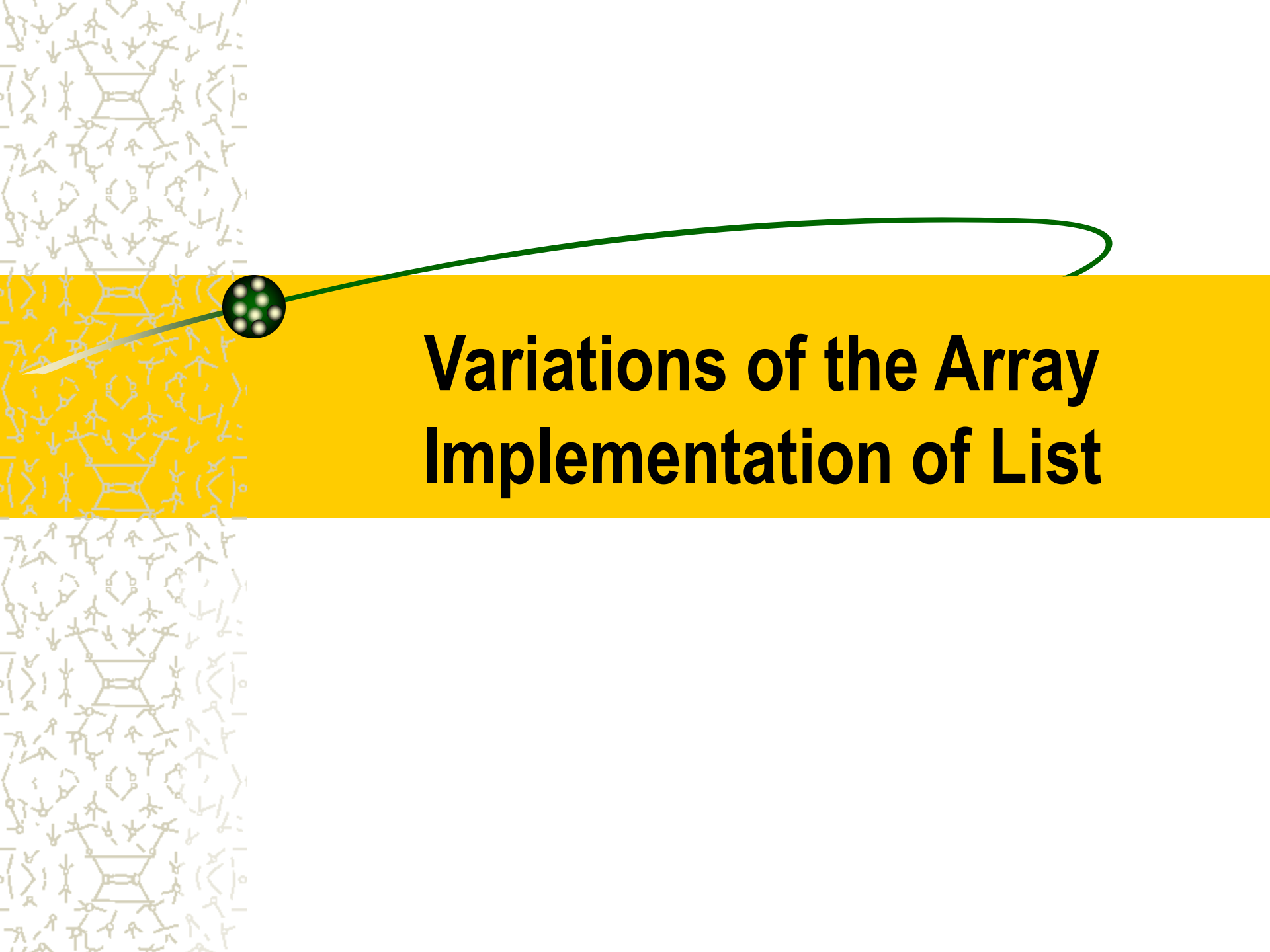
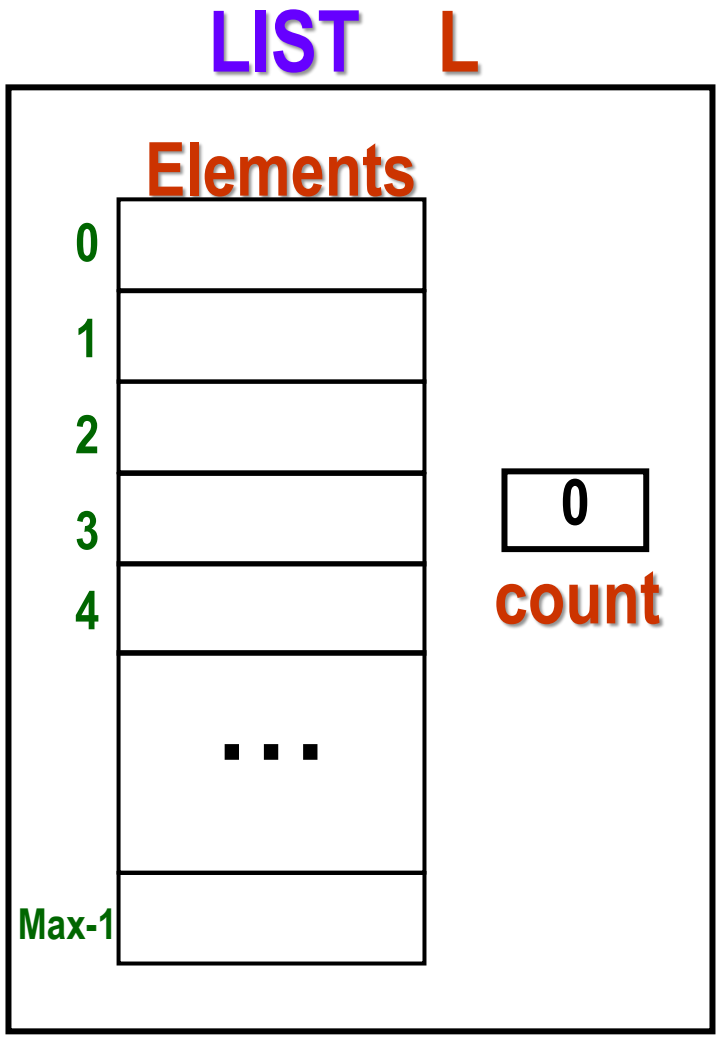
