

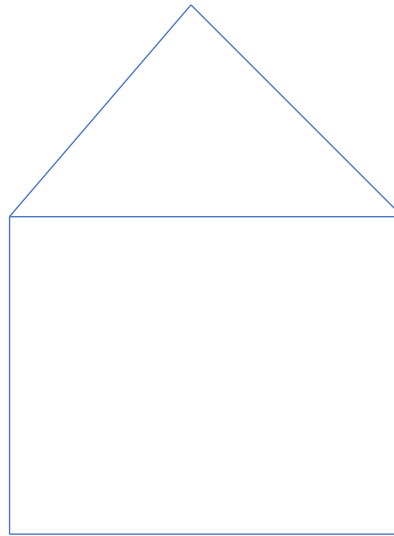
Inleiding Programmeren

For-loop

Toon Calders

toon.calders@uantwerpen.be

Een huisje tekenen ...

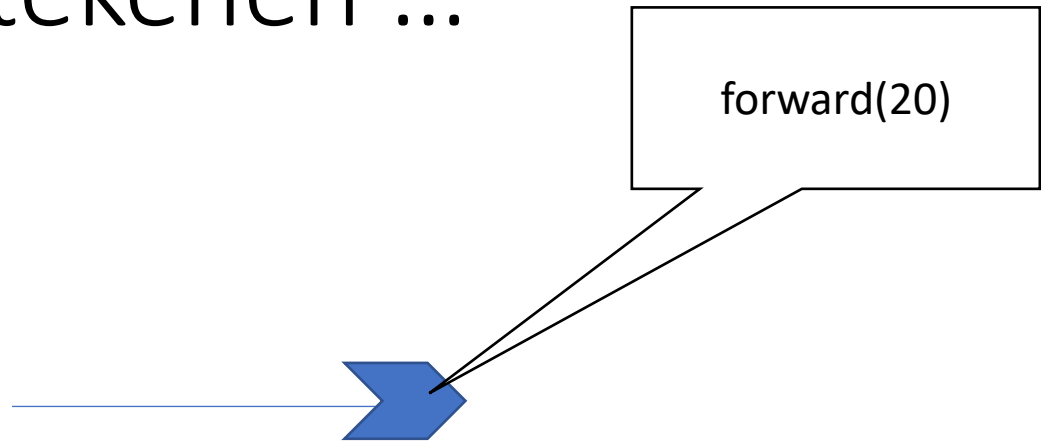


Een huisje tekenen ...

