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Name: Daniel Pinedo

Class: CS2

Assignment #: 3 prep

All Compilers Used: n/a

Operating Systems: n/a

Date/time of last successful compile:

Email: d.p@ieee.org

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Euclidian algorithm design (C++)

Definition: The greatest common divisor gcd is the largest natural number that divides both a and b without leaving a remainder.

Algorithm design:

// Below is recursive algorithm

// function prototype

gcd(a, b) = int gcd (int a , int b); // only solves for positive numbers

if ( b == 0 ) { //step 1

return a;

}

else if (a >= b && b > 0) { //step 2

return gcd (b , a%b); // only works if a >= b

}

else { //step3

return gcd (b , a); // if a < b switch them.

}

// example debugging procedures below

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a = 10, b = 5

step 1. 5 != 0 therefore false

step 2. 10 > =5 therefore true. return gcd(a=5, b=0).

step 1. 0==0 therefore true. return 5

a = 341, b = 743

step 1. b != 0 therefore false

step 2. 341 < 743 therefore false

step 3. return (a=743, b = 341)

step 4.

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