

```

class p1 extends object
  field x
  field y

  method initialize(a,b)
    begin
      set x = a;
      set y = b;
    end

```

```

  method m1(u,v)
    send self m2(u,v)

```

```

  method m2(u,v)
    +(x,y,u,v)

```

```

class p2 extends p1
  field w
  field z

```

```

  method initialize(a,b)
    begin

```

```

      super initialize(a,b);
      set w = +(a,b);
      set z = *(a,b);
    end

```

```

  method m2(u,v)
    *(w,z,u,v)

```

```

let

```

```

  o1 = new p2(1,4)

```

```

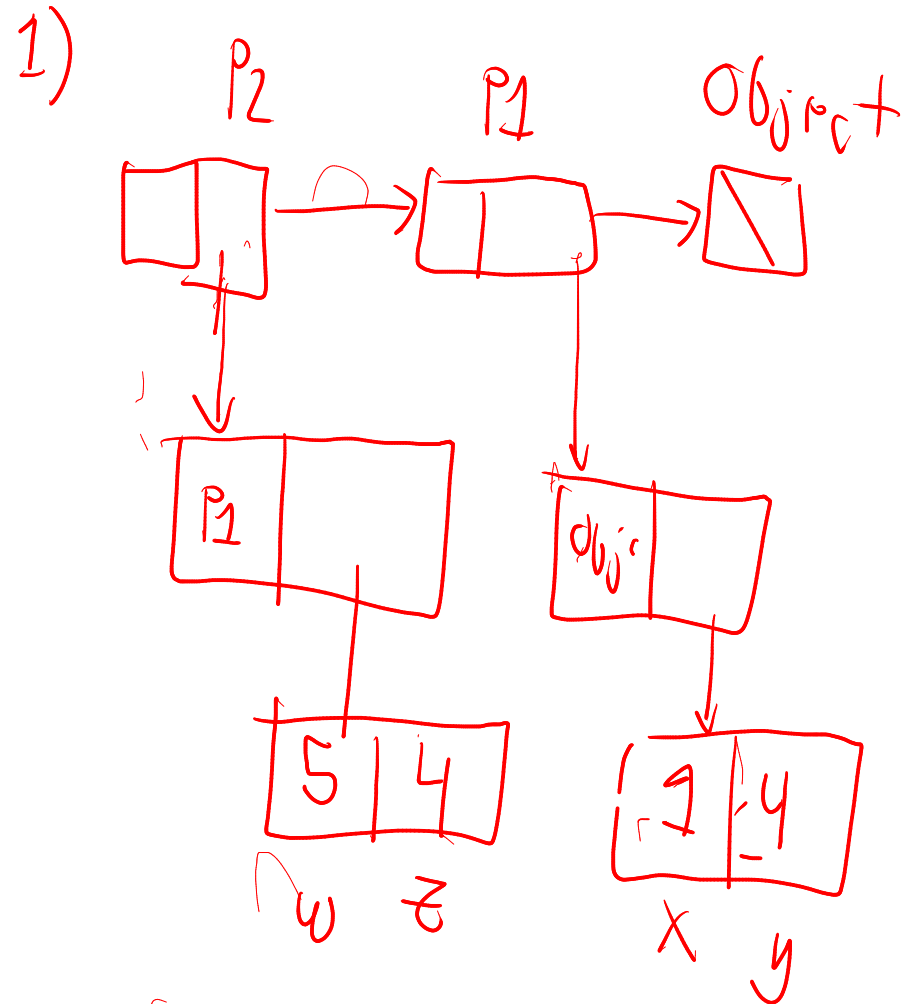
in

```

```

  send o1 m1(10,5)