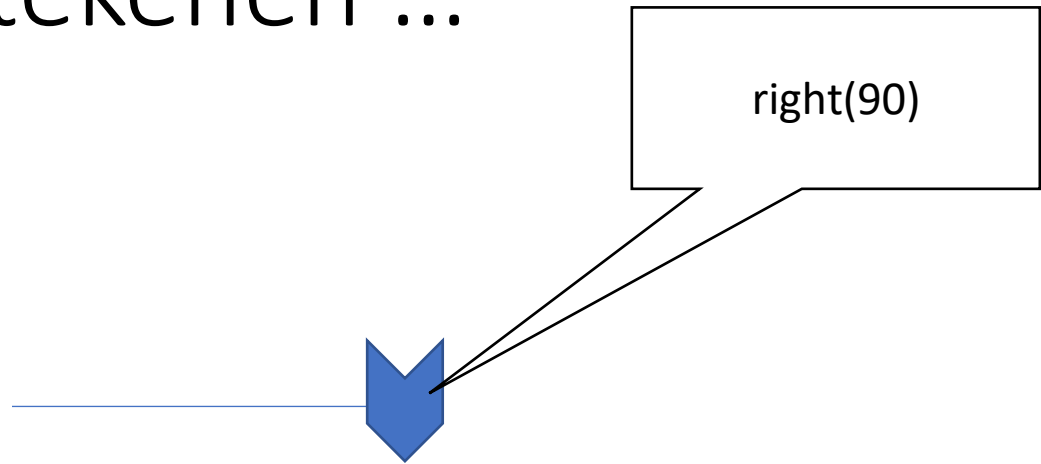


Schildpad (turtle) met
een pen

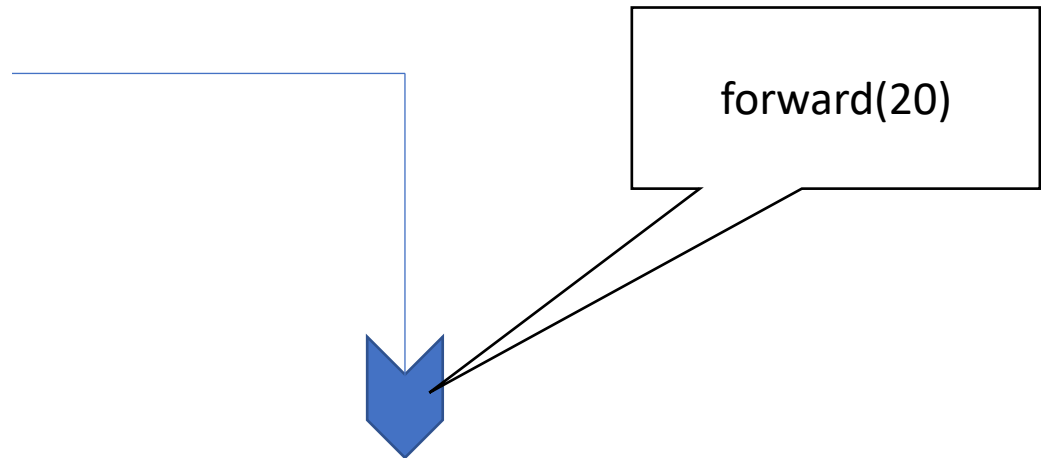
Een huisje tekenen ...



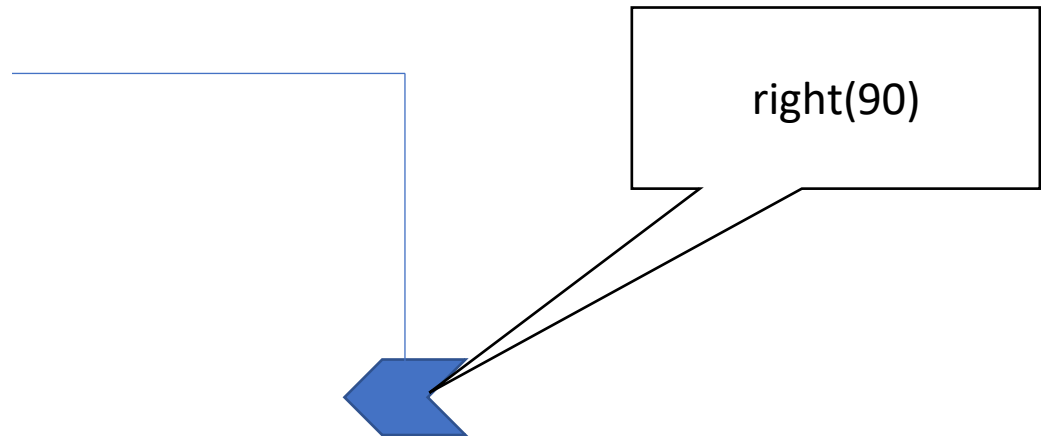
Een huisje tekenen ...



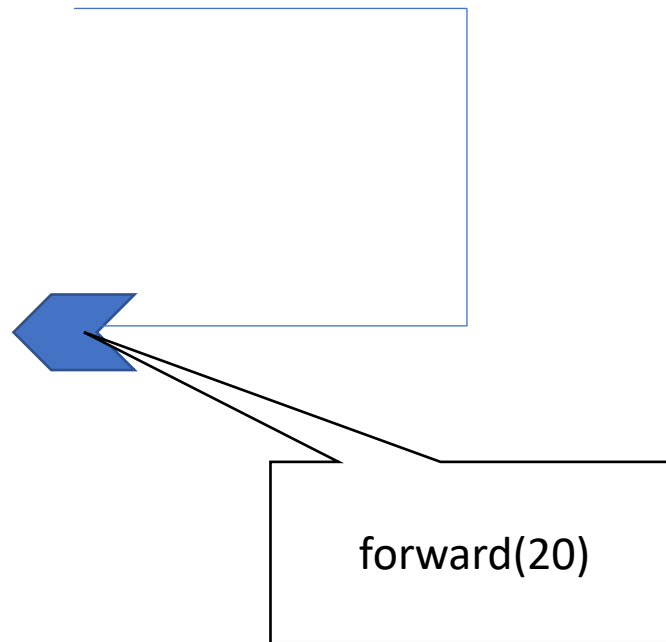
Een huisje tekenen ...



