

COMPUTACIÓN 1
Instituto de Computación

Examen – 17 de Julio de 2018

Problema 1	14 ptos (1,1,2,2,2,3,3)	
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- a) 00100000
- b) 11011111
- c) No se puede representar
- d) 100000
- e) Ppts 23 y 24 de la Clase 7.
- f) 0 10000110 000000100000000000000000
- g) 258

Problema 2	10 ptos	
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```
function CF = CapitalFinal(CI,r,n)
    if n == 0
        CF = CI;
    else
        CF = (1+r) * CapitalFinal(CI,r,n-1);
    end
endfunction
```

Problema 3	12 ptos	
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```
function w = sumaRec(v)
    lv = length(v);
    if lv == 1
        w = [v(1)+lv];
    else
        w = [v(1)+lv, sumaRec(v(2:lv))];
    end
endfunction
```

Problema 4	20 ptos (10,10)	
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a)

```
function res = pertenece(v, elem)
    n = length(v);
    i = 1;
    while i <= n && v(i) ~= elem
        i = i + 1;
    endwhile
    if i == n + 1
        res = 0;
    else
        res = 1;
    endif
endfunction
```

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b)

```
function res = pertenecenTodos(v, w)
    n = length(v);
    i = 1;
    res = 1;
    while i <= n && res == 1
        res = pertenece(w, v(i));
        i = i + 1;
    endwhile
endfunction
```

Problema 5	23 (7, 9, 7) pts	
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a)

```
function valor = promedioCeldaCentral(M, i, j)
    suma = 0;
    for posx = i-1:i+1
        for posy = j-1:j+1
            suma = suma + M(posx, posy);
        endfor
    endfor
    valor = suma/9;
endfunction
```

b)

```
function valor = promedioCelda(M, i, j)
    [limx, limy] = size(M);
    suma = 0;
    cantidad = 0;
    for posx = i-1:i+1
        for posy = j-1:j+1
            if (posx >= 1) & (posy >= 1) & (posx <= limx) & (posy <= limy)
                suma = suma + M(posx, posy);
                cantidad = cantidad + 1;
            endif
        endfor
    endfor
    valor = suma/cantidad;
endfunction
```

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c)

```
function Mout = promedioMatriz(M)
    [limx, limy] = size(M);
    Mout = zeros(limx,limy);
    for i = 1:limx
        for j = 1:limy
            Mout(i,j) = promedioCelda(M,i,j);
        endfor
    endfor
endfunction
```

Problema 6	21 (11, 10) pts	
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a)

```
function [Td,Tf,Tc] = borrarRec(Ad,Af,Ac,elem)
    lA = length(Ad);
    if lA == 0
        Td = [];
        Tf = [];
        Tc = [];
    else
        [Td,Tf,Tc] = borrarRec(Ad(2:lA),Af(2:lA),Ac(2:lA),elem);
        if Ad(1) != elem
            Td = [Ad(1), Td];
            Tf = [Af(1), Tf];
            Tc = [Ac(1), Tc];
        endif
    endif
endfunction
```

b)

```
function [Td,Tf,Tc] = borrarRec(Ad,Af,Ac,elem)
    lA = length(Ad);
    Td = [];
    Tf = [];
    Tc = [];
    for i = 1:lA
        if Ad(i) != elem
            Td = [Td, Ad(i)];
            Tf = [Tf, Af(i)];
            Tc = [Tc, Ac(i)];
        endif
    endfor
endfunction
```