```

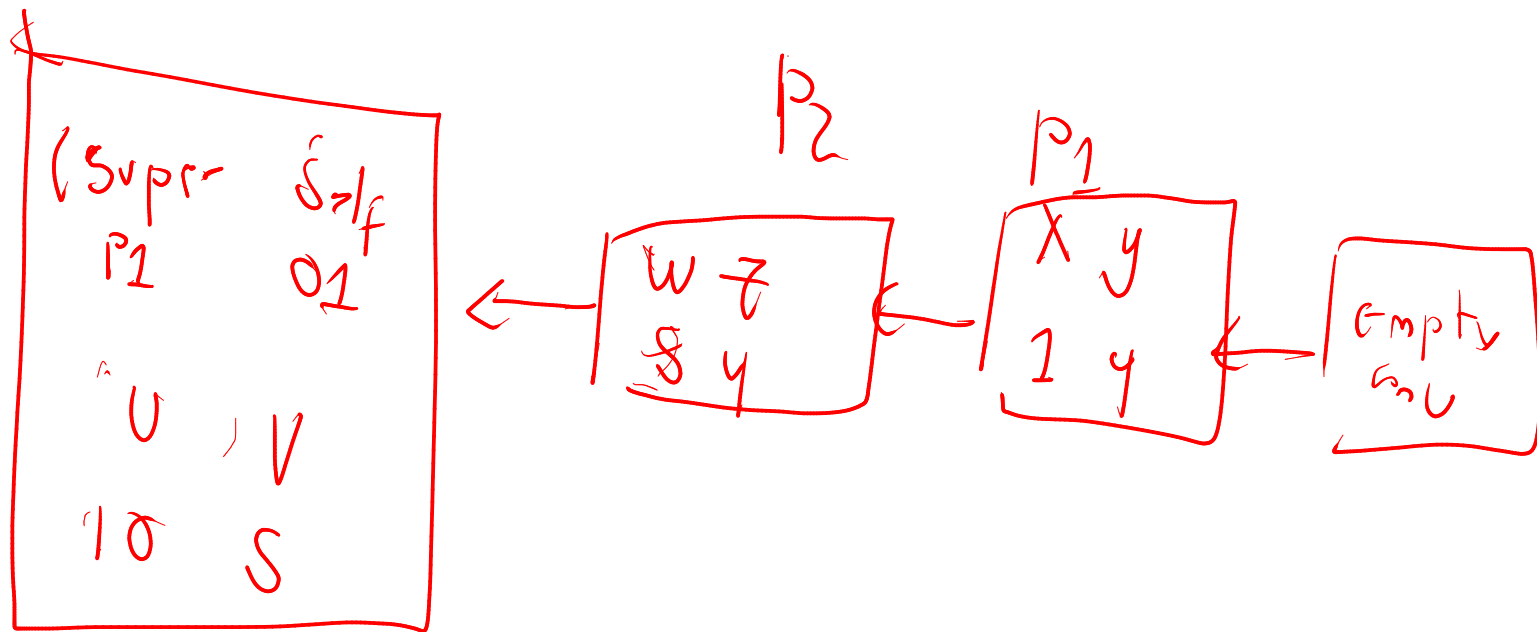


Super Self  
obj o1  
u-v  
10 5

x y  
1 4

Empty obj  
obj o1

send o1 m2(10,5)



\* (w, z, u, v)

\* (s, y, 10, S)

1000 ✓

```

class c1 extends object
  field x
  field y

method initialize()
  begin
    set x=5;
    set y=10;
    +(x,y)
  end

method m1()
  send self m4(x)

method m2(n, t)
  *+(t,x), -(n,y))

method m4(n)
  send self m2(n,+(n,n))

```

```

class c2 extends c1
  field x
  field y

method initialize(xin, yin)
  begin
    super initialize();
    set x=xin;
    set y=yin;
  end
end

```

```

method m1()
  super m4(x)

method m2(z,p)
  begin
    send self m3();
    +(z, +(p,x))
  end

```

```

method m3()
  begin
    set x=add1(x);
    set y=add1(y)
  end

```

```

class c3 extends c2
  field m
  field n
  method initialize(a,b)
    begin
      super initialize(+(a,2),-(b,2));
      set m = a;
      set n = b
    end

```

```

method m1()
  super m4(+(n,m))

```

```

method m5()
  send self m1()

```

```

let
  o1 = new c1()
  o2 = new c2(2,3)
  o3 = new c3(4,5)

```

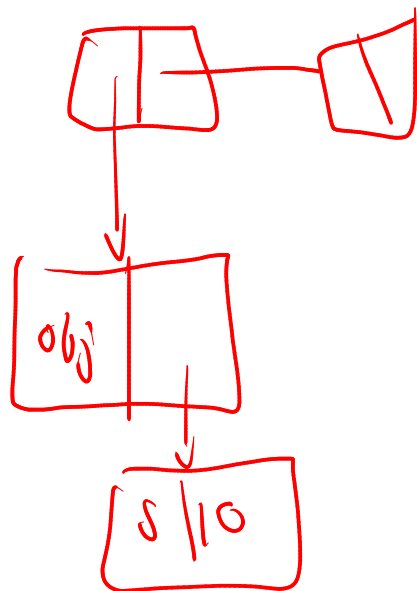
```

in
  let
    k = send o1 m1()
    f = send o2 m1()
    g = send o3 m5()
  in
    +(k,f,g)

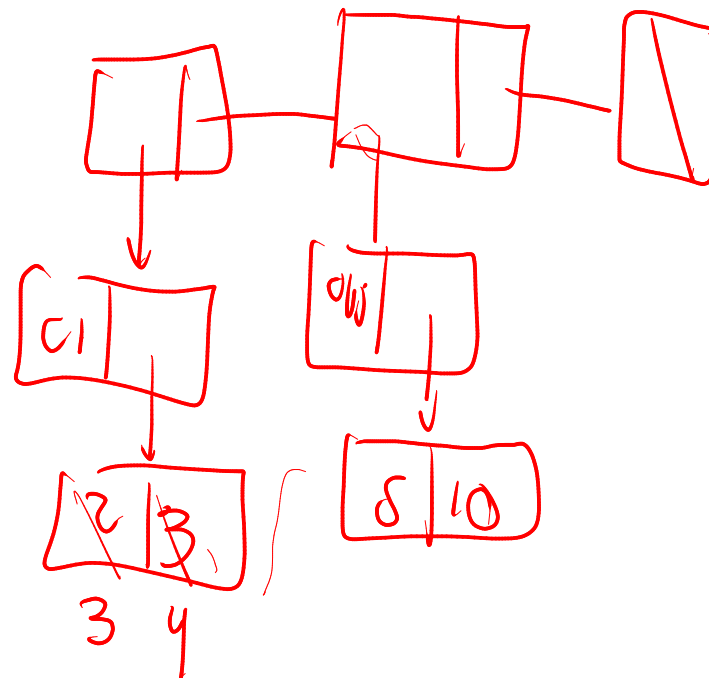
```

