



**2<sup>do</sup> Parcial - 24 de noviembre de 2011- 2a parte**

**Problema 1 (6 y 4 puntos, respectivamente)**

**Parte a)**

```
function sol = proximoNivel(v)
n = length(v);
sol = [1];
for i = 1:n-1
    sol = [sol, v(i) + v(i+1)]
end
sol = [sol, 1]
```

**Parte b)**

```
function sol = darNivel(n)
sol = [1]
for i = 2:n
    sol = proximoNivel(sol);
end
```

**Problema 2 (8 puntos)**

```
function R = Ackermann (m,n)
    if (m==0)
        R = n + 1;
    elseif (n==0)
        R = Ackermann(m-1,1);
    else
        R = Ackermann(m-1, Ackermann(m,n-1));
    end
```

**Problema 3 (12 y 5 puntos, respectivamente)**

**Parte a)**

```
function [suma,carry] = sumaCarry(a,b,N)
    %asumo mismos largos
    n = length(a);

    if(n == 0)
        suma = [];
        carry = 0;
    else
        [suma, carry] = sumaCarry(a(2:n), b(2:n), N);
        elem = a(1) + b(1) + carry;
        carry = floor(elem/N); % es equivalente a (elem - mod(elem,N))/N;
        suma = [mod(elem,N) suma];
    end
```



**Parte b)**

```
function suma = sumaBase(a,b,N)
    nA = length(a);
    nB = length(b);

    if nA < nB
        a = [zeros(1,nB - nA) a];
    else
        b = [zeros(1,nA - nB) b];
    end

    [suma carry] = sumaCarry(a,b,N);
    if carry ~= 0
        suma = [carry suma];
    end
```

**Problema 4 (5, 5 y 5 puntos, respectivamente)**

**Parte a)**

```
function max = MaxColIte (As, Ai, Aj, j)
    n = length(As);
    max = 0;

    for i = 1:n
        if (Aj(i)==j && As(i) > max)
            max = As(i);
        end
    end
```

**Parte b)**

```
function max = MaxColRec (As, Ai, Aj, j)

    n = length(As);
    if (n==0)
        max = 0;
    else
        max = MaxColRec(As(2:n), Ai(2:n), Aj(2:n),j);
        if (Aj(1) == j && As(1) > max)
            max = As(1);
        end
    end
```

**Parte c)**

```
function M = MaxTodasCol (As, Ai, Aj, m)

    n = length(As);
    M = zeros(1,m);

    for i = 1:n
        col = Aj(i);
        if As(i) > M(col)
            M(col) = As(i);
        end
    end
```