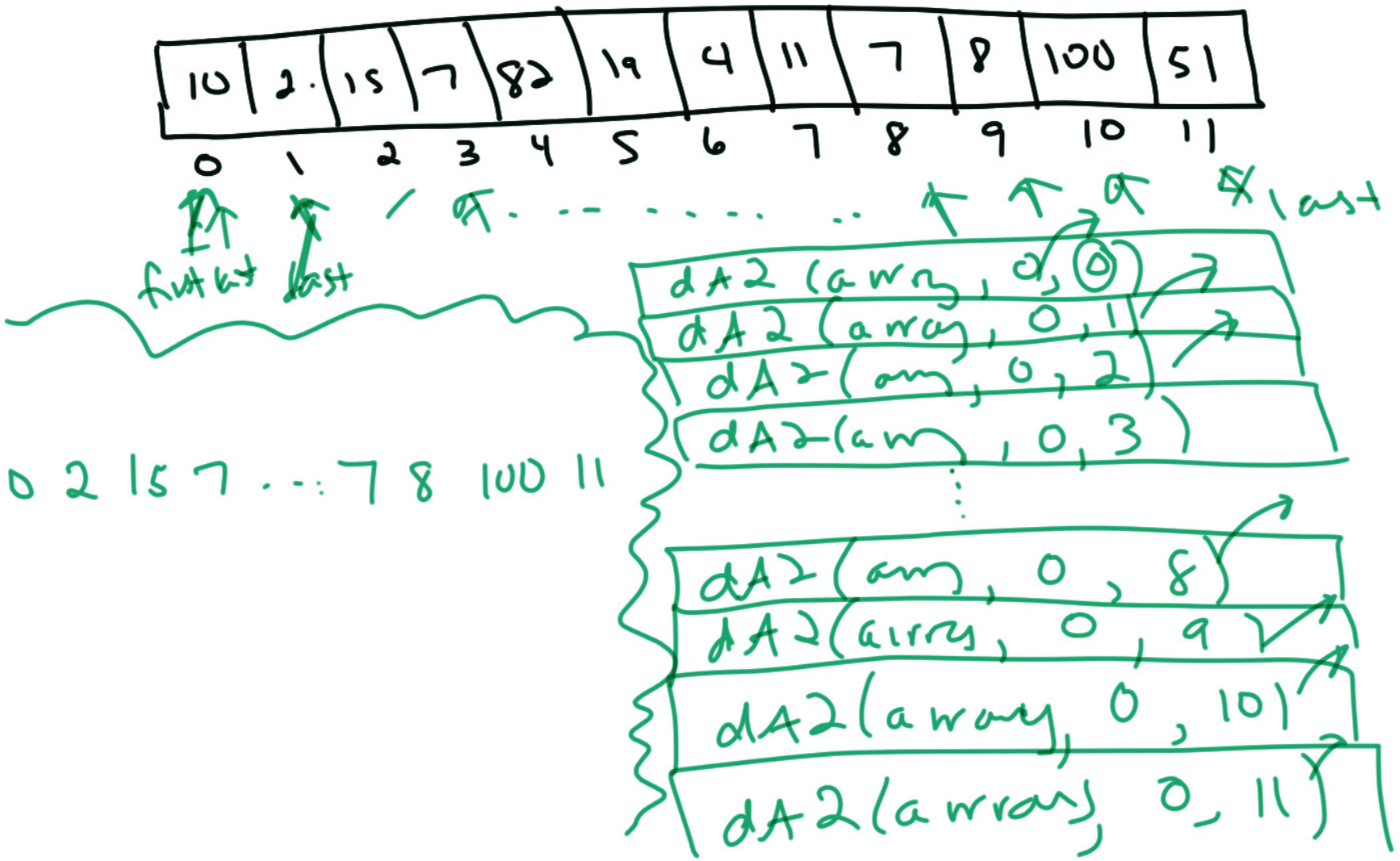
```java
13  public static void displayArray1(int[] array, int first, int last)
14  {
15      System.out.print(array[first] + " ");
16      if (first < last)
17          displayArray1(array, first + 1, last);
18  }
19
```