-75  
 9  
 34

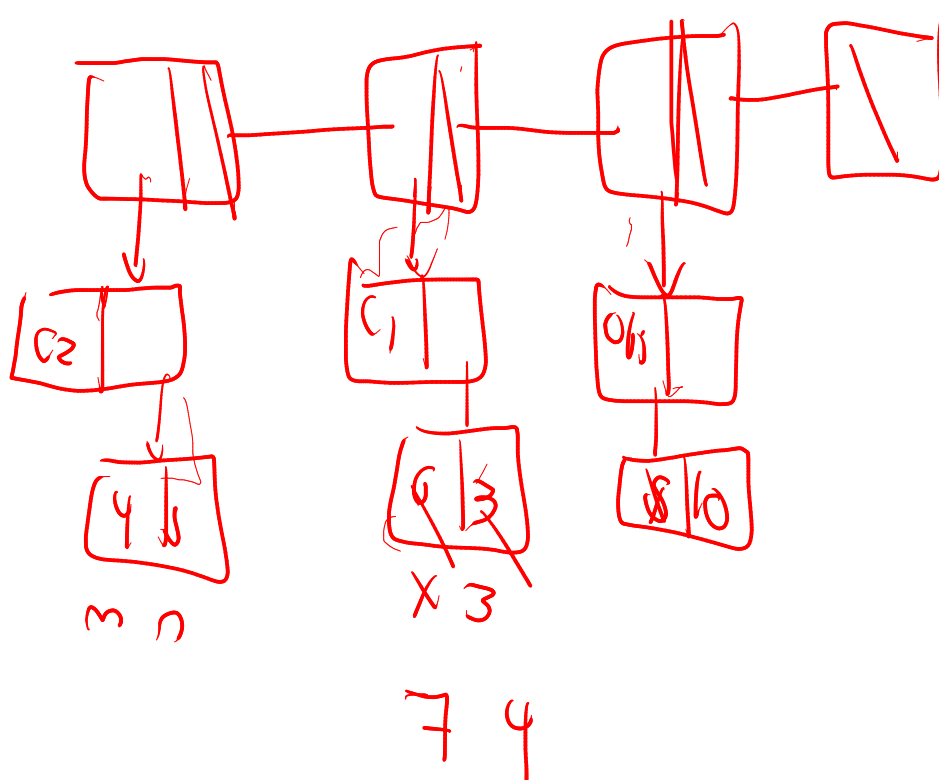
Q4)



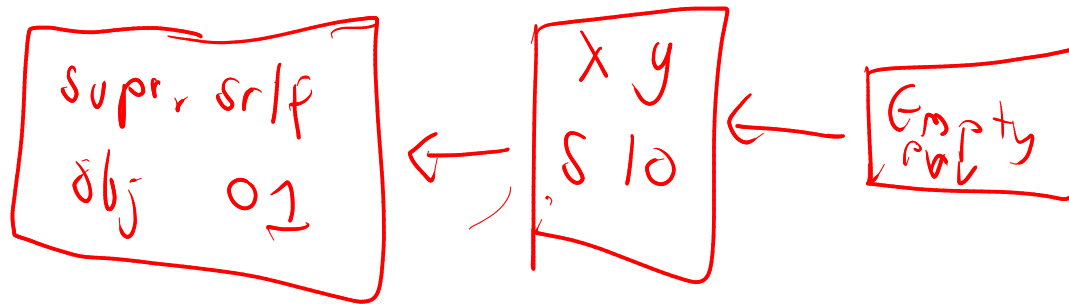
Q2)



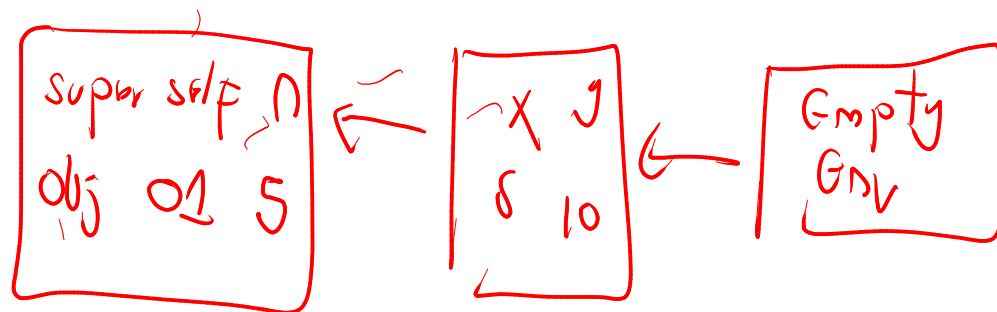
Q3)



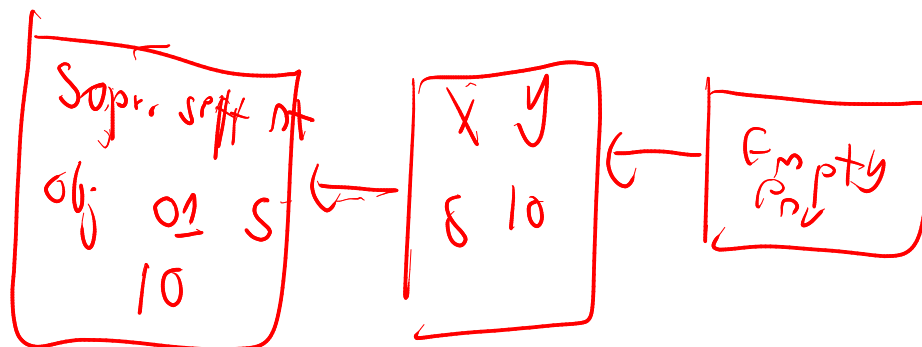
Send o1 m1()



Send o1 m4(s)

