

"Formal Methods of Describing Syntax"

ENGLISH

Alphabets: a, b, c, d, e...z, A, B, C...Z

Punctuations: , . e , | e e " _ /

I

eat

Chocolate

WORDS: Combination of
Alphabets

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Sentence

I eat chocolate. ✓

Eat I. Chocolate ✗

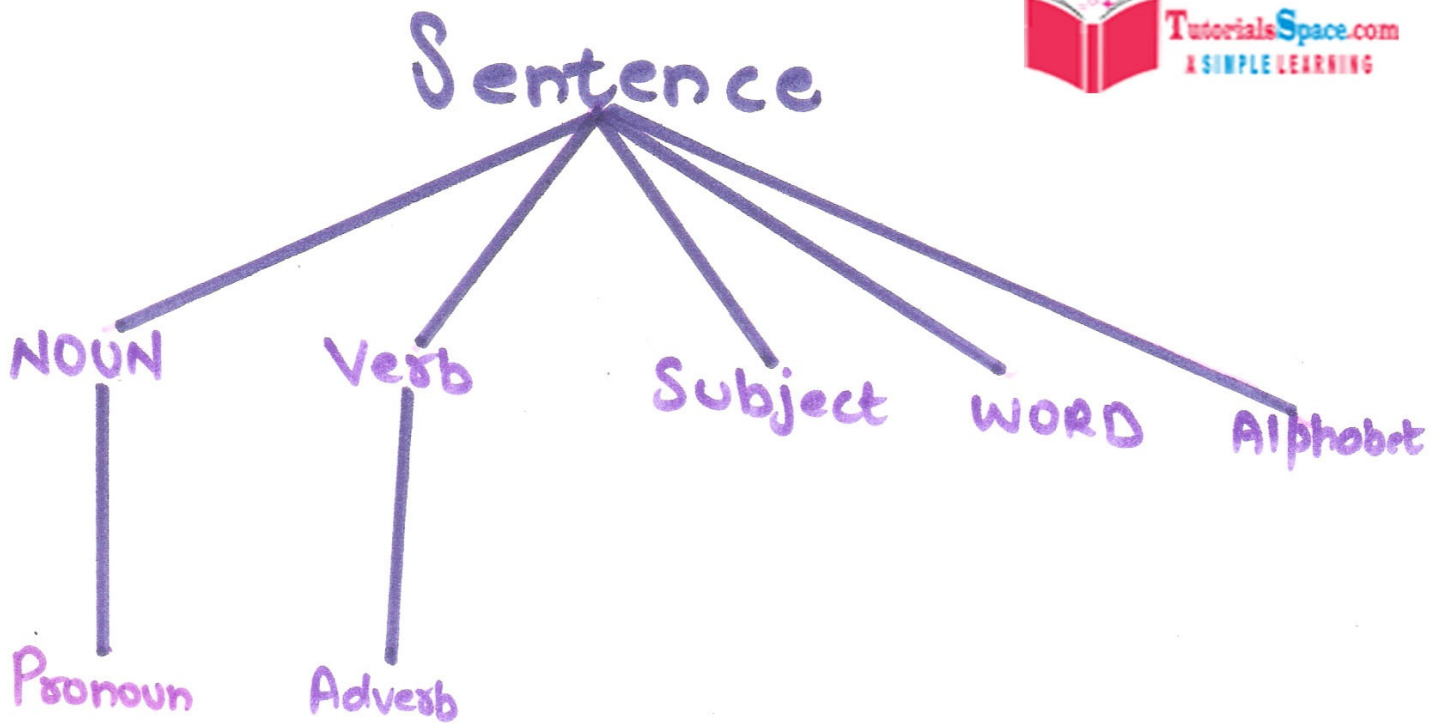
He
eat
chocolate
.

WORDS ARE
CORRECT

He eat chocolate. ✗

Here eat should be Eats by Tenses
So

He eats chocolate. ✓



All these are connected
with Grammar

Which Describes the
Whole English Language
Entities

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Programming Language

1. Alphabets : a, b, c, d, z, A, B, ... Z
2. DIGITS : 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
3. Arithmetics Symbols : *, /, +, -, Σ
4. Sepecial Symbols : \rightarrow , \uparrow , $-$, \$, #, @, !, ₹

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Programming Language in More Technical way

→ Header file : Math.h

→ Statements

→ Tokens

→ Expression

→ Lexemes

→ Identifiers

→ Literals

All needs a grammar which can describe their Syntax.

Grammar: Syntax and Structure of a Language.

It is used in Compiler Creation.

Describe the Syntax of a programming Language

Natural Language: A Language that has developed naturally through use.

Artificial Language: Language used to Communicate with Computers.

Syntax: The rules governing the arrangement of words and phrases to create well-formed Sentences

Meta Language: Language used to model the other Language

- Determine whether a series of characters is valid
- Generate well formed statements
- Break down a statement into constituent parts so it can be converted into machine language.

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Token: Each and every smallest individual units in a programming language are known as Token.

C Tokens are of Six Types

1. Keywords (eg: int, while),
2. Identifiers (eg: main, total),
3. Constants (eg: 10, 20),
4. Strings (eg: "total", "hello").
5. Special Symbols (eg: (, {, }),
6. operators (eg: +, /, -, *)

```
int main()  
{  
    int x, y, total;  
    x = 10, y = 20;  
    total = x + y;  
    printf ("Total = %d \n", total);  
}
```

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Where

- main — identifier
- {, }, (,) — delimiter (special symbol)



- int — Keyword
- x, y, total — identifier
- main, {, }, (,), int, x, y, total — tokens

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