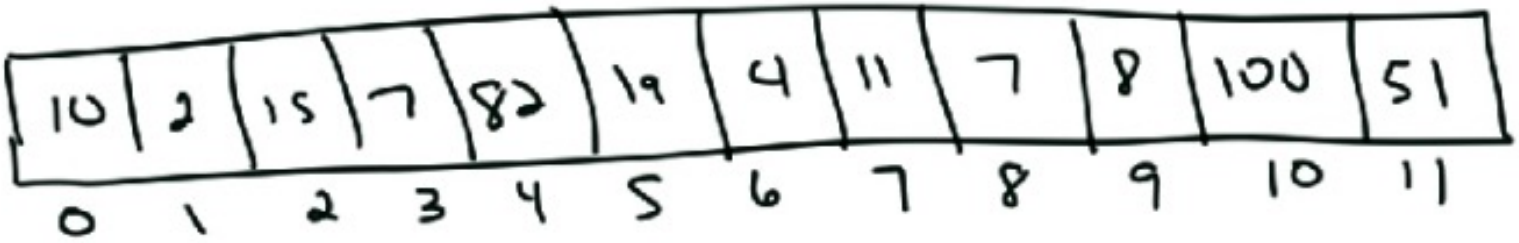




```java
28    public static void displayArray2(int[] array, int first, int last)
29    {
30        if (first <= last)
31            displayArray2(array, first, last - 1);
32            System.out.print(array[last] + " ");
33    }
```

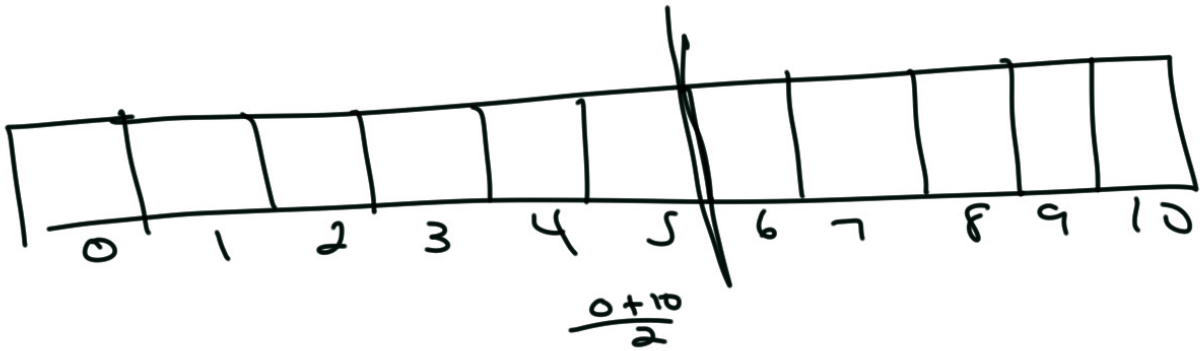


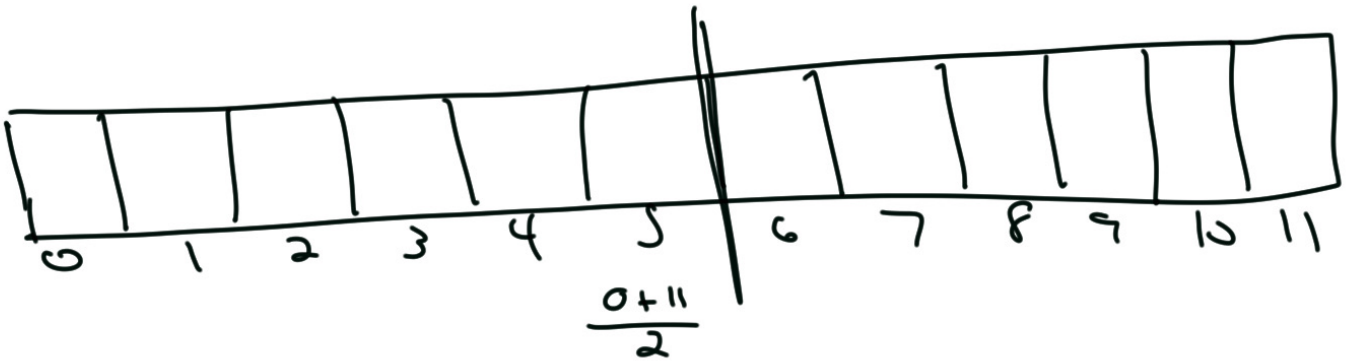
```java
public static void displayArray3(int[] array, int first, int last)
{
    if (first == last)
        System.out.println(array[first] + " ");
    else
    {
        int mid = (first + last) / 2;  //consider first + (last-first)/2
        displayArray3(array, first, mid);
        displayArray3(array, mid + 1, last);
    }
```



