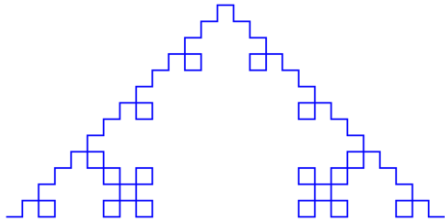# TAREA 4. FRACTALES

hola

Optativa Python
31 de agosto del 2025
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1. Ejemplo 4


```
import turtle
turtle.penup()
turtle.goto(-300,-300)
turtle.pendown()
rr='F'
r1='F+F-F-F+F'
teta=90
numiter=3
for i in range(numiter):
 tem=''
 for ss in rr:
  if ss=='F':
   tem= tem+r1
  else:
   tem=tem+ss
 rr= tem
S=rr
for ss in S:
   if ss=='F':
      turtle.forward(30)
```
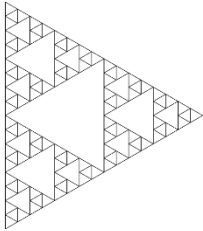
```python
    elif ss=='+':
        turtle.left(teta)
    else:
        turtle.right(teta)
```

2. Ejemplo 5

Código recentrado:


```python
import turtle
turtle.penup()
turtle.goto(-300,200)
turtle.pendown()
rr='F-G-G'
r1='F-G+F+G-F'
r2='GG'
teta=120
numiter=4
for i in range(numiter):
    tem=''
    for ss in rr:
        if ss=='F':
            tem= tem+r1
        elif ss=='G':
            tem=tem+r2
        else:
            tem=tem+ss
```
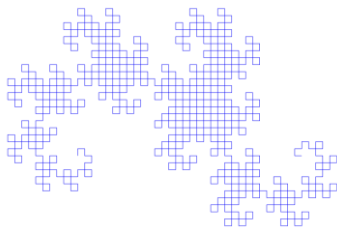
```python
 rr= tem
S=rr
for ss in S:
    if ss=='F' or ss=='G':
        turtle.forward(30)
    elif ss=='-':
        turtle.right(teta)
    else:
        turtle.left(teta)
```

3. Ejemplo 6


```python
import turtle
turtle.penup()
turtle.goto(-500,-100)
turtle.pendown()
rr='F'
r1='F+G'
r2='F*G'
teta=90
numiter=10
for i in range(numiter):
 tem=''
 for ss in rr:
  if ss=='F':
```
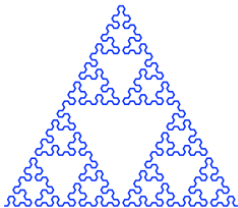
```
        tem= tem+r1
    elif ss=='G':
     tem=tem+r2
    else:
     tem=tem+ss
  rr= tem
S=rr
for ss in S:
   if ss=='F'or ss=='G':
      turtle.forward(10)
   elif ss=='+':
      turtle.left(teta)
   else:
      turtle.right(teta)
```

4. Ejemplo extra


```
import turtle
turtle.penup()
turtle.goto(-300,-300)
turtle.pendown()
rr='A'
r1='B-A-B'
r2='A+B+A'
teta=60
```

```python
numiter=6
for i in range(numiter):
 tem=''
 for ss in rr:
  if ss=='A':
   tem= tem+r1
  elif ss=='B':
   tem=tem+r2
  else:
   tem=tem+ss
 rr= tem
S=rr
for ss in S:
    if ss=='A'or ss=='B':
        turtle.forward(10)
    elif ss=='+':
        turtle.left(teta)
    else:
        turtle.right(teta)
```