University of Central Florida
School of Computer Science
COT 4210 Fall 2004

Prof. Rene Peralta
Homework 2

Due date: Sept. 17, in class

1. A correspondence between $\mathbb{N}$ and $\mathbb{Z}$ is defined by ordering the latter thus

   $$0, 1, -1, 2, -2, 3, -3, \ldots$$

   Give a mathematical formula for this correspondence. (i.e. find $f : \mathbb{N} \to \mathbb{Z}$ which is one-to-one and onto).

   Hint: $(-1)^i$ can be used to alternate positive and negative signs. You might also want to use the "floor" and/or "ceiling" integer functions.

2. (from Test 1) Describe a way to list the set of finite subsets of the natural numbers.

   Hint: recall the technique I used in lecture 4 to show that the set of languages over the binary alphabet is not countable.

3. several more problems ...