CSE 3101: Design and Analysis of Algorithms

Assignment 2

Weight: 3%, Due: May 28, in the drop box by 6:45 pm or in class by 7:10 pm

Problems to submit

1. (2 points) Prove that the following algorithm that computes the product the values in an array of integers $A[1 \ldots n]$ is correct. Assume that the numbers are small enough to not cause overflow issues.

```
PROD(A)
1  prod ← 1
2  for k ← 1 to n
3  do prod ← A[k] * prod
4  return prod
```

2. (4 points) Prove that the following algorithm that computes the n^{th} Fibonacci number is correct.

```
FIB(n)
1  if n = 0
2     then return 0
3     else  last ← 0
4           current ← 1
5           for j ← 2 to n
6           do temp ← last + current
7              last ← current
8              current ← temp
9  return current
```