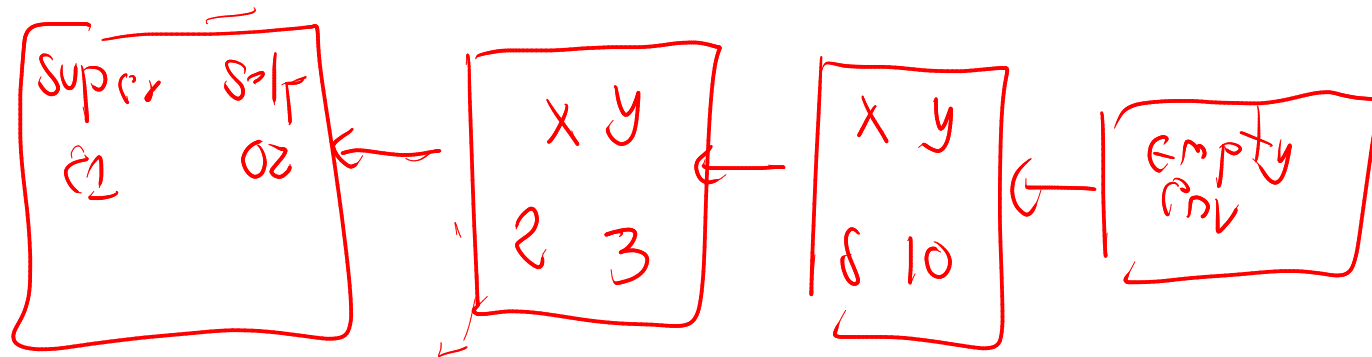


Send o1 m2(s, 10)

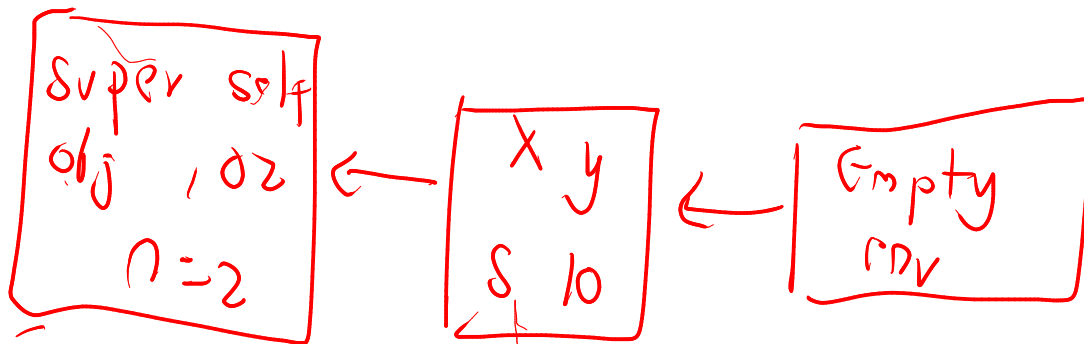


\* (1s, 10) = -7S

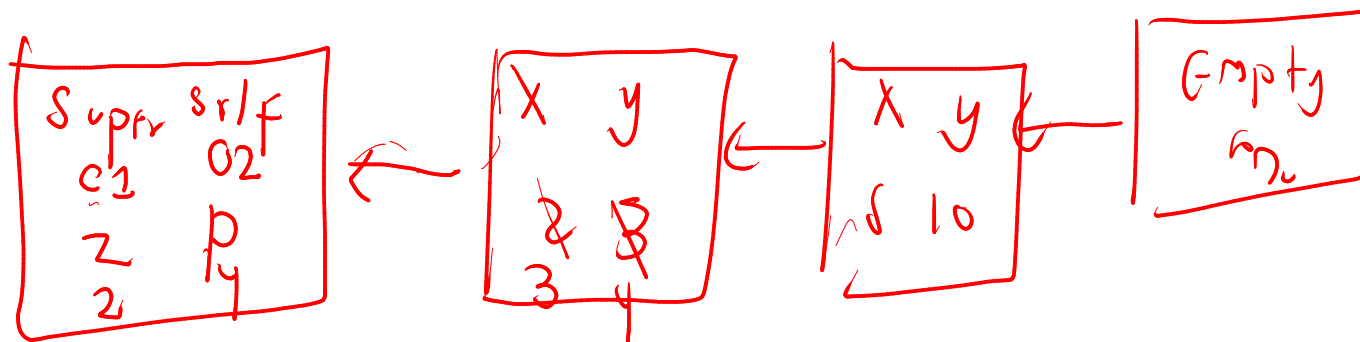
Send 02 m1()



Super m4(2)



Send 02 m2(2, 4)

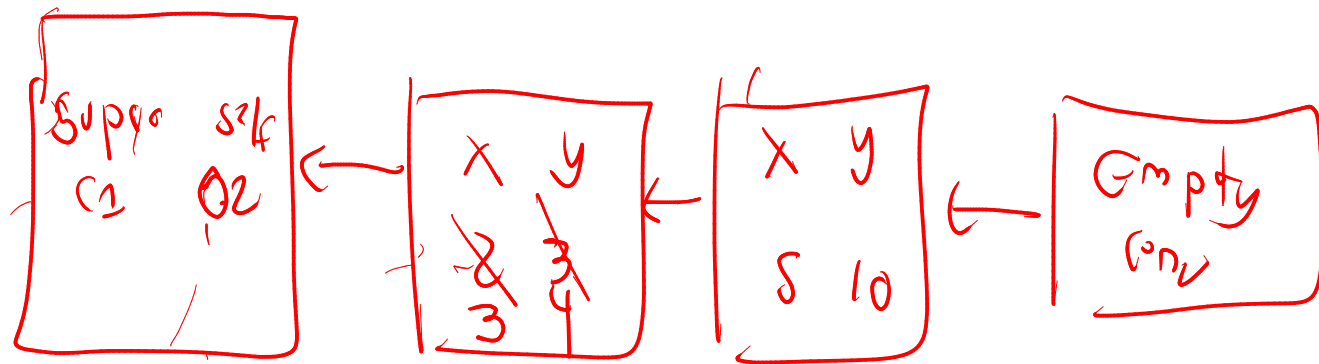


Send self m3()

