AP Computer Science A

Assignment – The Blockchain Assignment 4: Multithreading in Java

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Create a new repl. As appropriate, write responses to the following as comments in the code.

1. Write a method to print the prime numbers contained in a range of integers, start to end.
   Here is the signature of the method:

```
/* precondition: rangeStart < rangeEnd
   postcondition: print all primes on the interval [rangeStart, rangeEnd] */

public static void printPrimes (int rangeStart, int rangeEnd)
```

2. Use the code that you wrote in the previous problem to create a class `ThreadedPrintPrimes` that will allow concurrent, parallel threads to print all the prime numbers contained in a range of integers.

3. Use the class you wrote in the previous problem to make the following `main` method work. Modify the constructor of your class as required.

```
public static void main (String[] args)
  {
    //thread to print primes from 1 to 500
    ThreadedPrintPrimes one = new ThreadedPrintPrimes(1,500);

    //thread to print primes from 501 to 1000
    ThreadedPrintPrimes two = new ThreadedPrintPrimes(501,1000);

    //thread to print primes from 1001 to 2000
    ThreadedPrintPrimes three = new ThreadedPrintPrimes(1001,2000);

    one.start ();
    two.start ();
    three.start ();
  }
```

4. Compare the `main` method from problem 3 to the one below. Which do you think will execute faster? Explain.

```
public static void main (String[] args)
  {
    printPrimes (1,2000);
  }
```