Processing from The Middle

```
int mid = (first + last)/2;
```





$$mid = (first + last)/2$$

using this reduces the max value possible for these since int is $-2,147,483,648 \rightarrow 2,147,483,647$ (2^{32} values)

$$mid = first + (last - first)/2$$

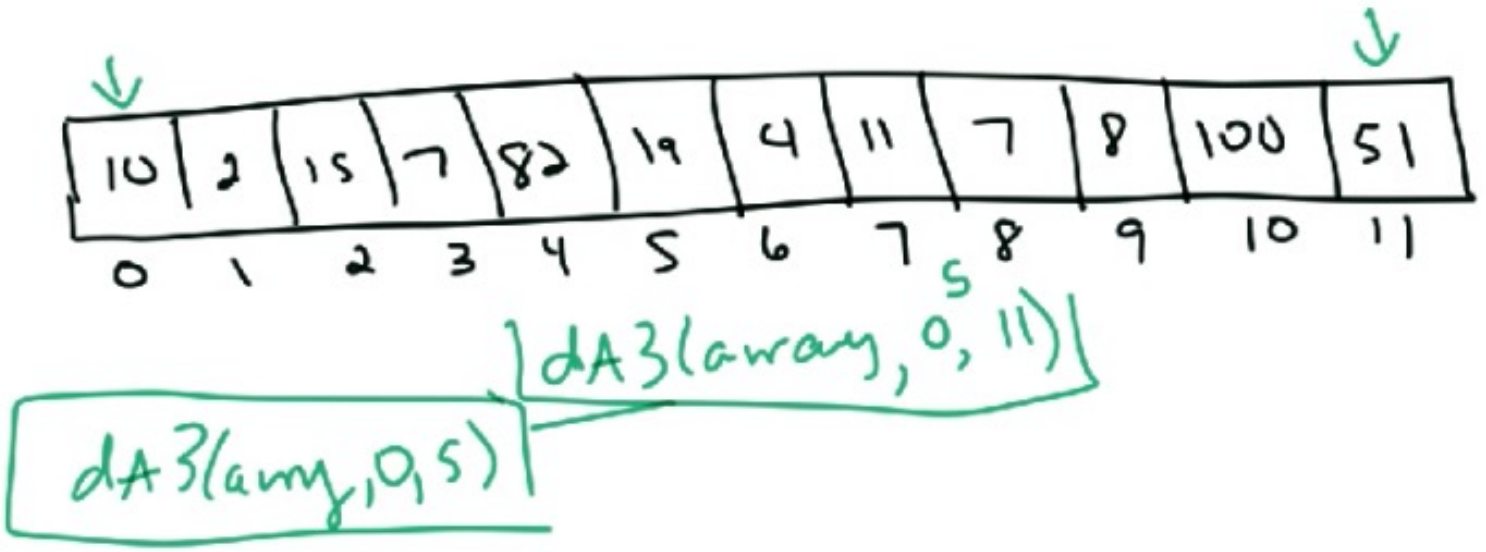
keeps values smaller for calculation

$$= first + \frac{last}{2} - \frac{first}{2}$$

$$= \frac{first}{2} + \frac{last}{2}$$

$$= (first + last)/2$$

```java
42    public static void displayArray3(int[] array, int first, int last)
43    {
44        if (first == last)
45            System.out.println(array[first] + " ");
46        else
47        {
48            int mid = (first + last) / 2;  //consider first + (last-first)/2
49            displayArray3(array, first, mid);
50            displayArray3(array, mid + 1, last);
51        }
```



```java
42    public static void displayArray3(int[] array, int first, int last)
43    {
44        if (first == last)
45            System.out.println(array[first] + " ");
46        else
47        {
48            int mid = (first + last) / 2;  //consider first + (last-first)/2
49            displayArray3(array, first, mid);
50            displayArray3(array, mid + 1, last);
51        }
52
```