

THE JOSEPHUS PROBLEM GENERALIZED

ROY QUINTERO

Abstract

The purpose of this research is to present some algorithmic solutions of a generalization of the well known Josephus problem (see [1]-[11]) in which the elimination process consists of only one step by allowing it to have multiple steps. First, it is given an algorithm (Theorem 1) to solve a particular case of the Josephus problem generalized (JPG) by following the approach developed by Graham, Knuth and Patashnik in [4, p. 81]. Next, the JPG is solved in full (Theorem 2) and a recursion proved (Corollary 2). The technique used is based on modular arithmetic in accordance with some ideas introduced by Halbeisen and Hungerbuhler in [6], with a few changes.

Key Words : *Congruences, Primitive roots, Residue systems, Sequences (mod m), Algorithms, Complexity.*

1990 Mathematics Subject Classification : 11A07, 11B50, 11Y16.

©Ascent Publication House: [http:// www.ascent-journals.com](http://www.ascent-journals.com)