Práctica 4

Ksenia Myakisheva

December 14, 2022

1 El desarrollo del cálculo de la menor codificación del programa WHILE "diverger".

El programa sería el siguiente:

$diverger = (0, s)$
s :

```
1 X1 := X1 + 1;
2 while X1 ≠ 0 do
3     X1 := X1;
4 od
```

Usando los scripts de Octave, tenemos que la codificación del programa equivale a $while2N(Q) = 9678230627$

```
>> WHILE2N(0, "X1=X1+1;while X1≠0 do X1=X1 od")
ans =  9678230627
>> N2WHILE(9678230627)
ans = (0, X1=X1+1; while X1≠0 do X1=X1 od)
```

2 El código Octave que hace un print de todos los vectores, y una captura de ejemplo de ejecución.

```
function program = TodosLosVectores
  i = 0;

  while true
    ["Vector num " num2str(i) ": [ " num2str(godeldecoding(i)) " ]"]
    i = i + 1;

  endwhile
 end
```

```
>> TodosLosVectores
ans = Vector num 0: [  ]
ans = Vector num 1: [ 0 ]
ans = Vector num 2: [ 0  0 ]
ans = Vector num 3: [ 1 ]
ans = Vector num 4: [ 0  0  0 ]
ans = Vector num 5: [ 1  0 ]
ans = Vector num 6: [ 2 ]
ans = Vector num 7: [ 0  0  0  0 ]
ans = Vector num 8: [ 1  0  0 ]
ans = Vector num 9: [ 0  1 ]
ans = Vector num 10: [ 3 ]
ans = Vector num 11: [ 0  0  0  0  0 ]
ans = Vector num 12: [ 1  0  0  0 ]
ans = Vector num 13: [ 0  1  0 ]
ans = Vector num 14: [ 2  0 ]
ans = Vector num 15: [ 4 ]
ans = Vector num 16: [ 0  0  0  0  0  0 ]
ans = Vector num 17: [ 1  0  0  0  0 ]
ans = Vector num 18: [ 0  1  0  0 ]
ans = Vector num 19: [ 2  0  0 ]
ans = Vector num 20: [ 1  1 ]
ans = Vector num 21: [ 5 ]
ans = Vector num 22: [ 0  0  0  0  0  0  0 ]
ans = Vector num 23: [ 1  0  0  0  0  0 ]
ans = Vector num 24: [ 0  1  0  0  0 ]
ans = Vector num 25: [ 2  0  0  0 ]
ans = Vector num 26: [ 1  1  0 ]
ans = Vector num 27: [ 0  2 ]
ans = Vector num 28: [ 6 ]
ans = Vector num 29: [ 0  0  0  0  0  0  0  0 ]
ans = Vector num 30: [ 1  0  0  0  0  0  0 ]
ans = Vector num 31: [ 0  1  0  0  0  0 ]
ans = Vector num 32: [ 2  0  0  0  0 ]
ans = Vector num 33: [ 1  1  0  0 ]
ans = Vector num 34: [ 0  0  1 ]
ans = Vector num 35: [ 3  0 ]
ans = Vector num 36: [ 7 ]
```

3 El código Octave que hace un print de todos los programas WHILE, y una captura de ejemplo de ejecución.

```
function program = TodosLosProgramas
  i = 0;
  while true
    N2WHILE(i)
    i = i + 1;
  endwhile

 end
```

```
>> TodosLosProgramas
ans = (0, X1=0)
ans = (1, X1=0)
ans = (0, X1=0; X1=0)
ans = (2, X1=0)
ans = (1, X1=0; X1=0)
ans = (0, X1=X1)
ans = (3, X1=0)
ans = (2, X1=0; X1=0)
ans = (1, X1=X1)
ans = (0, X1=0; X1=0; X1=0)
ans = (4, X1=0)
ans = (3, X1=0; X1=0)
ans = (2, X1=X1)
ans = (1, X1=0; X1=0; X1=0)
ans = (0, X1=X1; X1=0)
ans = (5, X1=0)
ans = (4, X1=0; X1=0)
ans = (3, X1=X1)
ans = (2, X1=0; X1=0; X1=0)
ans = (1, X1=X1; X1=0)
ans = (0, X1=X1+1)
ans = (6, X1=0)
ans = (5, X1=0; X1=0)
ans = (4, X1=X1)
ans = (3, X1=0; X1=0; X1=0)
ans = (2, X1=X1; X1=0)
ans = (1, X1=X1+1)
ans = (0, X1=0; X1=0; X1=0; X1=0)
ans = (7, X1=0)
ans = (6, X1=0; X1=0)
ans = (5, X1=X1)
ans = (4, X1=0; X1=0; X1=0)
ans = (3, X1=X1; X1=0)
ans = (2, X1=X1+1)
ans = (1, X1=0; X1=0; X1=0; X1=0)
ans = (0, X1=X1; X1=0; X1=0)
ans = (8, X1=0)
ans = (7, X1=0; X1=0)
ans = (6, X1=X1)
ans = (5, X1=0; X1=0; X1=0)
ans = (4, X1=X1; X1=0)
```