

ECOR 1606 DEF Winter 2013 - Assignment #2

Note: Program comments are required for full marks on every program you write! You must also include your name and student number in the comments at the top of every program.

Question 1

Write a C-- program (to be called "*a21.cmm*") that reads in two values (x and y) and that calculates and outputs x^y (i.e. x to the y th power). The value entered for y must be an integer. If it is not your program should just output an error message (and not do anything else). In C-- function *isInt* can be used to determine whether or not a value is an integer (as shown below)

```
if (isInt(k)) {  
    // if we get here k is an integer  
    ...  
} // endif
```

Apart from *isInt*, you may NOT make use of any functions (and in particular you are NOT permitted to use function *pow*). Instead the required value must be obtained by repeated multiplication. Both x and y may be less than zero, equal to zero, or greater than zero. Your program must be able to deal with all possible combinations. If an answer cannot be calculated your program should output an error message instead.

Hint: Use your solution (or the sample solution) from assignment #1 question #4 to help you.

Submit "*a21.cmm*" as Assignment 2; A#2 – Question 1.

Question 2

Imagine that we want to determine whether some carpets will fit a room. We know the size of the room and the sizes of the carpets. For each carpet, there are three possibilities. The carpet may be a perfect fit, it may be large enough that it can be cut to size, or it may be of no use at all.

Suppose, for example, that the room is 20 x 50 feet (or 50 x 20 feet)

If a carpet is 20 x 50 feet (or 50 x 20 feet), it fits the room exactly.

If a carpet is 30 x 60 feet (or 60 x 30 feet), it can be trimmed to size.

If a carpet is 10 x 60 feet (or 60 x 10 feet), it is of no use at all.

You are to create a C++ program ("*a22.cmm*") that reads in the size of the room and that then repeatedly reads in carpet sizes until 0 0 is entered. For each carpet size entered, your program should output a message indicating which of the three possibilities applies.

A sample executable has been supplied. Running it should give you an excellent idea of what is required. Note that the room and carpet dimensions may be entered in either order. There is no requirement that the smaller dimension always be entered first (or last). This makes the program somewhat more interesting.

Some error checking is required. If the room length and room width entered are not both greater than zero, your program should output an error message and have the user try again (and so on until valid dimensions are obtained). Bad carpet dimensions should also be rejected. Unless the length and width are both zero (our special "sentinel" combination), both the length and width must be greater than zero.

When 0 0 is entered your program should end.

Hint: Things would be much easier if the smaller dimension were always entered first (or last). Why not make this so by interchanging any dimensions that are entered the "wrong way" around?

Submit "*a22.cmm*" as Assignment 2; A#2 – Question 2.