Example of Formal Language:

There are the basic terminologies that are important and frequently used in automata:

Symbols:

Symbols are an entity or individual objects, which can be any letter, alphabet or any picture.

Example:

1, a, b, #

Alphabets:

Alphabets are a finite set of symbols. It is denoted by ∑.

Examples:

1. ∑ = {a, b}
2. ∑ = {A, B, C, D}
3. ∑ = {0, 1, 2}
4. ∑ = {0, 1, ....., 5]
5. ∑ = {#, β, Δ}

String:

It is a finite collection of symbols from the alphabet. The string is denoted by w.

Example 1:

If ∑ = {a, b}, various string that can be generated from ∑ are {ab, aa, aaa, bb, bbb, ba, aba.....}.

* A string with zero occurrences of symbols is known as an empty string. It is represented by ε.
* The number of symbols in a string w is called the length of a string. It is denoted by |w|.

Example 2:

1. w = 010
2. Number of Sting |w| = 3

Language:

A language is a collection of appropriate string. A language which is formed over Σ can be **Finite** or **Infinite**.

Example: 1

L1 = {Set of string of length 2}

= {aa, bb, ba, bb} **Finite Language**

Example: 2

L2 = {Set of all strings starts with 'a'}

= {a, aa, aaa, abb, abbb, ababb} **Infinite Language**

**RELEVANT READING MATERIAL AND REFERENCES:**

**Source Notes:**

* 1. <https://www.javatpoint.com/theory-of-automata>

**Online Notes:**

1. <https://www.iitg.ac.in/dgoswami/Flat-Notes.pdf>

**Text Book Reading:**

1. Martin J.C., “Introduction *to Languages and Theory of Computation*”, Tata McGraw-Hill Publishing Company Limited, 3rd Edition.
2. Hopcroft J.E. and Ullman J.D., “Introduction *to Automata Theory Languages and Computation*”, Narosa Publications.