



## PL Chapter 6

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1. <b>Data type</b>	a collection of data values and a set of predefined operations on these values
2. <b>Modifiability</b>	a programmer can change the type of a category of variables in a program by changing a type definition statement only
3. <b>arrays and records</b>	two most common structured data types in the imperative languages
4. <b>Descriptor</b>	collection of the attributes of a variable
5. <b>object</b>	represents an instance of a user-defined (abstract data) type
6. <b>Primitive Data Types</b>	Data types that are not defined in terms of other types
7. <b>integer</b>	the most common primitive numeric datatype Java: byte, short, int, long C++ & C# : unsigned int
8. <b>twos complement</b>	to store negative integers, which is convenient for addition and subtraction
9. <b>Floating point</b>	data types model real numbers, but the representations are only approximations for many real values
10. <b>float and double</b>	two floating types
11. <b>Precision</b>	accuracy of the fractional part of a value, measured as the number of bits
12. <b>Range</b>	combination of the range of fractions and more important the range of exponents
13. <b>Complex values</b>	represented as ordered pairs of floating point values
14. <b>Decimal</b>	data types that store a fixed number of decimal digits which are coded in Binary Coded Decimal (BCD) - essential to COBOL because of business



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| 15. <b>Boolean Types</b>                 | often used to represent switches or flags in programs  |
| 16. <b>Character Data</b>                | stored in computers as numeric codings   |
| 17. <b>Unicode</b>                       | includes the characters from most of the world's natural languages   |
| 18. <b>ASCII</b>                         | most commonly used coding  |
| 19. <b>Character String Type</b>         | one in which the values consist of sequences of characters   |
| 20. <b>Character String constants</b>    | used to label output, and the input and output of all kinds of data are often done in terms of strings             |
| 21. <b>Most common string operations</b> | comparison, pattern matching, assignment, catenation, substring reference  |
| 22. <b>substring reference</b>           | a reference to a substring of a given string   |
| 23. <b>regular expressions</b>           | the pattern-matching expressions are somewhat loosely based on mathematical regular expressions                    |
| 24. <b>static length string</b>          | the length can be static and set when the string is created  |
| 25. <b>limited dynamic length string</b> | allow strings to have varying length up to a declared and fixed maximum set by the variable's definition           |
| 26. <b>dynamic length string</b>         | allow strings to have varying length with no maximum   |
| 27. <b>Enumeration Type</b>              | one in which all of the possible values, which are named constants, are provided, or enumerated, in the definition |
| 28. <b>Enumeration Constans</b>          | types provide a way of defining and grouping collections of named constants  |
| 29. <b>Array</b>                         |  |



homogeneous aggregate of data elements in which an individual element is identified by its position in the aggregate, relative to the first element

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30. **Subscripts or indices** Specific elements of an array are referenced by means of a two-level syntactic mechanism, where the first part is the aggregate name, and the second part is a possibly dynamic selector consisting of one or more items known as \_\_\_\_\_
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31. **finite mappings** arrays are sometimes called \_\_\_\_\_
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32. **static arrays** one in which the subscript ranges are statically bound and storage allocation is static (done before run time)
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33. **fixed stack-dynamic arrays** one in which the subscript ranges are statically bound, but the allocation is done at declaration elaboration time during execution
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34. **fixed heap-dynamic arrays** similar to fixed stack-dynamic array, in that the subscript ranges and the storage binding are both fixed after storage is allocated
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35. **heap-dynamic arrays** one in which the binding of subscript ranges and storage allocation is dynamic and can change any number of times during the array's lifetime
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36. **array operations** one that operates on an array as a unit
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37. **heterogeneous array** one in which the elements need not to be of the same type
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38. **rectangular array** a multidimensioned array in which all of the rows have the same number of elements and all of the columns have the same number of elements
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39. **jagged array** in which the lengths of the rows need not be the same. For example, a jagged matrix may consist of three rows, one with 5 elements, one with 7 elements, and one with 12 elements
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40. <b>slice</b>	an array is some substructure of that array
41. <b>row major order and column major order</b>	two ways in which multidimensional arrays can be mapped to one dimension
42. <b>associate arrays</b>	an unordered collection of data elements that are indexed by an equal number of values called keys
43. <b>hashes</b>	in perl associative arrays are called _____
44. <b>dictionaries</b>	in python associative arrays are called _____
45. <b>record</b>	aggregate of data elements in which the individual elements are identified by names and accessed through offsets from the beginning of the structure
46. <b>fully qualified reference</b>	record field is one in which all intermediate record names, from the largest enclosing record to the specific field, are named in the reference. In the COBOL example above the field reference is fully qualified
47. <b>elliptical reference</b>	the field is named, but any or all of the enclosing record names can be omitted, as long as the resulting reference is unambiguous in the referencing environment
48. <b>tuple</b>	a data type that is similar to a record, except that the elements are not named