UTI 526 Object Oriented Programming

3rd Homework
Assignment Date: 24.03.2025
Due Date: 07.04.2025

From: Java How to Program, Early Objects (10th Edition), Paul J. Deitel and Harvey Deitel, Pearson, 2015.

7.27. ***(Sieve of Eratosthenes)*** A prime number is any integer greater than 1 that's evenly divisible only by itself and 1. The Sieve of Eratosthenes is a method of finding prime numbers. It operates as follows:

a) Create a primitive-type boolean array with all elements initialized to true. Array elements with prime indices will remain true. All other array elements will eventually be set to false.
b) Starting with array index 2, determine whether a given element is true. If so, loop through the remainder of the array and set to false every element whose index is a multiple of the index for the element with value true. Then continue the process with the next element with value true. For array index 2, all elements beyond element 2 in the array that have indices which are multiples of 2 (indices 4, 6, 8, 10, etc.) will be set to false; for array index 3, all elements beyond element 3 in the array that have indices which are multiples of 3 (indices 6, 9, 12, 15, etc.) will be set to false; and so on.

When this process completes, the array elements that are still true indicate that the index is a prime number. These indices can be displayed. Write an application that uses an array of 1,000 elements to determine and display the prime numbers between 2 and 999. Ignore array elements 0 and 1. **(100 points)**

Important Notes:
1. All source code and related homework reports should be submitted via Ege Ders platform: 2024 - 2025 Bahar Dönemi → Enstitüler → Fen Bilimleri Enstitüsü → Uluslararası Bilgisayar → Bilgi Teknolojileri ve İnternet Güvenliği → İÖ - Nesne Yönelimli Programlama - 573973 - 2425B → Hafta 5: Arrays and ArrayLists → Homework 3.
2. Do not forget to include appropriate comments in the source code. Hence the grader can easily understand the program during his/her assessment.
3. Write the programs in a simple and straightforward manner by considering object-oriented analysis and design principles.
4. Each report should include the printout of the related source code, two or more screenshots (depending on the illustration requirements) which exemplify execution of the programs and proper UML diagrams.
5. Homework reports are MANDATORY! Sending only source code without reports including the above mentioned content is subject to getting lower points.
6. IMPORTANT NOTICE: There will be significant point deductions for late, copied or shared submissions.