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Department: Computer Science

Matic Number: 18/SMS06/003

Course Code: CSC102

Question 1

Using a simple if statement write a simple pseudocode to describe the Euclidean algorithm.

Answer

The Euclidean algorithm is a way to find the greatest common divisor of two positive integers, a and b. I will demonstrate how to solve for the GCD

Find the GCD (54,888) using pseudocode

Begin

Input Integer: 54 and 888;

a = 888, b = 54;

output the GCD, g of a and b

if

a & b, exchange as ("a/b")

Begin

print Num

the remainder is declared as $r = \%d$

elseif

Begin

print Num

$r > 0$ then r is to replace the value of "b" and then the value of "a" is represented as "b" then perform the first if statement;

else if

Begin

print Num

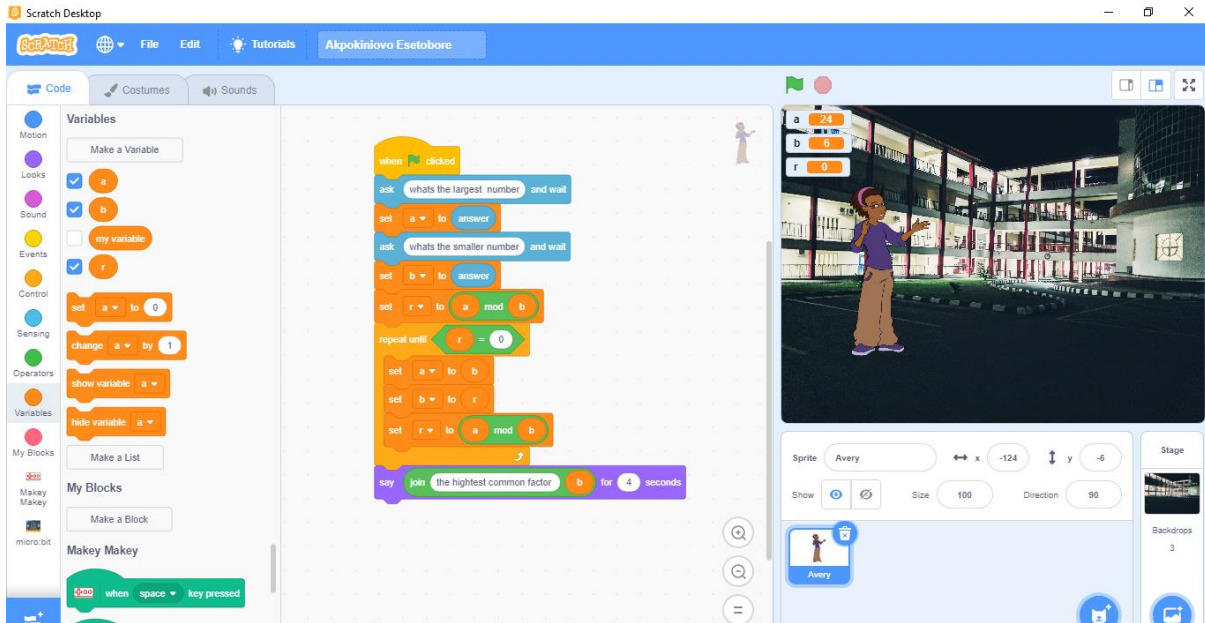
$r = 0$ the operation stops and retrieves the value of "r" as the highest common factor

