Chapter 1

Differences and Similarities

Exercise 1.1 [Reference Type] *Study the code in the file* `Exercise1-1.cpp`. *Where it make sense turn the arguments of the given functions into reference type arguments. Please justify your answers.*

Exercise 1.2 [Classes and inheritance] *The following exercises are based on the classes* Point *and* Board, *and on the main program* Print, *all of them published on the course's Web site. Carefully study the given code, especially the class* Point *and the testing program (ignore for now the functions at the end just before the main function that are commented out). Compile and run the program. Try to understand how it works.*

1. *How many objects of the class* Point *have been allocated in the program?*

   Change the given code so that this information is computed by the programm.

2. *Write code for the class* SPoint *which inherits from the class* Point. *In addition to the two coordinates, the class* SPoint *must have a data field* char symb *that stores a character which will be used to draw the point on the board. The class declaration must be written in the file* SPoint.h, *and the class implementation in* SPoint.cpp.

   You need to change the declaration of the class Point *in the file* Point.h. *You are not allowed to change the implementation of the class* Point *in* Point.cpp, *the class* Board, *nor the declaration of the two figures in* Print.cpp.

   To test your example, make the following changes to the file Print.cpp*:*

   a) *Remove comments from the statement* #include "SPoint.h" *in the beginning of the file and from the functions* makeSymbTriangle *and* makeSymbSquare *in the end of the file. These two functions create figures (a triangle and a square) made of* SPoints, *not* Points. *The last argument is the symbol that will be used to draw the points.*

   b) *Comment out the calls to* makeTriangle *and* makeSquare *in* main.

   c) *Remove the comments from the calls* makeSymbTriangle(figure1, 4, 7, 3, '$') *and* makeSymbSquare(figure2, 4, 10, 12, '&') *in* main.

After the changes the program should print the triangle made of \$ *and the square made of* &.