CS 2420
Fall semester section 01
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# Chapter 5 Programming

**In practice:**

**5.30:** Made the array and had it read linear O(N) through the whole array with a for loop in the for loop I had it check to see if Ai = array[i] to check if index and element were the same and if they were then it printed it. It worked.

```
4   public static void main(String[] args) {
5       int []array = new int[] {3, 4, 5, 6, 6, 6, 6, 6, 7, 8, 9, 9, 9, 10, 11};
6
7       for(int i = 0; i < array.length; i++) {
8           if(i == array[i]) {
9               System.out.println("Spot " + i + " has the property Ai = i, Array: " + array[i]);
10          }
11      }
12  }
13 }
```

Console

```
<terminated> chapter5program [Java Application] C:\Program Files\Java\jdk-14.0.2\bin\javaw.exe  (Sep 17, 2021, 5:04:11 AM – 5:04:11 AM)
Spot 6 has the property Ai = i, Array: 6
```

**5.31 skip b, c, and d:** took in an int from the user with scanner then used a method to pass the number then return a boolean checked to see if the number was less then or equal to and If it was then its false. Then started at 2 and went all the way to the number before the number entered by the user and divided each if the modules are 0 then it divided without reminder being false if not then true meaning it's a prime number. It worked with what I entered.

```
15          //Why isnt 459674? no even
16          //is 459673 prime? not prime either
17          Scanner sc = new Scanner(System.in);
18          System.out.println("Enter an intiger to see if its prime: ")
19          int prime = sc.nextInt();
20
21          isPrime(prime);
22
23      }
24      public static boolean isPrime(int prime) {
25          if(prime <= 1) {
26              System.out.println("false");
27              return false;
28          }
29
30          for(int i = 2; i < prime; i++) {
31              if(prime % i == 0) {
32                  System.out.println("false");
33                  return false;
34              }
35          }
36          System.out.println("true");
37          return true;
38      }
39  }
40
```

Console

```
<terminated> chapter5program [Java Application] C:\Program Files\Java\jdk-14.0.2\bin\javaw.exe  (Sep
Enter an intiger to see if its prime:
459673
false
```

**5.33:** Made two arrays to test the majority element I know A has one and B doesn't. so I made a method to test.

```
23        int []A = new int[] {6, 1, 6, 4, 6, 6, 7, 6, 2};
24        int []B = new int[] {6, 1, 6, 4, 6, 6, 7, 4};
25
26        majorityElement(A);
27        majorityElement(B);
28
```

Console

<terminated> chapter5program [Java Application] C:\Program Files\Java\jdk-14.0.2\bin\

```
Spot 6 has the property Ai = i, Array: 6
Enter an intiger to see if its prime:
4
false
Majority element: 6
No Majority element
```

here is the method which I did the work of reading the array then printint out which one it was or if it wasn't. I did this in big oh linear run time. Reading through everything once. It worked how I wanted it too.

```
public static void majorityElement(int [] A) {
    int []count = new int[10];
    boolean t = false;

    for(int i = 0; i < A.length; i++) {
        count[A[i]] ++;
    }

    for(int i = 0; i < count.length; i++) {
        if(count[i] > A.length/2) {
            System.out.println("Majority element: " + i);
            t = true;
        }
    }
    if(t == false) {

        System.out.println("No Majority element");
    }
}
```