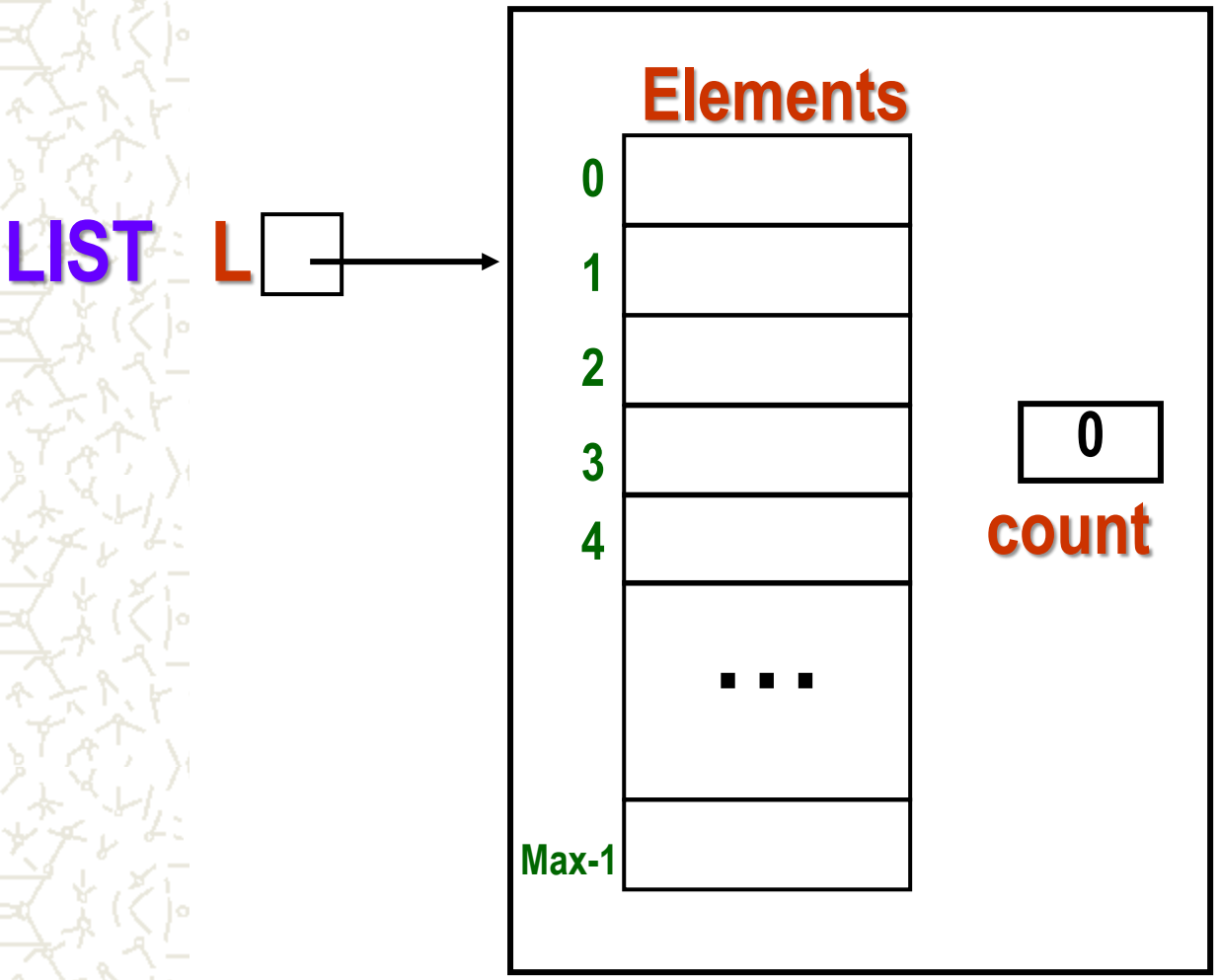

