# Pseudocode

## Theory

What is gcd: Greatest Common Divisor (GCD) of two integers A and B is the largest integer that divides both A and B.

How does it work: first we know gcd(a, 0) = a, gcd(0, b) = b, then we have a thought that make the number a or b, one of them become zero to find the gcd

Second we know a (suppose a>b) =b\*h+c(c>=0), then we found gcd(b,c) using the Euclidean Algorithm since gcd(a,b) = gcd(b,c)

Then what arranged to do is: gcd(a, b) -> gcd(b, a%b) until a%b=0

Pseudocode:

Aimed to produce a function called Euclidean algorithm which can found the gcd through Euclidean algorithm

function euclideanAlgorithm(a, b):

in here we aimed to use a loop to do this job: gcd(a, b) -> gcd(b, a%b) until a%b=0

each loop, a -> b, b -> remainder, until remainder = 0

while b! = 0:

remainder = a % b

a = b

b = remainder

return a

# 5

https://github.com/Fexas25/GCD\_FC723.git

Use the git add command to add the modified files to the git repository in preparation for submission.

Use the git commit command to submit the modified version to the git repository. Each submission should contain meaningful submission information describing the changes.

Use the git log command to view the submission history. You can see the author, date and submission information of each submission.

Use the git diff command to compare differences between different commits to see changes in your code.

Use the git remote add command to associate the local git repository with the remote repository to back up the code on the remote repository and share it with others.

Use the git push command to push the contents of the local warehouse to the remote warehouse, ensuring that all submissions and modifications are uploaded to the remote warehouse.

Provide a link to a public git repository, such as GitHub or GitLab, so that others can access and view the project's code and commit history.

# 6 Extend Pseudocode

By the formula lcm (the least common multiple) = (a \* b) / gcd, we can add a function in Euclidean Algorithm to calculate the lcm.

Suppose we wish to extend the Euclidean Algorithm to be able to compute the LCM of two numbers.

This can be done by using the Euclidean Algorithm to calculate the greatest common divisor and then using the formula lcm = (a \* b) / gcd to calculate the least common multiple.

So the pseudocode should

function extendedEuclideanAlgorithm(a, b):

gcd = euclideanAlgorithm(a, b)

lcm = (a \* b) / gcd

return lcm

This extended algorithm first uses the Euclidean Algorithm to calculate the greatest common divisor (gcd) of a and b, and then uses the formula lcm = (a \* b) / gcd to calculate the least common multiple (lcm).

By implementing this extended algorithm, a new method for calculating least common multiples can be added to existing Euclidean Algorithm applications.