Send 02 m3()

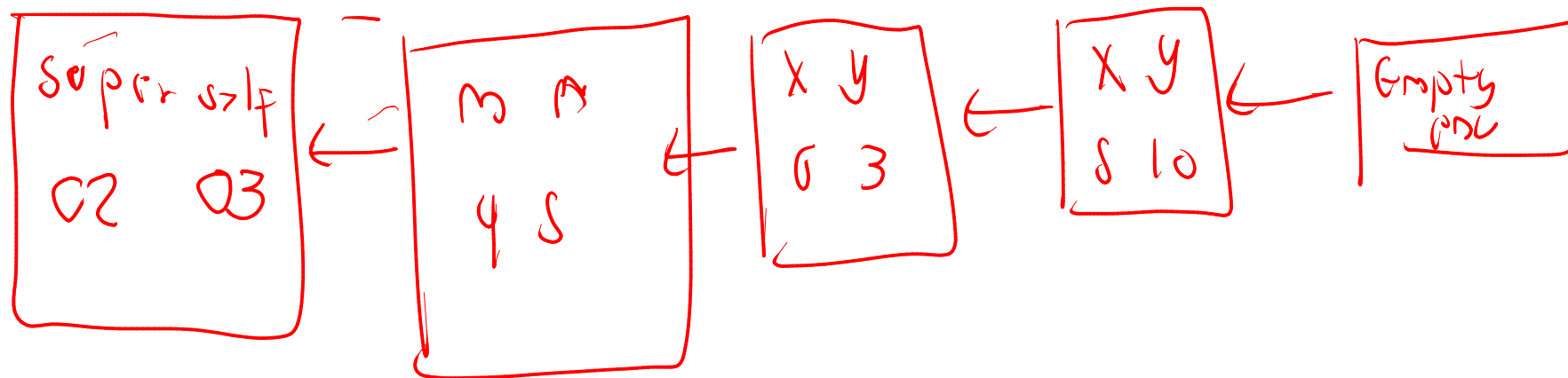
+ (2, p, x)  
+ (2, 4, 3)

Send 02 m3()

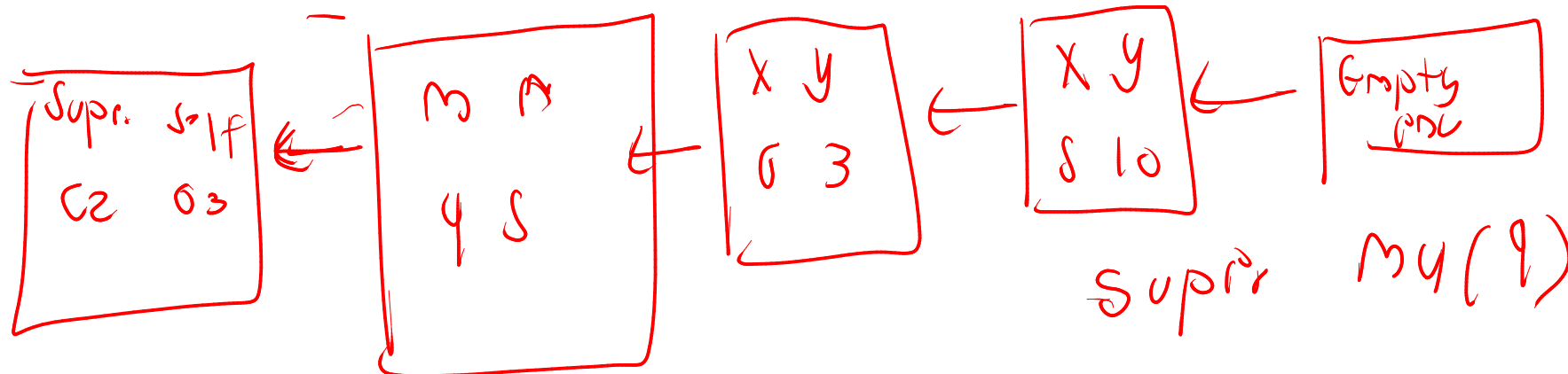


9

Send 03 m5()

