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| Book Name: | **Finite Abelian Groups, Elliptic Curves, Blockchain with Hashing and Graphs** |
| Manuscript Number: | **Ms\_BPR\_3842.9** |
| Title of the Manuscript:  | **A Python Programming Initiative for the Development of Blockchain Security Through Graphs** |
| Type of the Article | **Book chapter** |

**General guidelines for the Peer Review process:**

This Book’s peer review policy states that **NO** manuscript should be rejected only on the basis of ‘**lack of Novelty’**, provided the manuscript is scientifically robust and technically sound.

To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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| PART 1: Review Comments |
| Compulsory REVISION comments | Reviewer’s comment | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.** | **The research is significant because it explores the intersection of blockchain security and graph theory, providing innovative approaches to visualizing and analyzing decentralization mechanisms and attack scenarios. Using tools such as NetworkX, it contributes to understanding blockchain dynamics, especially in ensuring decentralization and mitigating attacks. The practical demonstration of simulations improves its applicability to real-world scenarios, which is valuable for researchers and developers in blockchain technology. The manuscript aligns its standards well with the goals of promoting secure and decentralized systems.** |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | **The title is a pretty good one, but I would have a suggestion to modify it for greater clarity: "Advancing Blockchain Security Using Graph Theory: A Python Programming Perspective"** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **The abstract is well-structured but could benefit from greater clarity on the specific contributions and results of the research. It is recommended that you: Highlight the novelty of using graph theory in blockchain security. Briefly mention the range of attacks analyzed and their implications. Conclude with a statement on how the findings contribute to blockchain resilience.** |  |
| **Are subsections and structure of the manuscript appropriate?** | **The paper is well organized, with logical subsections covering both consensus procedures and security simulations. However, the section “Simulating Attack Scenarios for Security Development” could be simplified by explicitly linking each type of attack to its implications for blockchain security. Additionally, including a summary subsection at the end of the manuscript to consolidate the findings would improve its readability and impact. It needs more descriptions after each step marked and represented by a graph for easier understanding.** |  |
| **Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.** | **The paper is scientifically sound and technically robust, as it uses well-established methodologies such as graph theory and NetworkX to explore blockchain security. The use of Python to simulate consensus mechanisms and attack scenarios ensures reproducibility and transparency, which are essential for scientific validation. In addition, the detailed visualization of attack types and their impact on decentralization demonstrates a strong understanding of blockchain dynamics. The manuscript successfully integrates theoretical and practical aspects, increasing its applicability to real-world blockchain systems.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | **The references included in the manuscript provide a solid foundation, and these include key works on blockchain and graph theory. However, most of the references are older, with limited coverage of recent advances in blockchain security or graph-based approaches from the past five years. Suggested additions include:****Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system.****Jayabalasamy, G., Pujol, C. and Latha Bhaskaran, K. (2024). Applying graph theory to blockchain technologies. Mathematics, 12(8), 1133.****These recommended references will strengthen the manuscript’s foundation in both classic and recent literature.** |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? | **Although the language quality is appropriate for academic communication, some minor edits are suggested to improve flow and clarity. Sentence structure changes will increase readability, and some technical words could be clarified for wider accessibility.** |  |
| Optional/General comments | **The manuscript represents a valuable contribution to the field, with strong practical implications for blockchain security. Including a discussion of future research directions or potential real-world implementations would further enhance its impact. In addition, a more explicit comparison with existing tools or frameworks could highlight its novelty and advantages.****The manuscript demonstrates significant potential but requires additional work to improve clarity and accessibility for readers. A more detailed description of the steps involved in generating and interpreting the graphs would greatly enhance its utility. Currently, the lack of such explanations may limit understanding, especially for readers less familiar with graph theory or blockchain security. Addressing these issues would significantly improve the manuscript’s overall quality and impact.** |  |

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| **PART 2:**  |
|  | **Reviewer’s comment** | **Author’s comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*** |
| **Are there ethical issues in this manuscript?**  | ***(If yes, Kindly please write down the ethical issues here in details)*** |  |

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| **Reviewer Details:** |
| **Name:** | **Anonymous reviewer (Only for this stage as per Review policy)** |
| **Department, University & Country** |  |