UFPE – CENTRO DE INFORMÁTICA
ESTRUTURAS DE DADOS ORIENTADAS A OBJETOS
ATIVIDADE PRÁTICA

(Gustavo Carvalho – ghpc@cin.ufpe.br)

Exercícios selecionados de: KIRCH-PRINZ, U., PRINZ, P.
A Complete Guide to Programming in C++.
1a Edição. Editora Jones & Bartlett Learning, 2001.

Exercise 1

Write a C++ program to perform the following:

A. Left-justify the number 0.123456 in an output field with a width of 15.
B. Output the number 23.987 as a fixed point number rounded to two decimal places, right-justifying the output in a field with a width of 12.
C. Output the number –123.456 as an exponential and with four decimal spaces. How useful is a field width of 10?

Exercise 2

Correct the mistakes in the following program.

```
#include <iostream>
using namespace std;
int main() {
  char ch;
  string word;
  cin >> "Let's go! Press the return key: " >> ch;
  cout << "Enter a word containing three characters at most: ";
  cin >> setprecision(3) >> word;
  cout >> "Your input: " >> ch >> endl;
  return 0;
}
```

Exercise 3

Assuming that `i` has a value of `-2`, what value will be assigned to the variable x after evaluating the following expression? Write a C++ program to check your answer.

```
x = -4 * i++ - 6 % 4;
```

Exercise 4

Write a C++ program that outputs a complete multiplication table (from 1 to 10) on screen.

	1	2	3	…	10
1	1	2	3	…	10
2	2	4	6	…	20
3	3	6	9	…	30
…	…	…	…	…	…
10	10	20	30	…	100

Exercise 5

Write a C++ program that reads an integer between 0 and 65535 from the keyboard and uses it to seed a random number generator.Then output 20 random numbers between 1 and 100 on screen.

Exercise 6

Write a program for the following numerical game. The computer stores a random number between 1 and 15 and the player (user) attempts to guess it. The player has a total of three attempts. After each wrong guess, the computer tells the user if the number was too high or too low. If the third attempt is also wrong, the number is output on screen. The player wins if he or she can guess the number within three attempts. The player is allowed to repeat the game as often as he or she wants.

Use the function `time()` to initialize the random number generator

```
#include <time.h> // Prototype of time()
#include <stdlib.h> // Prototypes of srand() and rand()

long sec;
time(&sec); // Take the number of seconds and
srand((unsigned) sec); // use it to initialise.
```

Exercise 7

Write

- the macro `ABS`, which returns the absolute value of a number,
- the macro `MAX`, which determines the greater of two numbers.

In both cases use the ternary conditional operator. Add these macros and other macros from this chapter to the header file `myMacros.h` and then test the macros