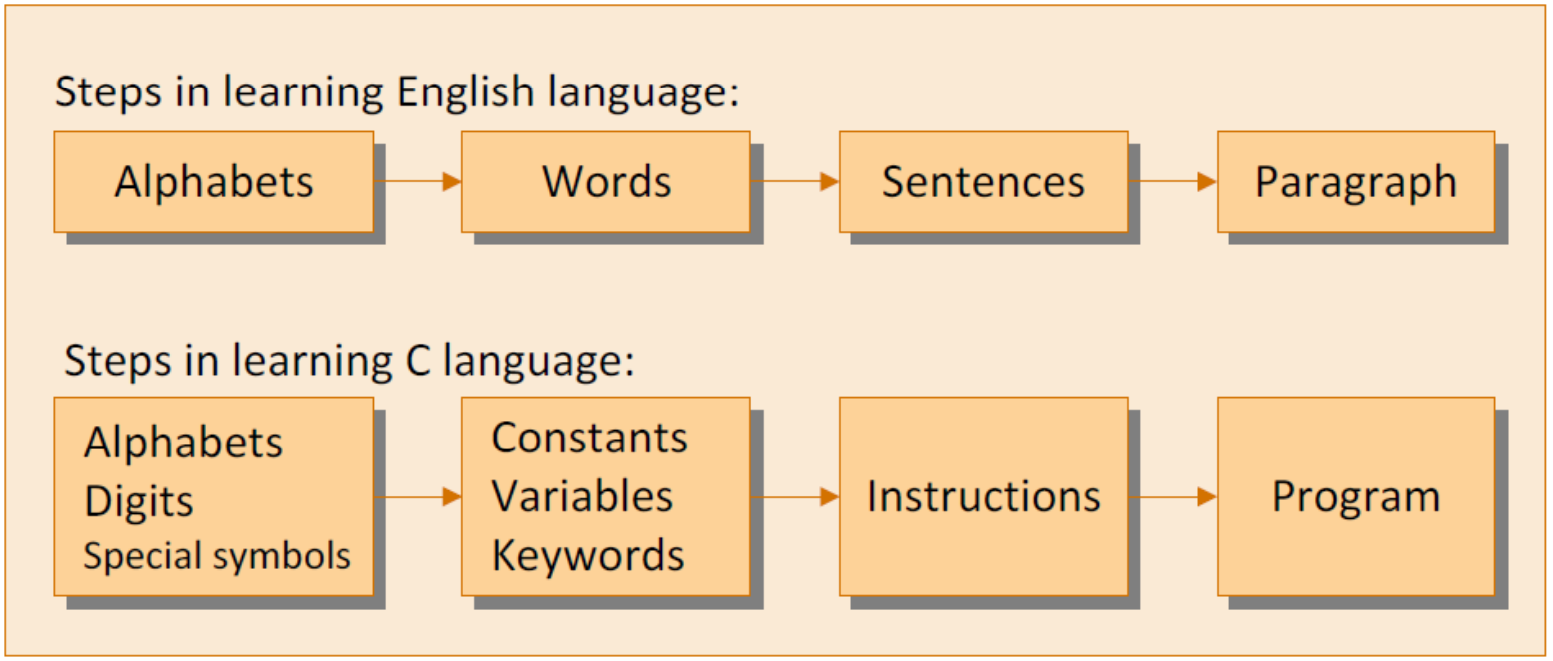
INTRODUCTION OF COMPUTING

Steps in learning C language



The C Character Set

Alphabets	A, B, ..., Y, Z a, b, ..., y, z
Digits	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Special symbols	~ ‘ ! @ # % ^ & * ( ) _ - + = | \ { } [ ] : ; " ' < > , . ? / $

C Tokens

C tokens are the basic buildings blocks in C language .There are 5 types of tokens in C

- ✓ Identifier
- ✓ Keyword
- ✓ Constant
- ✓ Variable
- ✓ Operators

C Tokens

"**Identifiers**" or "symbols" are the names you supply for variables, types, functions, and labels in your program. Ex: pi,r etc.

It is smallest identify unit in the program.

“Keywords” are predefined, reserved words used in programming that have special meanings to the compiler.(carries special meaning)

Ex: for, switch, do, while, case, else etc.

“Operator ”is a symbol that tells the compiler to perform specific mathematical or logical functions. Ex: +,-.*,/,%

C Tokens

"Constant" is a value that cannot be altered by the program during normal execution. (doesn't change).Any information is called constant.

Ex: 10, 2.35, 'a';

Data =Information=Constant

"Variable" is nothing but a name given to a storage area that our programs can manipulate. (may change)

variables are the names of memory locations where we store data .

