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/*--- HW14.java ---*/
import java.util.*;
/**
Public class for the 14th homework. works on using Throwables for exceptions. IE er
ror handling
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*/
public class HW14 {
  /**
  In main we compute an arithmetic sequence based on some numbers inputted from the
 user.
  The main also does some error handling for invalid inputs from the user.
  @param args arguments that come after the command is called.
   In this case only "-v"
  @return none
  */

  public static void main(String[] args) {
    boolean verbose = args.length > 0 && args[0].equals("-v");
    Scanner sc      = new Scanner(System.in);

    if (verbose) {
      System.out.print("Enter x, k, m: ");
    }
    int x = 0, k = 0, m = 0, r = 0;
    try{
      x = sc.nextInt();
      k = sc.nextInt();
      m = sc.nextInt();
      r = MyMath.modexp(x, k, m);
    } catch(InputMismatchException e){
      if(verbose)
        System.out.println("Error in HW14! invalid input");
      System.exit(1);
    } catch(ArithmeticException e){
      if(verbose)
        System.out.println("Error in HW14! invalid input");
      System.exit(1);
    }
        if (verbose) {
      System.out.print(x + "^" + k + " % " + m + " = ");
    }
    System.out.println(r);
  }
}

/*--- MyMath.java ---*/
/**
Class MyMath which is called in the HW14 class. Used for its arithmetic equation
*/
public class MyMath {
  /**
   * Returns x^k mod m
   * Note: k must be non-negative, and m must be positive
   * @param x integer for the equation
   * @param k integer for the equation
   * @param m integer for the equation
   * @return r integer which is the result of the equation
   */
  public static int modexp(int x, int k, int m) throws ArithmeticException{
    int r = 1;
    if(k < 0)
      throw new ArithmeticException();
    for (int i = 0; i < k; i++) {
      r = r * x % m;
    }
    return r;
  }
}
```