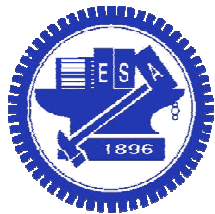# Homework #3
Program Description Using UML Diagrams

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Homework Highlights

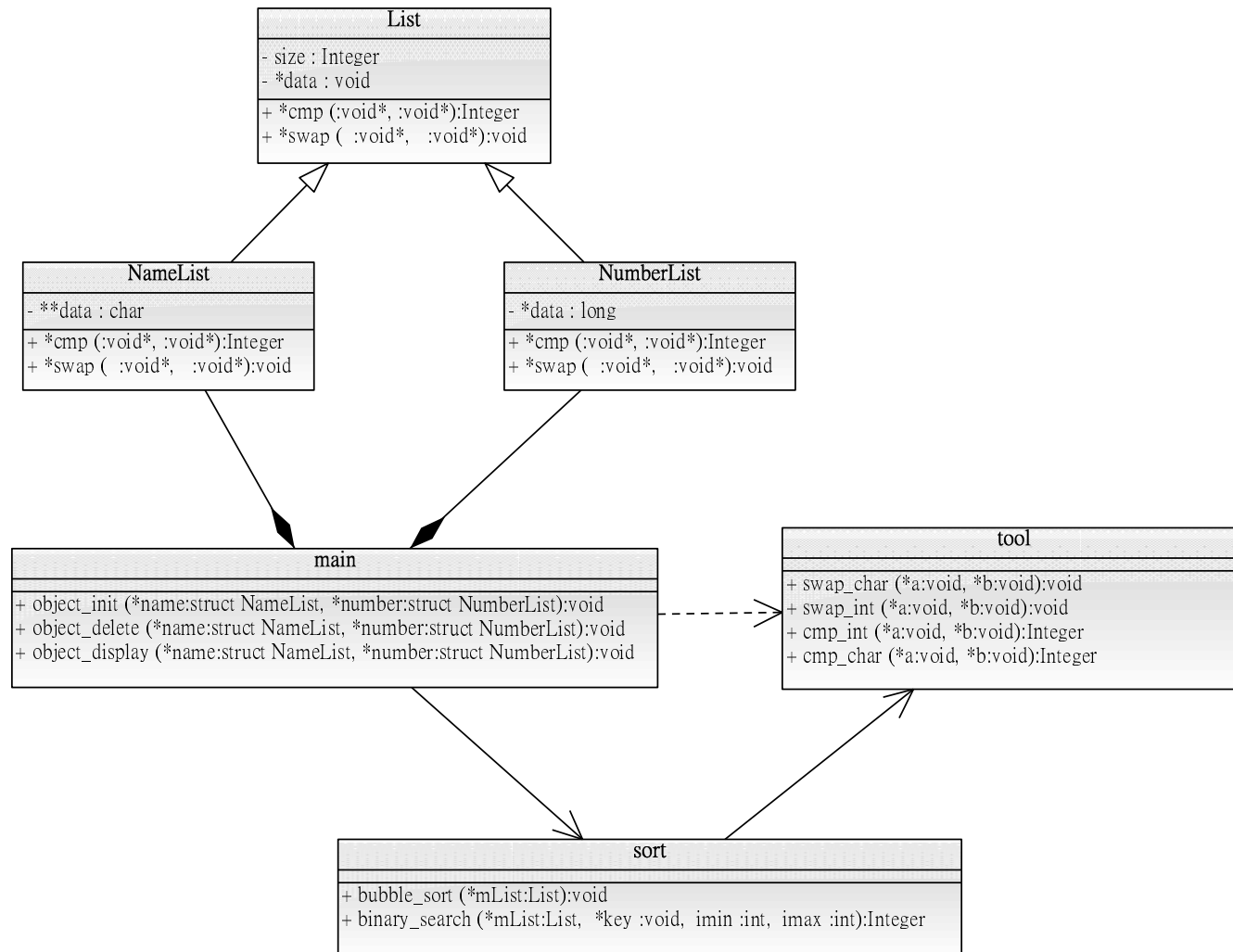❑ For this homework, you have to study the source code of a small program, and then use UML diagrams to describe the "behavior" of the program.

❑ There are two types of diagrams you must draw for this HW:

- Sequence diagram of the whole program, including three life-lines of main.c, sort.c, and tool.c

- Activity diagram of the sort() function.

❑ Email the TA your diagrams by the end of 5/22. TA's email address: fox.shc@gmail.com. The diagrams must be in the pdf format.

Target Program

❑ The target program is a small C program that performs sorting and searching of lists.

❑ The program is composed of three C files:

- main.c – contains the main "behavior" of the program
- sort.c – contains the functions for sorting/searching
- tool.c – contains the functions for comparison/swapping

❑ Each C file can be treated as a process (object) with its own life line.

Class Diagram of the Program

List

- size : Integer
- *data : void

+ *cmp (:void*, :void*):Integer
+ *swap (:void*, :void*):void

NameList

- **data : char

+ *cmp (:void*, :void*):Integer
+ *swap (:void*, :void*):void

NumberList

- *data : long

+ *cmp (:void*, :void*):Integer
+ *swap (:void*, :void*):void

main

+ object_init (*name:struct NameList, *number:struct NumberList):void
+ object_delete (*name:struct NameList, *number:struct NumberList):void
+ object_display (*name:struct NameList, *number:struct NumberList):void

tool

+ swap_char (*a:void, *b:void):void
+ swap_int (*a:void, *b:void):void
+ cmp_int (*a:void, *b:void):Integer
+ cmp_char (*a:void, *b:void):Integer

sort

+ bubble_sort (*mList:List):void
+ binary_search (*mList:List, *key :void, imin :int, imax :int):Integer

UML Diagram Drawing Tool

❑ You do not draw UML diagrams by pen-and-paper. There are many tools you can use to draw the UML diagrams

❑ You can use any tool of your choice; or, you can use the following tool:

Software Ideas Modeler (http://www.softwareideas.net/).

UML Information

❑ Section 7.5 of the textbook gives you an overview of UML, including some examples on the Class Diagram and the Sequence Diagram.

❑ A place for you to understand what UML really is, would be the Wiki page:
http://en.wikipedia.org/wiki/Unified_Modeling_Language

❑ The official UML specification can be obtained from:
http://www.omg.org/spec/UML/2.0/