End

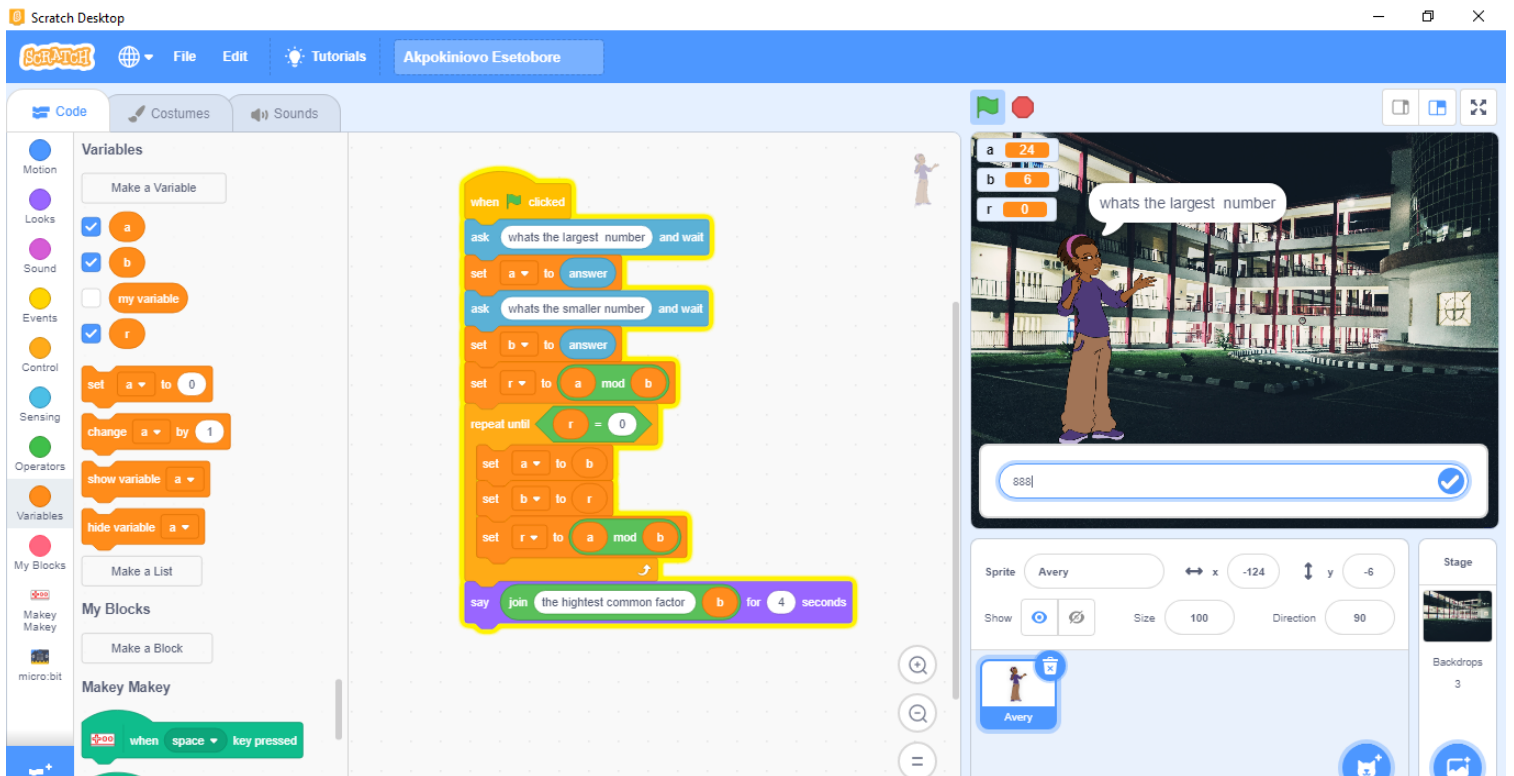
Question 2

Implement your pseudocode from 1 using scratch programming environment.

First picture showing the code



Step by step representation of the code



Scratch Desktop

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Code Costumes Sounds

Variables

- Make a Variable
- a
- b
- my variable
- r

Control

- set a to 0
- change a by 1

Operators

- show variable a
- hide variable a

My Blocks

- Make a List
- Make a Block

Makey Makey

- when space key pressed

when clicked

- ask "whats the largest number" and wait
- set a to answer
- ask "whats the smaller number" and wait
- set b to answer
- set r to a mod b
- repeat until r = 0
 - set a to b
 - set b to r
 - set r to a mod b
- say join "the highest common factor" b for 4 seconds

Stage

Sprite Avery

x: -124 y: -6

Show Size 100 Direction 90

Backdrops 3

Variables

- a: 888
- b: 6
- r: 0

whats the smaller number

54

Scratch Desktop

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Code Costumes Sounds

Variables

- Make a Variable
- a
- b
- my variable
- r

Control

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- change a by 1

Operators

- show variable a
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- set r to a mod b
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 - set a to b
 - set b to r
 - set r to a mod b
- say join "the highest common factor" b for 4 seconds

Stage

Sprite Avery

x: -124 y: -6

Show Size 100 Direction 90

Backdrops 3

Variables

- a: 24
- b: 6
- r: 0

the highest common factor 6