Submissions: This assignment is due at 11:59 PM on the 10th of Nov, 2020. Each student must submit his or her own assignment. This is a programming assignment. You have to submit code that can be run on a computer. You can use Java, C, C++ or Python to write code. In any case, your submission should be a single file (don’t compress it) containing your code (not compiled code), any relevant instructions to compile or run your code as comments. The input/output format for each problem is specified with the problem. For the input format, you may assume the format will be absolutely as specified, i.e., you do not need to check for errors in the input format. For the output, your code must output its results on the standard output in the strict format desired of it (and nothing else).

Academic Integrity: Everyone must write his/her own code. Absolutely no copying is allowed. Please refer to the course policies and schedules about this. If you have referred to external sources, please mention all sources on your assignment.

Problem 1[100 pts]: Write a program that prompts the user to enter three integers called $a$, $m$, and $n$. Then output the result of $a^m \mod n$. Notice that the simple algorithm that tries to compute $a^m$ by repeated multiplication by $a$ is unlikely to be correct due to overflow errors. Also, for full points, read and implement the algorithm for modular exponentiation given on pages 253-254 of the Rosen book.

(A correct solution that does not implement modular exponentiation may not get full points.)