Variations of the Array
Implementation of List

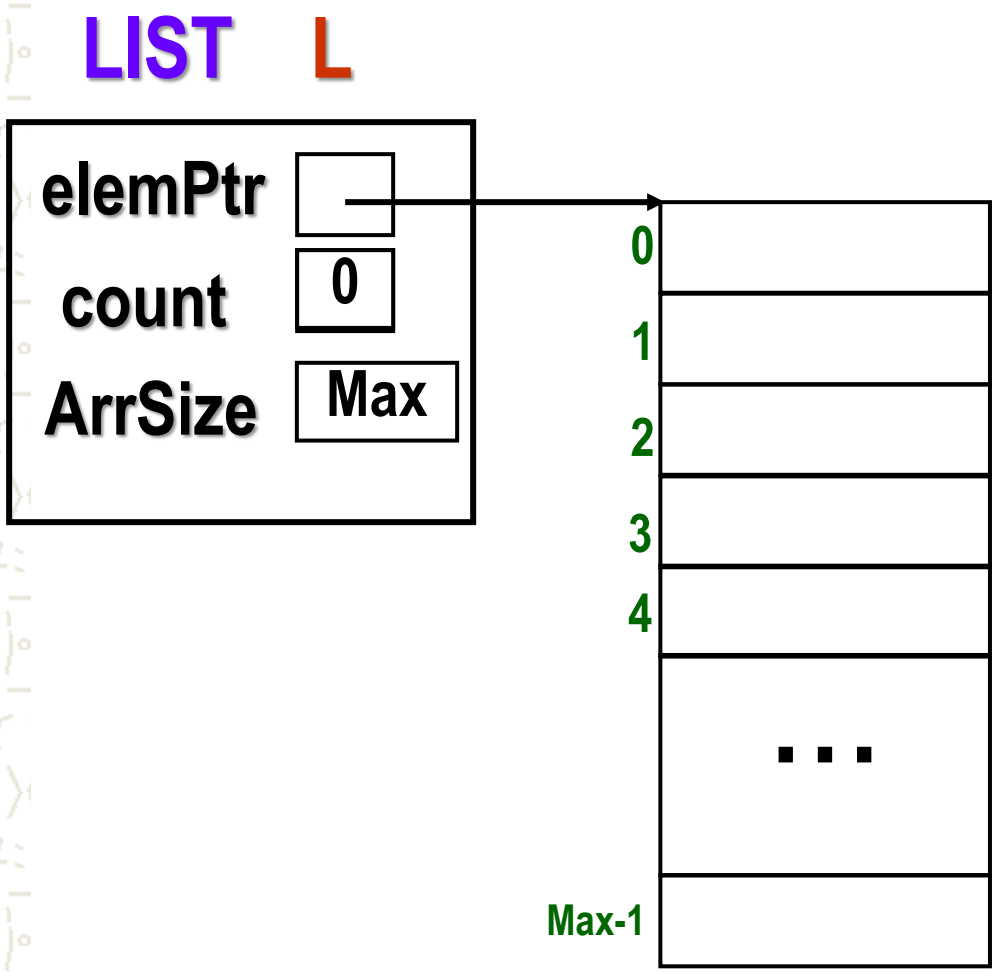
Version 1: List is a structure containing an array and variable count



Version 2: List is a pointer to a structure containing an array and variable count



