Homework #5: Pythagorian triples and Fermat's last theorem

- A Pythagorian triple is a triple (a, b, c) of *integers* that can form the lengths of a right angle triangle, that is, $a^2 + b^2 = c^2$. For example, $3^2 + 4^2 = 5^2$. We would like to write a program finding such triples.
- Pierre de Fermat claimed in 1637 that for an integer $n > 2$ there are no integer triples such that $a^n + b^n = c^n$. This was proven only in 1995. We would like the program to check this too.
- The program will get n as input, and also a maximal value *max*. It would look at triples such that $1 \leq a, b, c \leq max$ and check whether they satisfy $a^n + b^n = c^n$. If so, the triple will be printed. The program should also print at the end the number of triples found.
- If a, b, c are interchanged, we get essentially the same triple, so we want our program to check only $a < b < c$. Moreover, when we multiply the three numbers in a triple by the same number, we get another triple which isn't really interesting. For example, $6^2 + 8^2 = 10^2$ shouldn't surprise you by now. Therefore, we are interested in a, b only when they are relatively prime, that is, $\gcd(a, b) = 1$.
- Write a function `int gcd(int m, int n)` computing the greatest common divisor of m and n. Use either Euclid's algorithm or the naive way.
- In addition, include in your program the function `power` from the classwork.
- Write the program, using the functions `power` and `gcd`.

Good luck