Computer Programming Project 4 – 2nd Quarter SY 2017-18

1. Develop the code for a java class named **Prime** which will output all prime numbers (1, 3, 5, 7, 11,..) below any natural number n where n < 10,000.

   - Permit your code to change n to any number less than 10,000. Code utilizing a Sieve of Eratosthenes is a suggestion but any other *numerical* method is permitted.

   - Your code must also output the list of prime numbers to a text file named: PrimeNumbers.txt . Delimit the prime numbers in the file with commas. Submit this text file (listing primes up to 10,000) with the other required files. Study how to create simple data text files on the internet or textbook resources.

2. Develop the code for a java class named **MagicSquare** which solves for the prime numbers *to satisfy the magic square shown below* (where the sum of the primes in the grey region sum to 177 in all directions: vertical, horizontal, and diagonally). The prime numbers used by the MagicSquare class MUST be read from the PrimeNumbers.txt file created by the Prime class. Use of java classes Arrays and/or ArrayList is recommended/permitted. Study these Java.util.Arrays classes as necessary. Visit https://www.tutorialspoint.com/java/util/java_util_arrays.htm.

3. Develop a **MagicSquareApp class** which accesses/uses the Prime and MagicSquare classes to determine α, β, χ, δ, ε, ϕ, γ, η, and κ. EXPLICITLY identify the α, β, χ, δ, ε, ϕ, γ, η, and κ answers. **Submit as email attachments to mheinen_1@msn.com:**

177	177	177	177	177
177	α	β	χ	177
177	δ	ε	ϕ	177
177	γ	η	κ	177
177	177	177	177	177

   o The 3 Java classes with user inputs / outputs into a single MS Word.docx file

   o The PrimeNumbers.txt file (n = 10,000). Format as necessary to make the file readable.