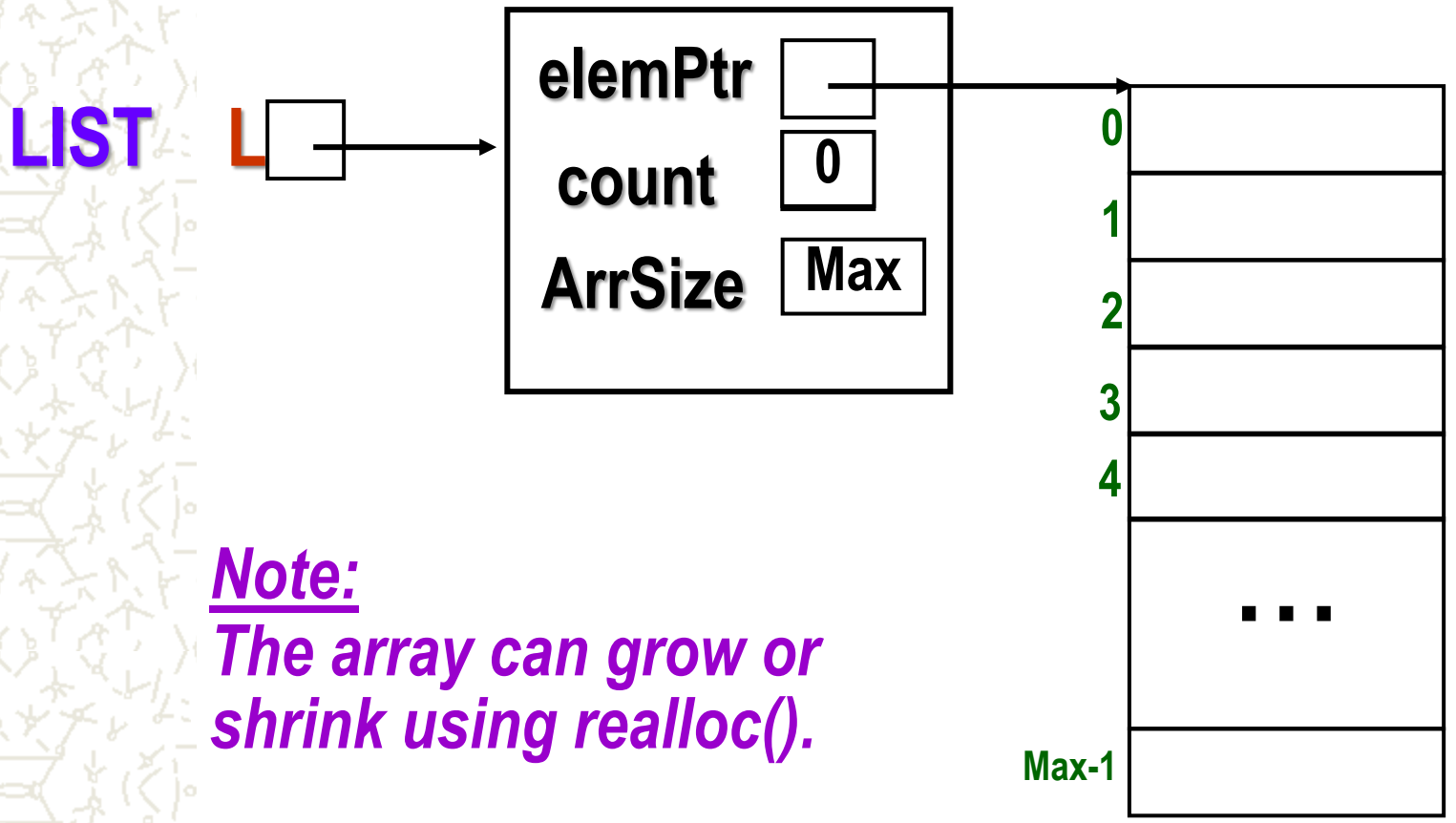
Version 3: List is a structure containing a pointer the first element of a dynamically allocated array, variable count, and current Array size



Note:
The array can grow or shrink using realloc().

Note: If array is full, increase its size via realloc.

Version 4: List is pointer to a structure containing a pointer the first element of a dynamically allocated array, variable count, and current Array size



Note:
The array can grow or shrink using realloc().

Exercise 4

1. Write the appropriate definition of data type **LIST** and declaration of variable **L** using the following:
   a) Version 2
   b) Version 3
   c) Version 4
2. Write the code of function Initialize() for each of the above version.

Exercise 5: Program Creation

Write a program that satisfies the ff. conditions:

1. The program will allow users to perform the following List operations:
   a) insert(x,p, L) – insert element x at position p in the list L
   b) delete(p,L) – delete the element at position p in the list L if p is a valid position
   c) p = locate(x, L) – returns the position p of element x in the list L.
   Return a dummy position if x is not in the list.
   d) x = retrieve(p, L) – returns the element x at position p of the list L.
   Return a dummy element value if p is not valid.
   e) makenull(L) – makes the list L empty.
   f) printList(L) – lists the elements of the list L
2. The elements of the list are student records. The initial entries of the list will come from the given file.
3. Program should be modular, the main function will be as short as possible and will contain variable declarations and as much as possible function calls ONLY.