1. Basic Syntax

- Comments: Single-line (//) and multi-line (/* ... */).
- Whitespace and Indentation: Rules for spacing and formatting.
- Statements and Expressions: Basic structure of statements and expressions.

2. Types

- Primitive Types: Boolean, Character, Integer, Float, Long, Byte, Null.
- Composite Types: Array.
- Special Types: Nullable, FunctionType.

3. Variables and Constants

- Variable Declaration: Syntax for declaring variables.
- Constants: Syntax for declaring immutable values.

4. Control Flow

- Conditionals:
    - if, else, switch, ternary.
- Loops:
    - for, foreach, while.
- Branching:
    - break, continue, goto, return.

5. Functions

- Function Declaration:
    - Named, optional, and positional parameters.
    - Return types.
- Function Invocation:
    - Calling functions.
    - Recursion.
- Lambda Functions:
    - Anonymous functions.
    - Closures.
- Function Overloading:
    - By parameters.

- By return type.

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6. Objects

- Classes:
  - Declaration, constructors, fields, methods.
- Encapsulation:
  - Public and Private members.
- Inheritance:
  - Single, multiple, and interface-based inheritance.
- Polymorphism:
  - Method overloading and overriding.

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7. Memory Management

- Allocation:
  - Heap allocation.
  - Stack allocation.
- Deallocation:
  - Garbage collection.
  - Manual deallocation.
- References:
  - Pointers.

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8. Modules, Abstractions, and Packages

- Imports:
  - Absolute and relative imports.
- Exports:
  - Public and private exports.

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9. Exception Handling

- Try-Catch:
  - try, catch, throw.

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10. Concurrency

- Threads:
  - Thread creation.

    - Thread pooling.
    - Thread synchronization.
- Task API:
    - High-level task management (e.g., Task.run()).

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11. Standard Libraries

- Collections:
    - List, Map, Queue, Set.
- I/O:
    - Console, file, directory, network operations.
- Serialization:
    - JSON, XML, TOML, HTML.
- Utilities:
    - Math, random, string manipulation, date/time.

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12. Advanced Features

- Generics:
    - Generic types and functions.
- User-Defined Types:
    - Custom classes and interfaces.
- Pointers:
    - Pointer manipulation and safety.

Suggested Order for Syntax Explanation

1. Basic Syntax (comments, whitespace, statements).
2. Types (primitives, composites, special types).
3. Variables and Constants.
4. Control Flow (conditionals, loops, branching).
5. Functions (declaration, invocation, lambdas, overloading).
6. Objects (classes, encapsulation, inheritance, polymorphism).
7. Memory Management (allocation, deallocation, references).
8. Modules and Packages (imports, exports).
9. Exception Handling (try-catch-throw).
10. Concurrency (threads, task API).
11. Standard Libraries (collections, I/O, serialization, utilities).
12. Advanced Features (generics, user-defined types, pointers).