COM1002: Foundations of Computer Science
Problem Sheet 2: Division, Euclid's Algorithm and Diophantine Equations

1. Find $hcf(123456789, 456456)$ using Euclid's algorithm.
2. (a) Find $hcf(52, 65)$ using Euclid's algorithm.
   (b) Does the equation $52x + 65y = 13$ have an integer solution? If so, find one.
   (c) Does the equation $52x + 65y = 4$ have an integer solution? If so, find one.
   (d) Does the equation $52x + 65y = 26$ have an integer solution? If so, find one.
3. (a) Find $hcf(62, 42)$ using Euclid's algorithm.
   (b) Does the equation $62x + 42y = 1$ have an integer solution? If so, find one.
   (c) Does the equation $62x + 42y = 2$ have an integer solution? If so, find one.
   (d) Does the equation $62x + 42y = 6$ have an integer solution? If so, find one.
4. Compute the *general solutions* to the following equations:
   (a) $52x + 65y = 13$
   (b) $52x + 65y = 26$
   (c) $62x + 42y = 2$
   (d) $62x + 42y = 6$
5. How many ways are there to make 60 pence using just 2 pence and 5 pence coins?