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/**
 * File: PseudoRandom.java
 */

/*****
 *   CS 211, Winter 2009, R. Gandham
 *   Bellevue College, Bellevue, Washington, USA
 *
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 *****/

/**
 * The <code>PseudoRandom</code> class generates a sequence of pseudo random
 * numbers.
 * @author Mark A. Taff <a href="mailto:mark@marktaff.com">mark@marktaff.com</a>
 */
public class PseudoRandom
{
    private int m_seed        = 0;    // Seed for the generator
    private int m_multiplier  = 0;    // Factor multiplied by the seed
    private int m_increment   = 0;    // Value added to the product of seed and multiplier
    private int m_modulus     = 1;    // Range of pseudo-random number, [0:modulus]

    /**
     * Ctor
     * @param seed The seed for the generator
     * @param multiplier A factor multiplied by the <code>seed</code>
     * @param increment A value added to the product of the seed and multiplier
     * @param modulus Sets the range of the pseudo-random number from 0 to
     *                <code>modulus</code>
     * @throws IllegalArgumentException
     *         Indicates that modulus was zero, but divide by zero is undefined.
     */
    public PseudoRandom(int seed, int multiplier, int increment, int modulus)
    {
        // modulus cannot be zero
        if (modulus == 0)
        {
            throw new IllegalArgumentException("Modulus == 0: Cannot divide my zero");
        }
    }
}

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m_seed      = seed;
m_multiplier = multiplier;
m_increment  = increment;
m_modulus    = modulus;

} // End Ctor

/**
 * Sets the seed to the new value
 * @param seed The new value for the seed
 */
public void setSeed(int seed)
{
    m_seed = seed;
} // End method setSeed()

/**
 * Generates and returns the next pseudo-random number
 * @return the next number in the sequence
 * @postcondition the seed equals getNextNumber()
 */
public int getNextNumber()
{
    int nextNumber = (m_multiplier * m_seed + m_increment) % m_modulus;

    // Next number becomes new seed
    m_seed = nextNumber;

    return nextNumber;
} // End method getNextNumber()

} // End class PseudoRandom
```