**Advanced programming - C++ Practical 1**

Launch **Visual Studio C++** . Unless otherwise stated, all your programs should be created as C++ builder *console applications* for the time being .All code must be well commented and consistently indented.

There is an ascii table at the end of the document to help you complete the exercises. You cannot use Strings or arrays**, only chars and ints.** Use printf to output to the screen. A deadline will be announced in class, as will details about how to submit your programs for collection and correction. All programs will be collected immediately after the deadline.

1) Write a program called **leapyear.cpp** that will input a stream of numbers, each corresponding to some year (any value greater than 0 and up to implementation defined limits for an int) and outputs the message “*this is a leap year*” or “*this is not a leap year*” as appropriate. A year is a leap year if it is divisible by 4 and not 100, unless it is also divisible by 400. The program will terminate when a zero is input. Keep your code as short, efficient and readable as possible. The appropriate error checking must

2) The C standard library header file <ctype.h> prototypes a number of functions that test and operate upon character type data. Write a program called **swopcase.cpp** that will input a line of text from the user and return that line with all uppercase letters converted to lowercase, all lowercase letters converted to uppercase and all other characters left unchanged. You may not #include <ctype.h> in your program or use Strings or arrays, you must instead implement any of the functions from it that you need to complete this task. In particular, you’ll probably require:

**int isupper(int somechar)** tests if somechar is an upper case character – returns non-zero

(true) if it is and returns zero (false) if it isn’t

**int islower(int somechar)** tests if somechar is a lower case character – returns non-zero

(true) if it is and returns zero (false) if it isn’t

**int toupper(int somechar)** returns uppercase equivalent of somechar if it’s lowercase,

otherwise it returns somechar

**int tolower(int somechar)** returns lowercase equivalent of somechar if it’s uppercase,

otherwise it returns somechar

3) Write a program that takes as input the number of a month and outputs the name of that month. (Write two versions: one with an if statement and one with a switch statement).

4) Write a program that determines if an integer input by the user is the same backwards as forwards. For example 34877843.

Notes:

Loop to get input from keyboard.

#include <stdio.h>

#include <cstdlib>

int main(void)

{

// we need to declare it as an int for EOF to work

int inchar=0;

printf("Enter characters\n");

inchar = getchar();

while(inchar != EOF)

{

putchar(inchar);

inchar = getchar();

}

system(“pause”);

return 0;

}

Terminate the input by typing the two characters *CTRL+Z* and *ENTER* on a line of their own.