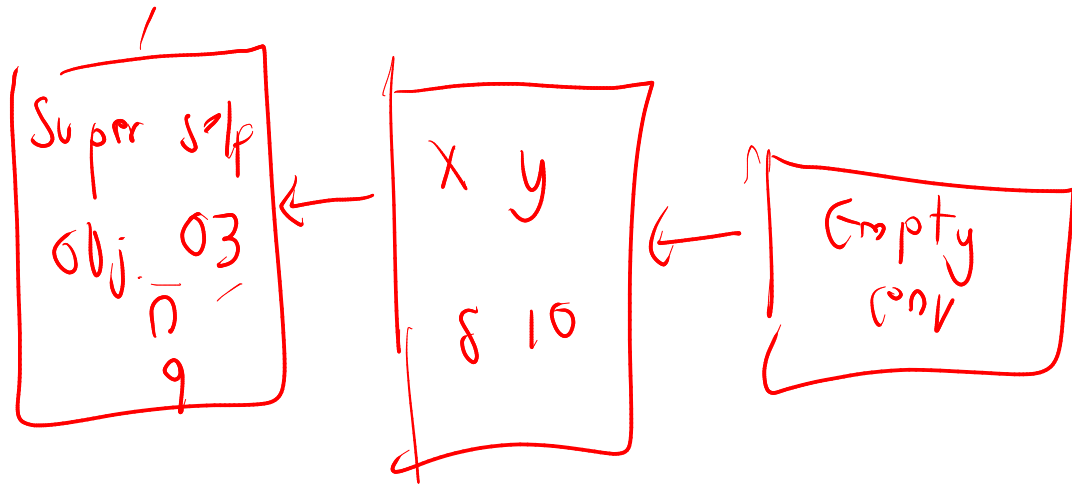


Send 03 m1()

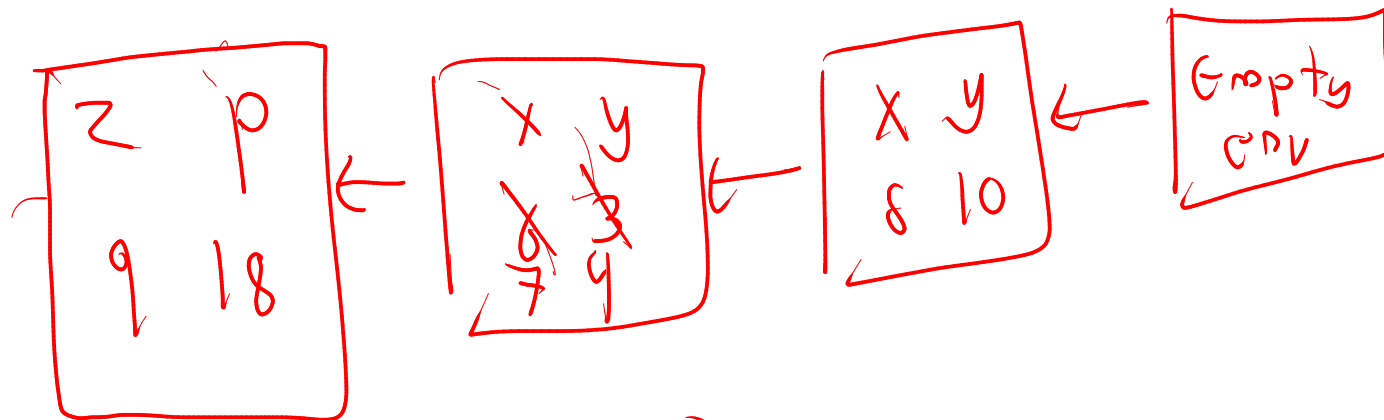


Suppr m4(9)

Super m4(9)

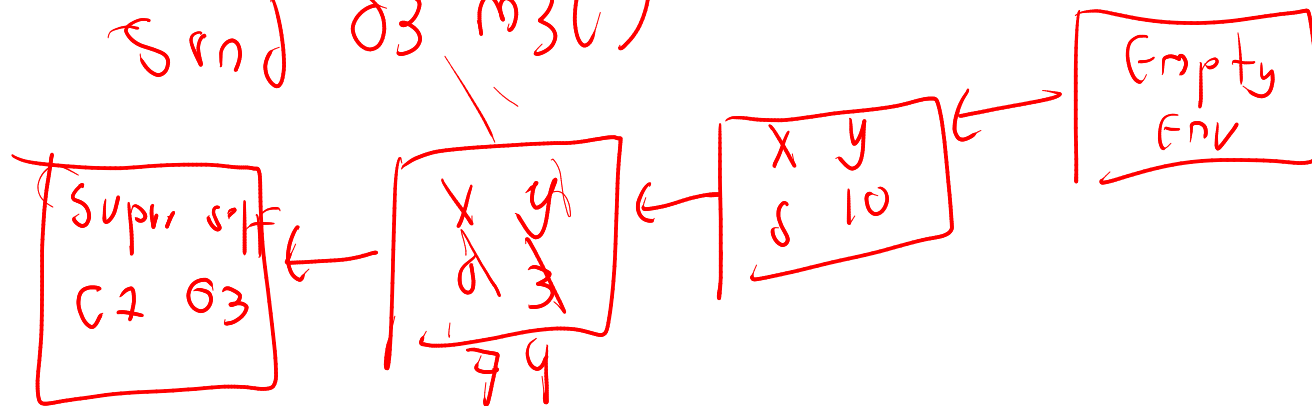


Send 03 m2(9, 18)



+ (z, p, x)  
9, 18, 7  
39

Send 03 m3()





```

class p1 extends object
  field a
  field b

  method initialize(f, g)
    begin
      set a = f;
      set b = g;
    end

  method setValor(p, q)
    begin
      set a = +(a, p);
      set b = +(b, q);
      send self getValor(a, b)
    end

  method getValor(p, q)
    +(p, +(q, a))
  end

```

```

class p2 extends p1
  field d
  method initialize(k, l, m)
    begin
      super initialize(k, l);
      set d = m;
    end

```

```

  method getValor(m, n)
    +(d, +(m, n))
  end

```

let

```

o1 = new p1(1, 2)
o2 = new p2(4, 5, 6)

```

in

let

```

a = send o1 setValor(1, 4)