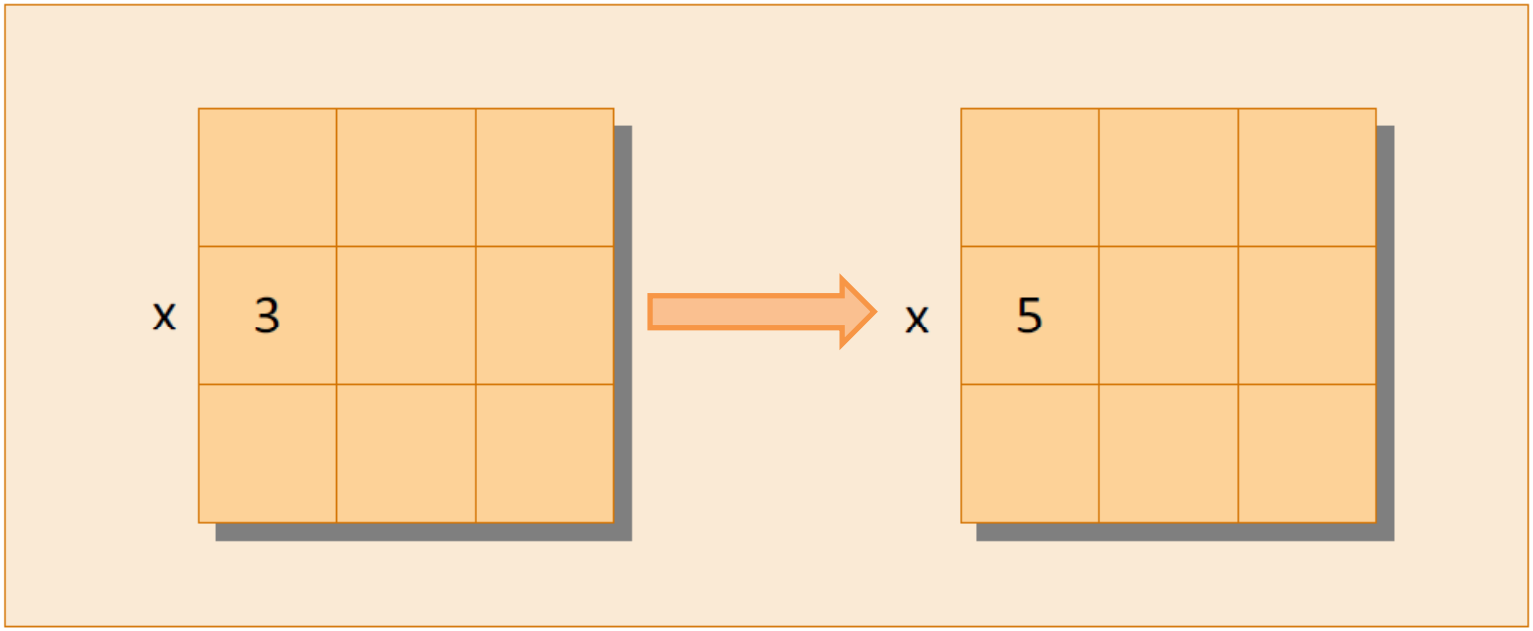
Ex: int a=5,

x1=2,

a_b=9;

