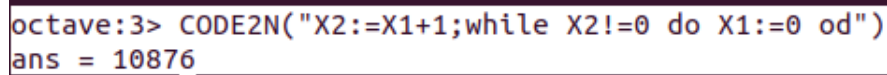# Practica 4

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1. Create the simplest WHILE program that computes the diverge function (with zero arguments) and compute the codification of its code

$Q = (0,s)$

s:

$X_2 := X_1 + 1;$
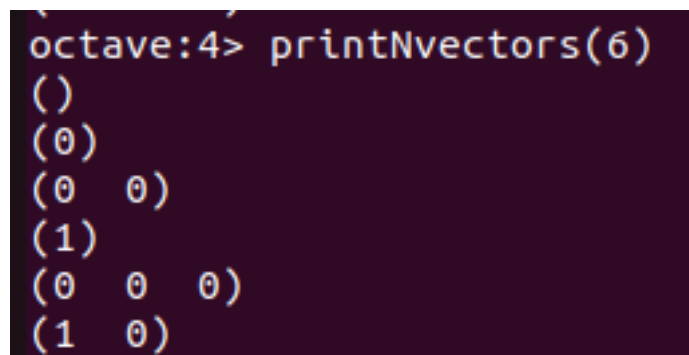**while** $X_2 \neq 0$ **do**
  $X_1 := 0$
od

```
octave:3> CODE2N("X2:=X1+1;while X2!=0 do X1:=0 od")
ans = 10876
```

Figura 1:

2. Create an Octave script that enumerates all the vectors.

```
    function printNvectors(N)
for i=0:N-1
disp([( num2str(godeldecoding(i)))])
end
end
```
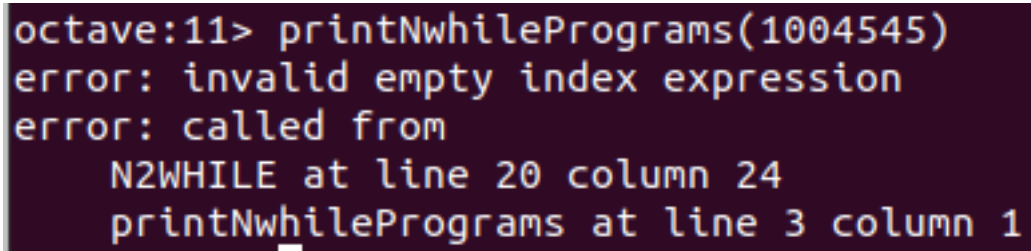

Figura 2:

3. Create an Octave script that enumerates all the WHILE programs.

```
function printNwhilePrograms(N)
```

```
for i=1:inf
    N2WHILE(i)
end

end
```



```
octave:11> printNwhilePrograms(1004545)
error: invalid empty index expression
error: called from
    N2WHILE at line 20 column 24
    printNwhilePrograms at line 3 column 1
```

Figura 3: