

# What is BNF ?

**syntax**

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*Left-Hand-Side ::= Right-Hand-Side*

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**syntactically**

**parse tree**

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*well-formed sentences*

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## How it works ?

`symbol := alternative1 | alternative2 ...`

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## A real example

```
S  := '-' FN |
      FN
FN  := DL |
      DL '.' DL
DL  := D |
      D DL
D   := '0' | '1' | '2' | '3' | '4' | '5' | '6'
      | '7' | '8' | '9'
```

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```
Step1:  DL . DL
Step2:  D  . DL
Step3:  3  . DL
Step4:  3  . D DL
Step5:  3  . D D
Step6:  3  . 1 D
Step7:  3  . 1 4
```

## **EBNF: What is it, and why do we need it?**

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### **An EBNF sample grammar**

`S := '-'? D+ ('.' D+)?`

`D := '0' | '1' | '2' | '3' | '4' | '5' | '6'  
| '7' | '8' | '9'`

## Abbreviation for Alternative Rules

$\langle \text{NaturalNumber} \rangle ::= \langle \text{digit} \rangle \quad \text{Rule1a}$   
 $\quad \quad \quad / \langle \text{digit} \rangle \langle \text{NaturalNumber} \rangle \quad \text{Rule1b}$   
 $\langle \text{digit} \rangle ::= 0 \mid 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9$   
 $\quad \quad \quad \text{Rule2}$

## Abbreviation for Optional Symbols