a=22

Example of Variable



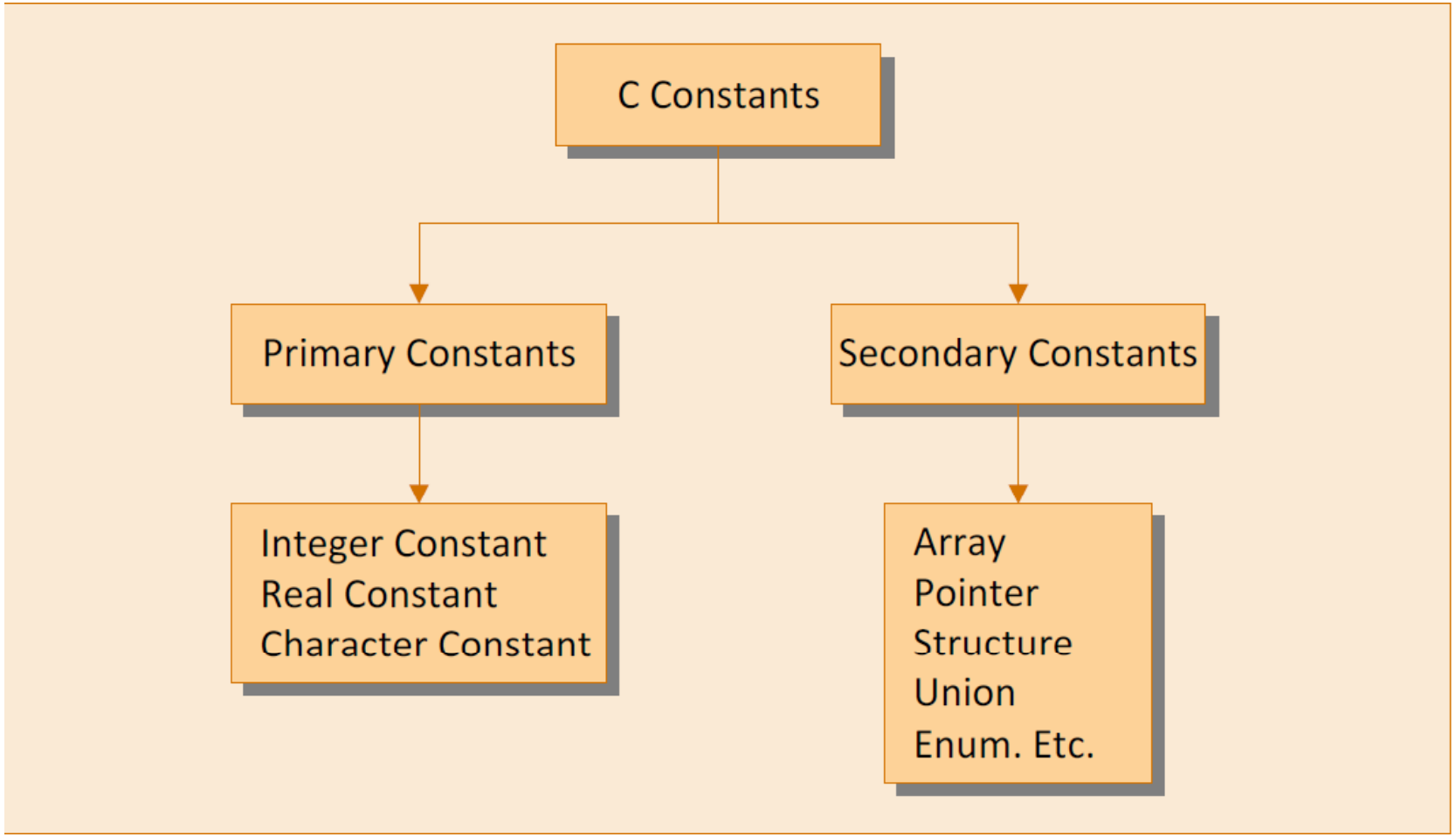
Here, x is holding different values at different Times, Hence it is known as a variable (or a variable name).

Types of C Constants

There are two types of constants:

1. Primary Constants
2. Secondary Constants

Types of C Constants



Rules for Constructing Integer Constants

1. An integer constant must have at least one digit.
2. It must not have a decimal point.
3. It can be either positive or negative.
4. If no sign precedes an integer constant, it is assumed to be positive.
5. No commas or blanks are allowed within an integer constant.
6. The allowable range for integer constants is -2147483648 to +2147483647.

Rules for Constructing Integer Constants

NOTE: range of an Integer constant depends upon the compiler. For compilers like Visual Studio, gcc, it is -2147483648 to +214748364, whereas

for compilers like Turbo C or Turbo C++ the range is -32768 to +32767.

Ex.: 426
+782
-8000
-7605

Rules for Constructing Real Constants

Real constants are often called Floating Point constants. The real constants could be written in two forms—

1. Fractional form and
2. Exponential form.

Rules for Constructing Real Constants

1. A real constant must have at least one digit.
2. It must have a decimal point.
3. It could be either positive or negative.
4. Default sign is positive.
5. No commas or blanks are allowed within a real constant.

Ex.: +325.34

426.0

-32.76

-48.5792

Rules for Constructing Real Constants

NOTE:

The exponential form is usually used if the value of the constant is either too small or too large.

It, however, doesn't restrict us in any way from using exponential form for other real constants.

Rules for Exponential form

In exponential form the real constant is represented in two parts: mantissa and exponent

The part appearing before ‘e’ is called mantissa, whereas the part following ‘e’ is called exponent.

Thus 0.000342 can be written in exponential form as 3.42e-4 (which in normal arithmetic means 3.42×10^{-4}).

Rules for Exponential form

1. The mantissa part and the exponential part should be separated by a letter e or E.
2. The mantissa part may have a positive or negative sign.
3. Default sign of mantissa part is positive.
4. The exponent must have at least one digit, which must be a positive or negative integer. Default sign is positive.
5. Range of real constants expressed in exponential form is -3.4e38 to 3.4e38.

Ex.:

+3.2e-5

4.1e8

-0.2E+3

-3.2e-5

Rules for Constructing Character Constants

1. A character constant is a single alphabet, a single digit or a single special symbol enclosed within single inverted commas.

2. Both the inverted commas should point to the left. For example, ’A’ is a valid character constant whereas ‘A’ is not.

Ex.: 'A'
'I'
'5'
'='