# SORTES C test Nov. 9th 2010

The elements of a linked list include a pointer to the next element (called « elem ») in the list and a structure called « data » that is defined elsewhere (you do not have to define « data »). You are asked to implement in C a function « list_to_wheel » that gets as argument an integer « n » and a pointer to a linked list of $2^n$ structs « elem ».

The function must replace the linked list of « elem »s by a ring of structs « node » where each « node » (lets call i its position from the head of the list passed in argument) has an extra pointer to node $i+2^{n-1}$ modulo $2^n$ .

Graphically the ring would look like a wheel with spokes (a spoke is a rod extending from the hub of a wheel to the rim)

You must provide the C code to define the structures **`elem`** and **`node`**

You must also provide the declaration and the definition of the function **`list_to_wheel`**

This function returns 0 in case of success and an error code (you must provide in comment the meaning of each error value) in case of failure.