Problem 18.7

```
import java.util.Scanner;

public class Problem18_7 {

	static int count = 0;

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner input = new Scanner(System.in);

		System.out.println("Enter an index for a Fibonacci number: ");

		int index = input.nextInt();

		System.out.print("Enter the number at index " + index +" is "+ fib(index));

		System.out.println("\nThe number of times the mehod is invoked: "+count);

	}

	public static long fib(long index) {
		count++;
		if (index == 0)
			return 0;
		else if (index == 1)
			return 1;
		else
			return fib(index - 1) + fib(index - 2);
	}

}
```

Problem 18.9

```
import java.util.Scanner;

public class Problem18_9 {

	public static void main(String[] args) {
```

```
		// TODO Auto-generated method stub

		try {
			System.out.print("Enter a String: ");
			Scanner input = new Scanner(System.in);
			String str = input.next();
			System.out.print("The reverse String is: ");
			reverseDisplay(str);
		}
		catch(Exception e) {
			System.out.println("Exception has occurred in the class. Program will exit.
");
			System.exit(0);
		}
	}
	public static void reverseDisplay(String value) {
		if(value.length() > 0) {
			System.out.print(value.charAt(value.length()-1));
			reverseDisplay(value.substring(0, value.length()-1));
		}
	}
}
```

Problem 18.11

```
import java.util.Scanner;

public class Problem18_11 {
	static int sum;

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		try {
			System.out.print("Enter the number: ");
			Scanner input = new Scanner(System.in);
			String str = input.next();
			int num = Integer.parseInt(str);
			System.out.print("The sum is: "+sumDigits(num));
		}
		catch(Exception e) {
```

```
                System.out.println("Exception has occurred. Program will exit. ");
                System.exit(0);
            }

        }

        public static int sumDigits(long n) {
            if(n > 0) {
                sum = sum+(int)n%10;
                sumDigits(n/10);
            }
            return sum;
        }

}
```

Problem 18.13

```
import java.util.Scanner;

public class Problem18_13 {

        public static void main(String[] args) {
            Scanner input = new Scanner(System.in);
            int [] array = new int[8];
            int number;

            for(int i=0; i<8; i++) {
                System.out.print("Enter number "+(i+1)+": ");
                number = input.nextInt();
                array[i]=number;
            }
            int largest = largestNumber(array, array.length-1, array[array.length-1]);

            System.out.println("\nThe largest integer in the given numbers: "+largest);

        }
        public static int largestNumber(int[] array, int size, int currentValue) {
            if(size == 0) {
                if (currentValue < array[size]) {
```

```
                        return array[size];
                }
                else return currentValue;
        }
        else {
                if (currentValue < array[size])
                        currentValue = array[size];
                size--;

                return largestNumber(array, size, currentValue);
        }
    }

}
```

Problem 18.15

```
import java.util.Scanner;

public class Problem18_15 {
    static int k = 0;

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        try{
            System.out.print("Type a string to analyze: ");
            Scanner input = new Scanner(System.in);
            String str = input.nextLine();
            System.out.print("Type a character to check: ");
            String temp = input.nextLine();
            char c = temp.charAt(0);
            int count = count(str,c);
            System.out.println("There are "+count+" "+c+" 's.");
        }
        catch(Exception e) {
            System.out.println("Exception has occurred in the class. Program will
exit. ");
            System.exit(0);
        }
    }
```

```
	public static int count(String str, char a){
		return count(str,a,0);
	}
	public static int count(String str, char a, int high) {
		if(str.equals("")) {
			return 0;
		}
		if(high + 1 <= str.length()) {
			if(str.substring(high, high+1).equals(Character.toString(a))) {
				k++;
			}
			count(str.substring(high+1, str.length()),a,high);
		}
		return k;
	}

}
```

Problem 18.17

```
import java.util.Scanner;

public class Problem18_17 {

	public static void main(String[] args) {
		Scanner input = new Scanner(System.in);
		System.out.println("Please enter characters in one line: ");
		String str = input.nextLine();
		char[] array = str.toCharArray();
		System.out.print("\nPlease enter a character to the find number of its
occurrences: ");
		String str1 = input.next();
		char ch = str1.charAt(0);
		int occrs = count(array, ch);
		System.out.println("\nThe number of occurrences of specified character in the
given array: "+ occrs);
	}
	public static int count(char[] chars, char ch) {
		return count(chars, ch, chars.length-1);
	}
	public static int count(char[] chars, char ch, int high) {
		if (high >= 0) {
```

```
                int count = 0;
                char ch1 = chars[high];
                if(Character.toUpperCase(ch) == Character.toUpperCase(ch1))
                        count++;
                return count + count(chars, ch, high-1);
        }
        else
                return 0;
    }

}
```