

## **6.004 Recitation 8**

### **L08 - More on Combinational Circuits**

#### **Problem 1.**

Write a Bluespec function `checkParity`, which takes as input a 5-bit vector and returns `True` if the input vector has an odd number of 1's, otherwise it returns a `false`.

Also, think about the propagation delay of your solution.

#### **Problem 2.**

Write Bluespec function `addParity`, which takes as input a 4 bit vector and returns a 5 bit vector which adds an odd-parity bit to the input in the most significant position.

Note that an odd-parity bit makes the number of 1's in the resulting bit vector odd and an even-parity bit makes the number of 1's in the resulting bit vector even.

**Problem 3.**

In Lab 3, we wrote a function that computed whether a 4-bit input is a power of 2 or not (basically, this was checking if there is only one bit in the input which is equal to 1). Rewrite this function so that it works with inputs of arbitrary bit width.

**Problem 4:**

Parameterize the bit-scan-reverse function from Lab3 to take as input a w-bit vector and output the index of the first non-zero bit scanned from the largest index.