Milestone 1: Understanding the Grammar and Implementing Input Handling

Overview:

The first milestone focuses on understanding the grammar of the language and implementing basic input handling functionalities in the parser. This milestone lays the foundation for subsequent stages of the project by ensuring that the parser can accept input from the user and tokenize it appropriately.

Deliverables:

Grammar Understanding Documentation:

- Document the grammar rules provided in the problem statement.
- Explain each rule in detail, including examples and explanations of how they contribute to forming valid arithmetic expressions.
- Clarify any ambiguities or questions regarding the grammar rules.

Input Handling Implementation:

- Implement a function or class method to accept input from the user.
- Develop a mechanism to tokenize the input string into individual tokens based on the grammar rules.
- Handle errors gracefully, such as invalid input characters or syntax errors.
- Store the tokens in a suitable data structure for further processing.

Explanation:

Grammar Understanding Documentation:

- Understand each grammar rule thoroughly, breaking down the components and relationships between different symbols.
- Provide clear explanations and examples to illustrate how valid arithmetic expressions are formed according to the grammar.
- Address any questions or uncertainties about the grammar rules to ensure a comprehensive understanding before proceeding to implementation.

Input Handling Implementation:

- Create a function or method that prompts the user to enter an arithmetic expression.
- Implement logic to tokenize the input string by identifying numbers, operators, and parentheses based on the grammar rules.
- Use regular expressions or string manipulation techniques to extract tokens efficiently.
- Handle edge cases and error scenarios, such as invalid characters or mismatched parentheses, to prevent crashes and ensure robustness.

- Store the tokens in a data structure like a list or a queue to facilitate parsing and further processing in subsequent milestones.