Home work 1

(Part A)

Due by Sunday 4th June, 9 PM.

As discussed in the lecture class, code two algorithms to generate all prime numbers from 1 to N. The first one is a simple method which checks if each number $i < N$ is a prime number by dividing with numbers smaller than i. The second method uses the sieve of Eratosthenes (see problem 5.29 in the book). Write two separate programs for the two algorithms using Java 5.0. Include statements to count the number of operations. Each program would have two parts.

1. For the first part, ask the user to input an integer N. The program should output the generated prime numbers up to N.

2. For the second part of the homework, the programs should print the value of N, and the number of operations for each N, for following values of N : 10, 100, 1000, 10000, 100000. *It should not print the generated prime numbers.* Use this data to determine which time complexity best describes the two methods (determine the closest Big-O for each).

Mail the code to your lab instructor by Sunday 4th June, 9 PM.
ehsan.ghaneie@gmail.com
Submit a written report with outputs and your observations to him in the lab class on Monday 5th June.

(Part B)

Due in lecture class on May 31, 2006.

This is the written home work part. Submit the solutions to the following 5 problems from the text book.

1. 5.6 b (Justify your answer by taking a sample array).
2. 5.7 a, b
3. 5.11
4. 5.15 Give a Big-O analysis of the running code for Fragments 3, 4, 5
5. 5.10