

Mini Assignment 2

Due: 11:20am on February 14th, 2019

20 points

Give the worst-case analysis for the following functions in terms of big- Θ .
You should submit your pdf solution using L^AT_EX if possible.

1.

```
//method is called with someMethod(arr, 0);  
public static boolean someMethod(int[] arr, int loc){  
    if(arr[loc] == 10){  
        return true;  
    } else{  
        return someMethod(arr, loc+1);  
    }  
}
```

$$T(n) = T(n - 1) + \Theta(1) = \boxed{\Theta(n)}$$

2.

```
//method is called with someMethod(arr, arr.length);
public static int someMethod(int[] arr, int x){
    int sum = 0;
    if(x==0){
        return 0;
    }
    for(int i=0; i<arr.length; i++){
        sum = arr[i];
    }
    return sum + someMethod(arr, x-1);
}
```

$$T(n) = T(n - 1) + \Theta(n) = \boxed{\Theta(n^2)}$$

3.

```
//method is called with someMethod(arr, 1);
public static int someMethod(int[] arr, int x){
    if(x < arr.length){
        return someMethod(arr, x*2) + someMethod(arr, x*2) + 4;
    } else{
        return x+1;
    }
}
```

$$T(n) = 2T(n/2) + \Theta(1) = \boxed{\Theta(n)}$$