## PROBLEM OF THE WEEK

Solution of Problem No. 1 (Spring 2013 Series)

## Problem:

Show that every set of $n+1$ positive integers, chosen from a set of $2 n$ consecutive integers, contains at least one pair of relatively prime numbers.

Solution: (by Kilian Cooley, Senior, Math \& AAE, Purdue University)
The $2 n$ consecutive integers can be split into $n$ disjoint pairs where the elements of each pair are consequtive. Therefore at least two of the $n+1$ chosen integers are in the same pair and are consecutive. The greatest common divisor of those two integers must also divide their difference, which is 1 , so those two integers are relatively prime.

## The problem was also solved by:

Undergraduates: Bennett Marsh (So. Engr.), Rustam Orazaliyev (Fr. Actuarial Sci), Jason Rahman (Fr. CS), Yue Teng (Jr. Math), Chenkai Wang (So. Math)

Graduates: Tairan Yuwen (Chemistry)
Others: Shawn Belloso (Sr. UC Merced), Marco Biagini (Italy), Radouan Boukharfane (Graduate student, Montreal, Canada), Charles Burnette (Grad Student, Drexel Univ.), Pierre Castelli (Antibes, France), Pawan Chawla, Hongwei Chen (Professor, Christopher Newport Univ., Virginia), Shashank Chorge (Computer Engineer, India), Gruian Cornel (Cluj-Napoca, Romania), Hubert Desprez (Paris, France), Miguel Rodrigues dos Santos (Physics Student, Portugal), Tom Engelsman (Tampa, FL), Ghasem Esmati (Sharif Univ. of Tech), Bob Franz (Homer, NT), Andrew Garmon (Sr, Phys. Christopher Newport Univ.), Jerry Hermanto (Sr. HS Student, Indonesia), Chris Kennedy (Professor, Christopher Newport Univ, VA), Lydia Kennedy (Professor, Virginia Wesleyan College), Peter \& Levente Kornya (Retired Faculty, Ivy Tech), Chris Kyriazis (HS Teacher, Chalki, Greece), Steven Landy (Physics Faculty, IUPUI), Wei-Xiang Lien (Graduate Student, National Kaohsiung Univ., Taiwan), Matthew Lim, Xiaoyin Liu (So. Univ. of North Carolina), Patrick Lutz (Fr. University of CA, Berkeley), Karthikeyan Marimuthu (Grad Student, Carnegie Mellon Univ.), Uddipan Mukherjee (Grad Student, UC Irvine), Evan Phibbs, Sorin Rubinstein (TAU faculty,Tel Aviv, Israel), Craig Schroeder (Postdoc. UCLA), Patrick Soboleski (Math Teacher, Zionsville Community HS), Steve Spindler (Chicago), Bill Thygerson (MBA, U of Michigan), Daniel Vacaru (Pitesti, Romania), Nicholas Wawrykow (Sr. Saint Joseph HS), William Wu (The Math Path, LLC)

