Maths for CS – Assignment 2a

Module Code 55-402612

A board game company is designing a game. Each copy of the game includes 1204 tokens. There are two types of box which are used to store the tokens, the type *A* boxes can hold 42 tokens and the type *B* boxes can hold 119 tokens.

1. The company wants to order boxes for ach game in order to store the tokens. That is, they want to order a number of type *A* boxes and a number of type *B* boxes which will exactly hold the 1204 tokens of the game. Formulate this problem in the form *sa + tb = n*, where a E Z is the number of type *A* boxes, b E Z is the number of type *B* boxes, *n* is the total number of tokens in the board game, and *s, t E Z*.
2. What further restriction should we put on *a* and *b* in order for this problem to make sense?
3. Use the Extended Euclidean Algorithm in order to find the highest common factor of 42 and 119.
4. Are there any solutions to the problem in part (a)? If so, state them. Then explain why the solution exists and how you found them.