HW #1-3

1. Think of 3 computational tasks that are carried out by popular web applications or electronic devices.   
 Describe each task in terms of its input and output.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Web application  or device** | **Input** | **Output** |
| **Example done for you** | **Facebook’s mutual-friend counter** | **Two Facebook members who aren’t friends yet** | **A listing of all the mutual friends the members have** |
| **Another example done for you** | **Self-check-in kiosks at the airport** | **A scan of your passport** | **Your flight reservation info** |
| **Your example #1** |  |  |  |
| **Your example #2** |  |  |  |
| **Your example #3** |  |  |  |

2. Use the Euclidean algorithm to find the greatest common divisor of 735 and 1239.

|  |  |  |
| --- | --- | --- |
| **Max** | **Min** | **Remainder of Max / Min** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| So the GCD is: | | |

3. Write the algorithm you learned in Grade 10 for factoring trinomials of the form x2 + bx + c   
(*for instance, x2 – 4x – 32*). The output is the factored form of the trinomial (for example, (x – 8)(x+4)) OR the statement “Cannot be factored”. The algorithm has been started for you. Your job is to finish.

|  |  |
| --- | --- |
| Input: **A trinomial of the form  x2 + bx + c, where b and c are integers** | Output: **The factored form of the trinomial, or the statement that it can’t be factored** |
| Algorithm  **if b = 0:**  **if c < 0 and c is a perfect square:**  **Let s =**  **Output “x2 + c = (x + s)(x – s) because the trinomial is a difference of squares”**  **else:**  **Output “This trinomial cannot be factored”**  **else:** (*meaning b is not 0*)  you finish… | |

**Stop here.**

**Do the following problems only after Lesson 4 Algorithm Correctness**