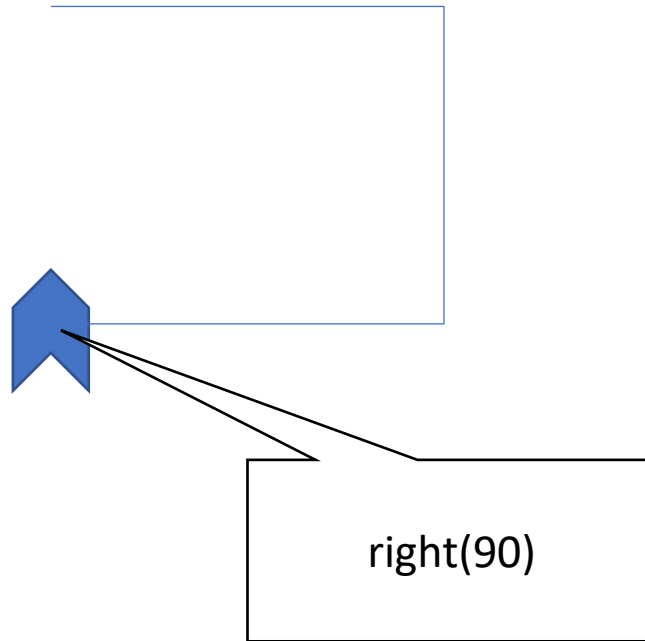
Een huisje tekenen ...



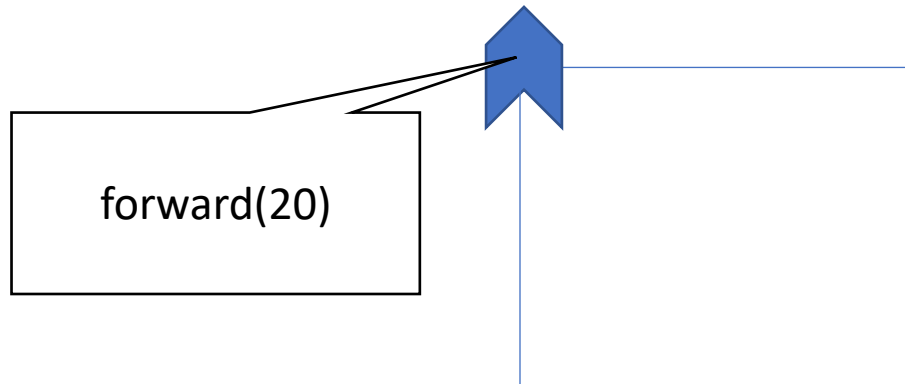
Een huisje tekenen ...



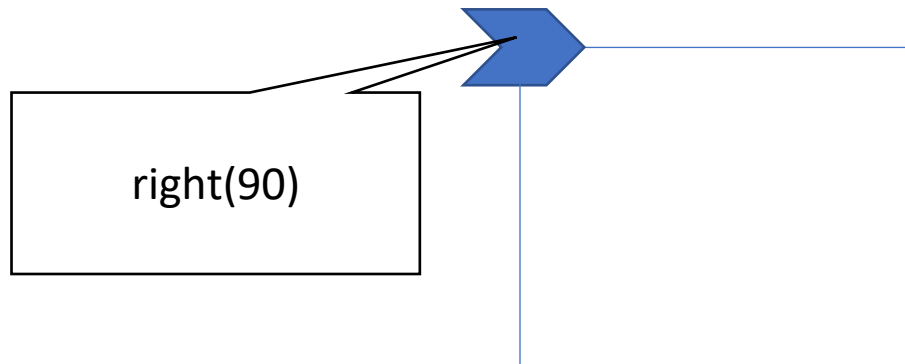
Een huisje tekenen ...



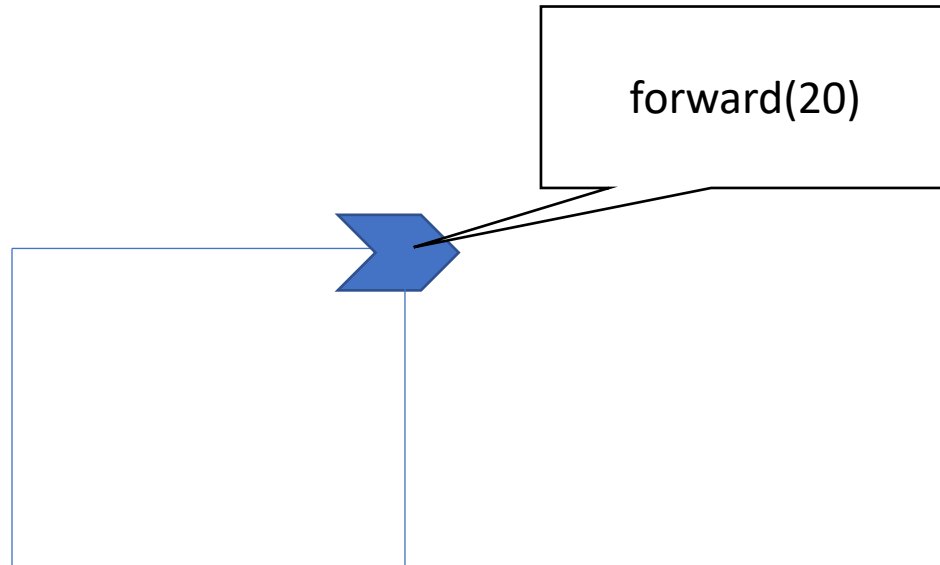
Een huisje tekenen ...



