Keidre Richards

1504225

Datastructures Lab 3

**public** **class** IterationMathLib

**extends** MathLib{

@Override

//Part 1 Greatest Common Divisor

**int** gcd(**int** x, **int** y) { 3

**int** temp; 1

**while**(y!=0) { n

**if**(x>=y && x!= 0) { n

temp = x; 1

x=y; 1

y=temp % y; 1

}

}

**return** x;

}

@Override

**int** ack(**int** x, **int** y) { 3

**int** t, t2; 2

**while**(x!=0) { n

**if**(y==0) { n

x-=1; 1

y=1; 1

}

**if**(x!=0 && y!=0) { n

t = x; 1

x -=1; 1

t2=y; 1

y= ack(t, t2-1); 1

}

}

**return** y+=1; 1

}

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@Override

**int** fib(**int** x) { ` 2

**while**(x!=0) { n

**if**(x==1) { n

**return** 1;

}

**if**(x>1) { n

**return** fib(x-1) + fib(x-2); 2

}

}

**return** 0; 1

}

@Override

**int** hanoi(**int** n) { 2

**while**(n!=1) { n

**if**(n>1) { n

**return** 2\*hanoi(n-1)+1; 2

}

}

**return** 1; 1

}

}

Gcd

Big O = Linear

Ack

Big O = Quadratic

Fib

Big O = Quadratic

Hanoi

Big O = Quadratic