

# Programming Design, Spring 2016

## Suggested Solution for Homework 2

Solution provider: Wei-Hung Liao  
Department of Information Management  
National Taiwan University

### Problem 1

In the first program, it outputs “ $a$  is odd” when the remainder of  $a$  divided by 2 is 1, which is exactly the definition of  $a$  is odd. It outputs “ $a$  is even” when  $a$  is not odd. We all know that an integer is either odd or even, so the first program is correct. In the second program, the first part is the same as the first program, while the second part isn’t. It outputs “ $a$  is even” when the remainder of  $a$  divided by 2 is 0. It’s the definition of  $a$  is even, so the program is correct, too.

Though the two programs are both correct, the first program is more efficient. No matter what value  $a$  is, the first program will check the condition once while the second will check the condition twice.

### Problem 2

Please see the attached CPP file.

### Problem 3

Please see the attached CPP file.