Assignment 8 (By Utkarsh Ranjan)

Problem 2

Variable
An array with 2 bytes of entries.
The 1st byte represents the first number, while 2nd byte represents the second number

Algorithm
Basic Euclidean Algorithm

- If we subtract a smaller number from a larger (we reduce a larger number), GCD doesn't change. So if we keep subtracting repeatedly the larger of two, we end up with GCD.

Design of the program

a. LOOP

- The programme first stores the variable in the register R0.
- Then copies the two numbers in R1,R2
- The loop compares the two number if they are unequal , subtract greater from the smaller, else vice versa
- The loop exists when the two register have the same value and then stores this value in R3

```
LOOP
        CMP      R1,R2
        SUBGT    R1,R1,R2
        SUBLT    R2,R2,R1
        BNE      LOOP
        MOV      R3,R1
```