Data Types

* If the array

b c a  
e d f  
i h g

were stored in row-major order, the elements would be stored as: b c a e d f i h g

* Garbage collection is a way of addressing the problem of memory leaks
* Java does not provide an explicit deallocation operator; instead, it provides garbage collection
* *Binary coded decimal (BCD)* is used to store numbers with a fixed number of decimal digits, with the decimal point at a fixed location
* "Structure type equivalence" means that two variables have equivalent types if their types have identical structures
* Two of the earliest languages to include enumeration types were C and Pascal
* Substring references are most like array slices
* An array slice is a portion of a larger array that can itself be treated as an array
* A *dangling pointer* is a pointer that contains the address of a dynamic variable that has been deallocated
* If the array

b c a  
e d f  
i h g

were stored in column-major order, the elements would be stored as: b e i c d h a f g

* The C++ "delete" operator is an example of a deallocation operator
* A *record* is a data structure in which the components are referred to by field names
* An array whose subscript range is bound at compile-time, and whose storage is allocated at declaration elaboration time, is called a fixed stack-dynamic array
* An array whose subscript range and storage are bound before run-time is called a static array
* "Mark-sweep" is a method of garbage collection
* *Unicode* is an extension of the ASCII character set to include other alphabets, such as Cyrillic
* "Name type equivalence" means that two variables have equivalent types if their declarations use the same type name
* One use of tuples in Python and F# is to allow functions to return multiple values
* *Twos complement* is a method for representing negative numbers
* A *pointer* type is one that stores an address in memory
* Regular expressions are used in Perl, Ruby, and some other scripting languages for pattern matching with strings
* Assignment, concatenation, and pattern matching are operators commonly provided for string types
* Boolean types were first introduced in ALGOL-60
* An array which can grow and shrink at run-time is called a heap-dynamic array
* Some languages with pointers and dynamic variables do not include an operator for deallocating dynamic variables, because deallocation operators can lead to dangling pointers
* Two hazards of using pointers are dangling pointers and memory leaks