

Language Evaluation Criteria:

Some of the language criterias to evaluate a programming language are:

1. Readability
2. Writability
3. Reliability
4. Cost
5. Generality
6. Extensibility
7. Standardability
8. Support for internationalization

1. **Readability:** Coding should be simple and clear to understand.

1. Simplicity: Should not involve complex syntax, many ways to perform a single task, overloading of methods and operator etc.
2. Orthogonality: This means relatively small set of primitive constructs can be combine.
 - For ex., `int *count;` Here pointer and integer is combined.
 - Another ex., `int count[5];` Here array and pointer is combine.
3. Control Statements: There should be adequate control statements.
 - Use of `for` loop, `while` loop, `do while` loop is adequate.
 - Using of `go to` statements causes poor readability.
4. Data Types and Structures: Language should involve adequate facilities for defining data types and data structure.
 - For ex., `timeout = 1;` is unclear as compare to `timeout = true;`.
5. Syntax Design: Syntax design affects the readability in the following way.
 1. *Identifier forms*: Restriction to very short length of identifier is a barrier to readability.
 2. *Special words*: Special words like `while`, `for`, `class`, `int` affects the

readability of any language. If special words are allowed to be variable names than it will become confusing.

2. **Writability:** Writability is a measure of how easily language can be used to code. Most of the language characteristics that affect readability also affect writability.

1. Simplicity: Should not involve complex syntax, many ways to perform a single task, overloading of methods and operator etc.
2. Orthogonality: This means relatively small set of primitive constructs can be combine.
 - For ex., `int *count;` Here pointer and integer is combined.
 - Another ex., `int count[5];` Here array and pointer is combine.
3. Support for Abstraction: Language should support process and data abstraction.
4. Expressivity: In less lines of code program should be writable.
 - For ex., `for` statements makes counting loops easier than `while`.
 - Another ex., `i++` is more expressive than `i=i+1`.

3. **Reliability:** A program is said to be reliable if it performs to its specifications under all conditions.

1. Type Checking: It is testing for type error, either at compile or run time.
 - For ex., `float percentage;` is more desirable as compare to `int percentage`.
2. Exception Handling: It is the ability of program to handle run time error. Remember, handling runtime error are more expensive than compile errors.
3. Aliasing: It is same memory location (variable) having more than one name. Which is causes confusion.
4. Readability: Readability influences reliability.
5. Writability: Writability also influence reliability.

4. **Cost:** Total cost of programming should be minimum.

- For ex., cost of trainer.
- Cost of writing algorithm.

- Cost of compiling program in the language.
 - Cost of hardware required for program.
 - Cost of maintenance.
5. **Generality:** Language should not be limited to specific application only.
 6. **Extensibility:** Should be flexible, must be able to add new constructs.
 7. **Standardability:** Language should be platform independent.
 8. **Support for Internationalisation:** Various formats like time, date, currency etc should be supportable.

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References:

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