```

```

b = send o2 setValor(3, 2)

```

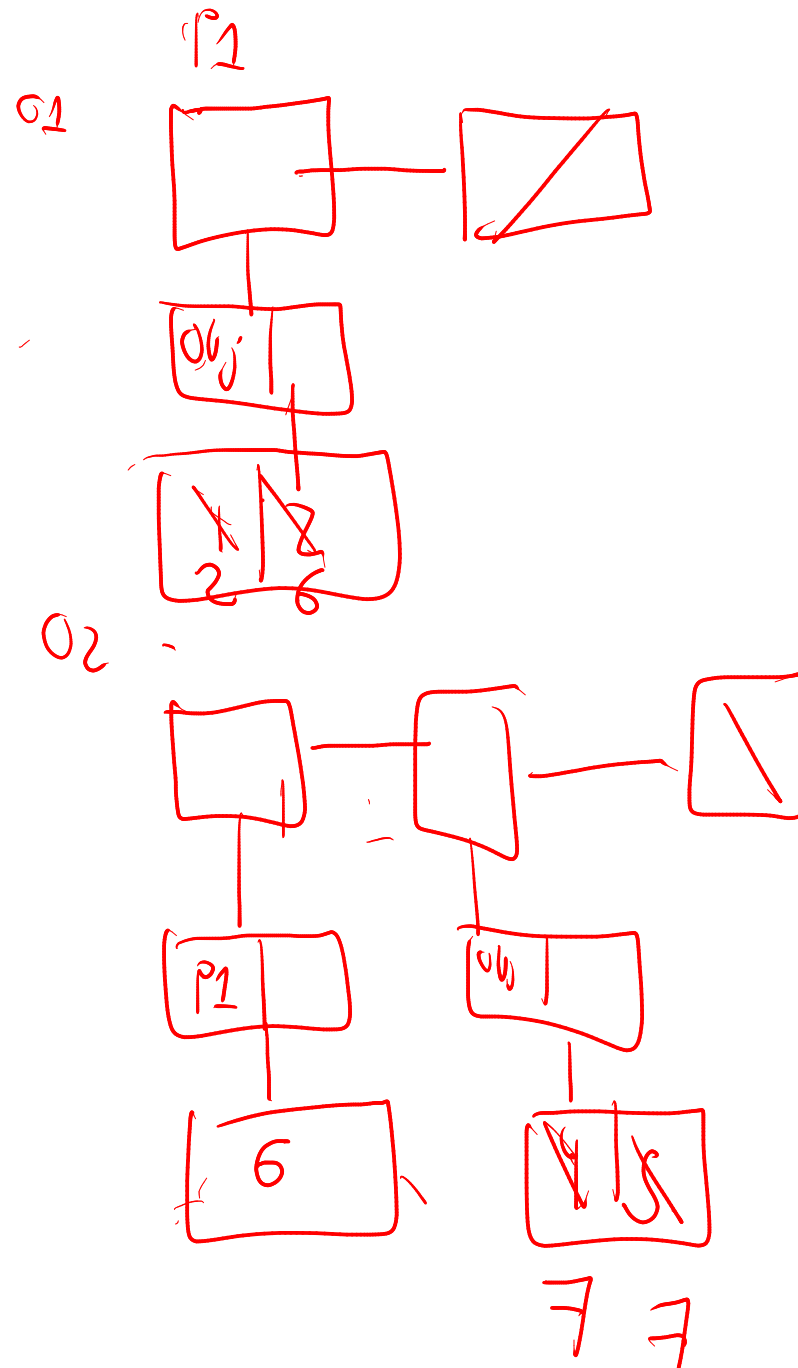
in

```

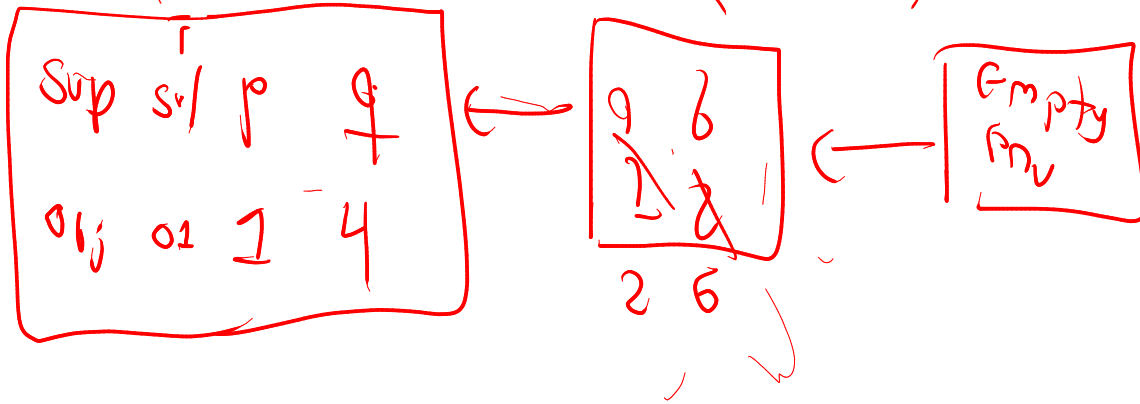
+(a, b)

