Assignment 4 – Eric Wan – [ezw23@drexel.edu](mailto:ezw23@drexel.edu)

**Question 1:**

1. Checking if k=1 case is true

1. Assume k=n case is true
2. Prove k=n+1 is true

- b/c we assumed the k=n case is true:

1. Checking if k=1 case is true

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**Question 2:**

1. Checking if k=1 case is true

1. Assume k=n case is true
2. Prove k=n+1 case is true

**Question 3:**

1. Checking k=1 case is true

1. Assuming k=n case is true
2. Prove k=n+1 case is true

**Question 4:**

|  |  |
| --- | --- |
| **N** | **Output** |
| 000 | 0 |
| 001 | 1 |
| 010 | 1 |
| 011 | 0 |
| 100 | 1 |
| 101 | 0 |
| 110 | 0 |
| 111 | 1 |

Base Cases:

00 => replaced by 0

01 => replaced by 1

10 => replaced by 1

11 => replaced by 0

XOR of pairs recursively replaced until last pair is reached, and if the numbers of the xor are the same, outputs a 0, else a 1

**Question 5:**

1. Prove that k=1 is true

1. Assuming k=n is true
2. Prove that k=n+1 is true

- b/c is true and the first case is true, then is true

**Question 6:**

1. Prove that k=1 is true

1st element of (reverse L) is or the first element of L

1. Assuming k=n is true
2. Prove that k=n+1 is true

**Extra Credit:**

1. Prove that i=0 is true

1. Assuming i=n is true
2. Prove that i=n+1 is true