Annals of Mathematics and Computer Science ISSN: 2789-7206
Vol 20 (2024) 1-3 https://doi.org/10.56947/amcs.v20.223

P IS NP

ALTHAF MUHAMMAD[1]

Abstract. The Subset Sum Problem is a decision problem in theoretical computer science: given a finite set S of positive integers and a target value T, determine whether there exists a subset of S whose elements sum exactly to T. This problem is one of the NP-complete problems identified by Karp, and no deterministic polynomial-time algorithm is currently known. The best-known exact algorithms run in exponential time, although pseudo-polynomial time algorithms exist via dynamic programming. Subset Sum is therefore classified as a weakly NP-complete problem. In this work, we present an algorithm that solves the Subset Sum Problem in polynomial time.

Keywords. Subset Sum Problem, NP-complete problems, Computational complexity, Deterministic polynomial time
2020 Mathematics Subject Classification. Primary 68Q15; Secondary 68Q25

1. Introduction and Preliminaries

I chose Subset Sum Problem from many NP-complete problems because I wanted a problem that was simple to understand and can be experimented freely in a computer without additional logic conversions. The proof technique used is *proof by algorithm*, meaning my algorithm is my proof. I will add pseudocode and explanations later for this algorithm in this research paper. The algorithm code is in Python programming language, but I wrote it in a way that feels like it is pseudocode. So even if you don't know Python, you can follow along. The GitHub repository for this research paper and the algorithm is here: https://github.com/althaf-07/p-is-np.git.

[1] Unaffiliated
Email address: zoory9900@gmail.com

Date: Received: xxxxxx; Revised: yyyyyy; Accepted: zzzzzz.
* Corresponding author
© The Author(s) 2025. This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of the licence, visit https://creativecommons.org/licenses/by-nc-nd/4.0/.