```

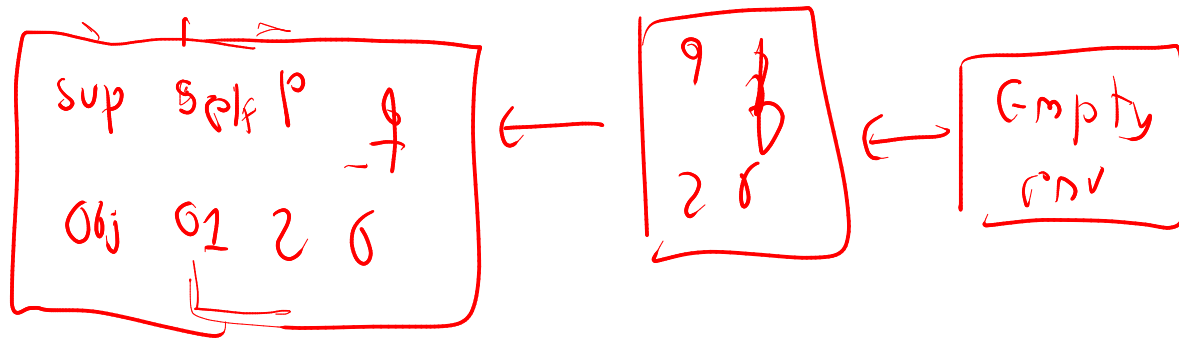
10  
20



Send 01 setValOr(1, 4)



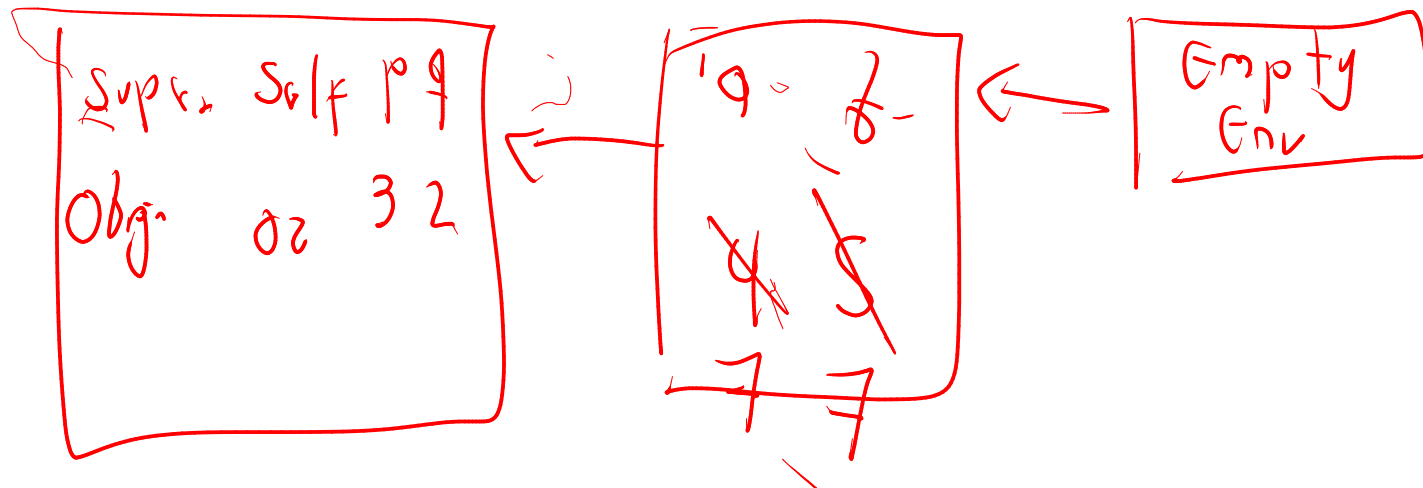
Send 01 getValOr(2, 6)



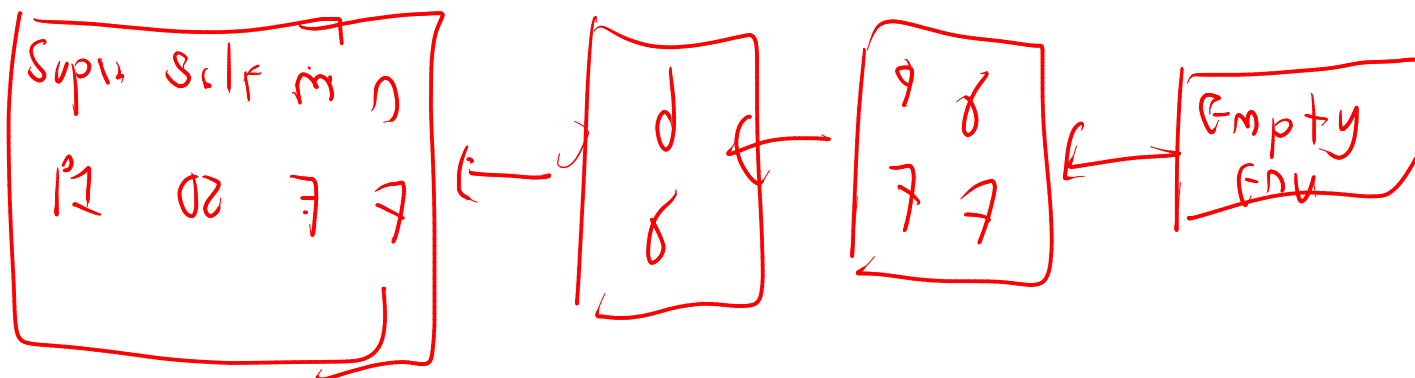
$t(p, q, a)$

$2, 6, 2 \approx 10$

Send or SetValue(3, 2)



Send or GetValue(7, 7)



$$f(d, m, n) = 6 + 7 + 7 = 20$$