

Extra Java Problems (Solution)

Problem 1

The following function is defined:

```
1 public static int[] Q1(int[] arr)
2 {
3     int n = arr.length;
4     int arr2[] = new int[n];
5
6     for (int i=0; i<n; i++)
7         arr2[i] = arr[n-i-1];
8
9     return arr2;
10 }
```

Note: the command

```
1 int arr2[] = new int[n];
```

creates a new array of length n called `arr2`.

1. What will the function return for the input `[1,0,5,7,2,3]`?
2. What does the function return in general?

Problem 2

The following function is defined:

```
1 public static boolean Q2(int[] arr1, int[] arr2)
2 {
3     if (arr1.length != arr2.length)
4         return false;
5
6     boolean condition = true;
7     int i = 0;
8     while (condition==true && i<arr1.length)
9     {
10         if (arr1[i] != arr2[i])
11             condition = false;
12         i++;
13     }
14
15     return condition;
16 }
```

Follow the code carefully and explain what does the function do.

Problem 3

The Fibonacci sequence $\{F_i\}$ is defined as follows:

$$F_i = F_{i-2} + F_{i-1},$$

with $F_0 = F_1 = 1$.

For example, the first 10 terms of the sequence are

$$1, 1, 2, 3, 5, 8, 13, 21, 34, 55, \dots$$

1. Write a Java function that takes an integer $n \geq 2$ and returns the first n values of the Fibonacci sequence.
2. **Challenge:** Write a **recursive** function that takes an integer $n \geq 0$ and returns the value of F_n .