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| Book Name: | **Finite Abelian Groups, Elliptic Curves, Blockchain with Hashing and Graphs** |
| Manuscript Number: | **Ms\_BPR\_3842.6** |
| Title of the Manuscript: | **A Python Programming Initiative for Finite Groups** |
| 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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Important Policies Regarding Peer Review

Peer review Comments Approval Policy: <https://r1.reviewerhub.org/peer-review-comments-approval-policy/> Benefits for Reviewers: <https://r1.reviewerhub.org/book-benefits-for-reviewers>

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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.** | This manuscript explores an interesting and relevant topic that has potential applications in the field of finite groups and computational mathematics. However, its current structure lacks key academic sections such as an introduction, abstract, and conclusion, which are essential for contextualizing the research and its outcomes. While the examples and Python implementations are practical and illustrative, the absence of theoretical discussions and summary conclusions limits its overall impact. Addressing these structural and contextualissues would significantly enhance its value to the scientific community. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | The current title of the manuscript is somewhat generic and does not fully reflect the depth of the content or its specific focus on computational methods for finite groups. A more descriptive and precise title is recommended to align with the manuscript's contributions.**Suggested Title:**"Computational Techniques in Finite Group Theory: Python Implementations and Applications" |  |

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| **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 manuscript does not include an abstract, which is a critical component for summarizing the scope, methodology, results, and significance of the research. An abstract should be added to provide readers with a concise overview of the manuscript.**Suggestions for the Abstract:**1. **Purpose and Scope:** Briefly state the aim of the manuscript, which is to explore computational methods for finite group theory using Python.
2. **Methodology:** Mention the key computational techniques used, such as generating Cayley tables, finding cosets, and verifying group properties.
3. **Results and Contributions:** Summarize the key findings from the examples, such as Abelian groups and subgroups, and highlight the practical applications of these methods.
4. **Significance:** Emphasize the potential impact of these computational tools in both theoretical and applied group theory.

An abstract with these points will make the manuscript more accessible to readers and better reflect its contributions. |  |
| **Are subsections and structure of the manuscript appropriate?** | The manuscript's structure includes practical examples and Python code related to finite group theory, which are valuable for understanding the concepts. However, the lack of key structural components such as an **introduction**, **abstract**, and **conclusion** limits the clarity and flow of the content. These sections are essential for providing context, outlining the significance of the work, and summarizing the findings.While the subsections, such as **Cayley’s Table**, **Subgroup’s Cosets**, and **Generators and Subgroups**, are logically organized and focus on specific computational examples, the manuscript would benefit from a clearer introductory framework and concluding remarks that tie everything together.**Suggestions:**1. Add an **Introduction** to provide background on finite group theory and the importance of computational methods in this area.
2. Include an **Abstract** to give a concise summary of the manuscript's content and purpose.
3. Conclude with a **Conclusion** to highlight the outcomes, discuss the practical implications of the findings, and suggest future research directions.
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| **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 manuscript demonstrates a solid understanding of finite group theory and successfully applies computational methods to explore various group properties. The Python code implementations are technically sound and accurately reflect the mathematical concepts discussed, such as generating Cayley tables, finding cosets, and identifying generators and subgroups. The manuscript also correctly uses modular arithmetic for the group operations,which is appropriate for the examples provided. However, the scientific rigor could be |  |

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|  | enhanced by further elaborating on the theoretical foundations behind the examples, as well as providing more context for the methods used, which would strengthen the manuscript'sacademic depth. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | The references provided in the manuscript are relevant, but they are somewhat dated and could be expanded to include more recent developments in the field. The existing references focus on foundational concepts, which is important, but adding more recent publications could enhance the manuscript's relevance and showcase the current state of research in finite group theory and computational methods.**Suggestions:**1. Include more recent references related to **computational group theory** and **Python- based implementations** in mathematical research.
2. Cite recent works that explore the use of computational tools in group theory, such as software libraries or advanced algorithms for group operations.
3. Consider referencing works that discuss the application of these computational methods in areas like cryptography, coding theory, or algebraic systems.

Incorporating these updates would make the manuscript more comprehensive and demonstrate engagement with current trends in the field. |  |

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| Minor REVISION comments**Is the language/English quality of the article suitable for scholarly communications?** | The overall language quality of the manuscript is understandable, but there are several areas where clarity and precision can be improved. Some sentences contain minor grammatical errors and awkward phrasing, which may hinder smooth reading. Additionally, the manuscript occasionally lacks consistency in terminology and technical expressions, which can be confusing for the reader.**Suggestions:**1. **Grammar and Syntax:** A thorough review of grammar and sentence structure is recommended to improve readability and coherence. For example, correcting typos and ensuring subject-verb agreement will enhance the quality of the text.
2. **Consistency in Terminology:** Ensure that technical terms are used consistently throughout the manuscript. For instance, the terms "generator" and "group operation" should be applied uniformly.
3. **Clarity:** Consider simplifying some complex sentences to improve overall comprehension. This will make the manuscript more accessible to a broader academic audience.

These revisions will ensure that the language meets the high standards expected for scholarly communication. |  |

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| **Optional/General** comments | The manuscript provides a valuable contribution to the field by offering practical computational examples related to finite group theory. However, there are several areas where it could be strengthened to increase its academic impact:1. **Introduction and Context:** The addition of a clear introduction and context for the study would greatly improve the readability and accessibility of the manuscript, especially for readers who may not be deeply familiar with the topic.
2. **Theoretical Background:** While the code examples are well-written, the manuscript would benefit from a more thorough explanation of the theoretical concepts behind each example. Providing some background on finite groups and group properties will help readers understand the significance of the computational methods.
3. **Conclusion:** A concluding section that summarizes the key findings, discusses the potential implications, and suggests future directions would help to tie the work together and reinforce its academic value.
4. **Figures and Tables:** Consider adding more visual aids such as tables or diagrams to illustrate the concepts further. For instance, a table summarizing the results from the Cayley tables or a visual representation of subgroup cosets could enhance the understanding of these concepts.
5. **References:** As mentioned earlier, updating the reference list to include more recent works in the area of computational group theory and Python-based mathematical applications would strengthen the manuscript's relevance.

With these improvements, the manuscript has the potential to make a meaningful contribution to the field and could be considered for publication after revision.While the manuscript demonstrates valuable computational work in the field of finite group theory, the lack of key structural elements (such as an introduction, abstract, and conclusion) and the need for minor language improvements affect its academic rigor. After these revisions, the manuscript would be well-positioned for publication. |  |

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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: |  |
| Department, University & Country |  |