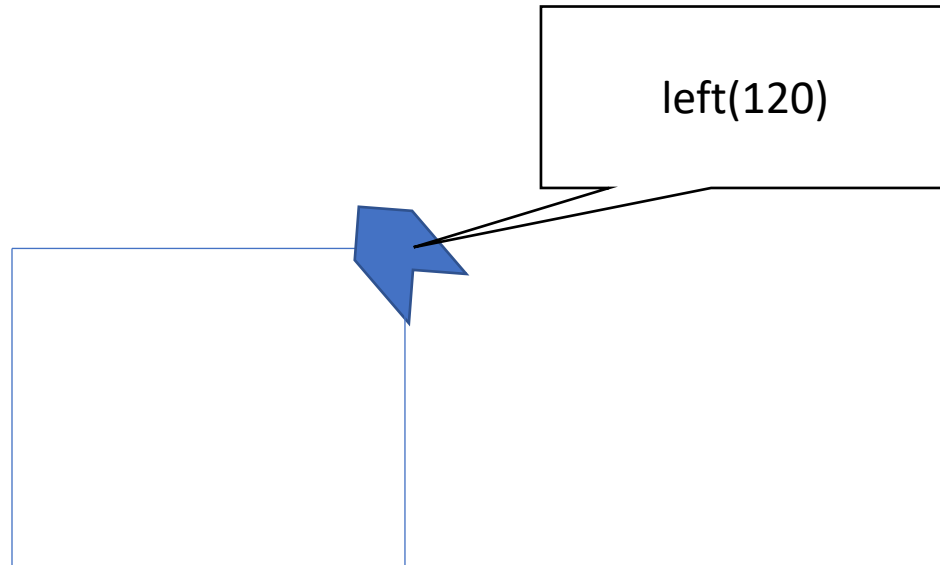
Een huisje tekenen ...



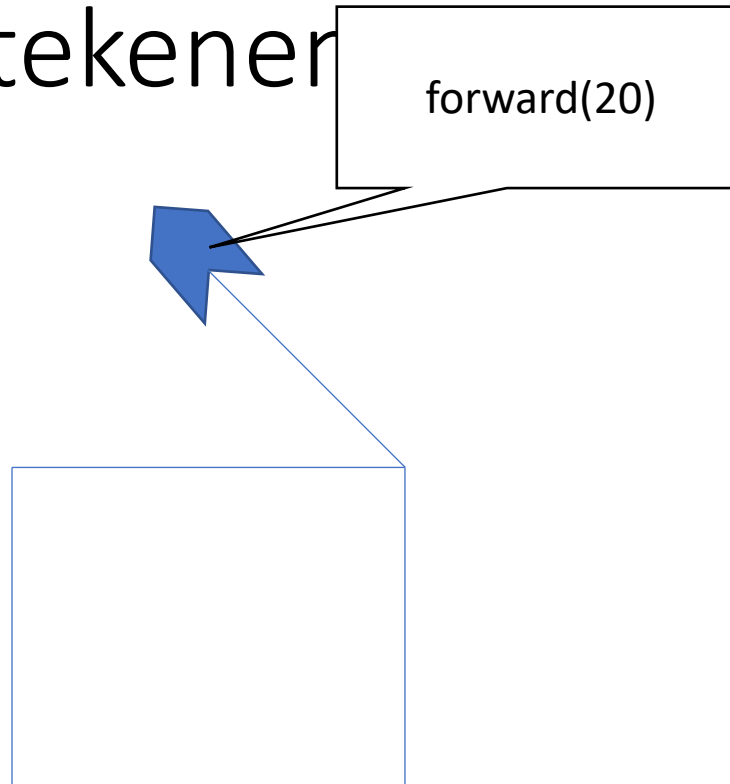
Een huisje tekenen ...



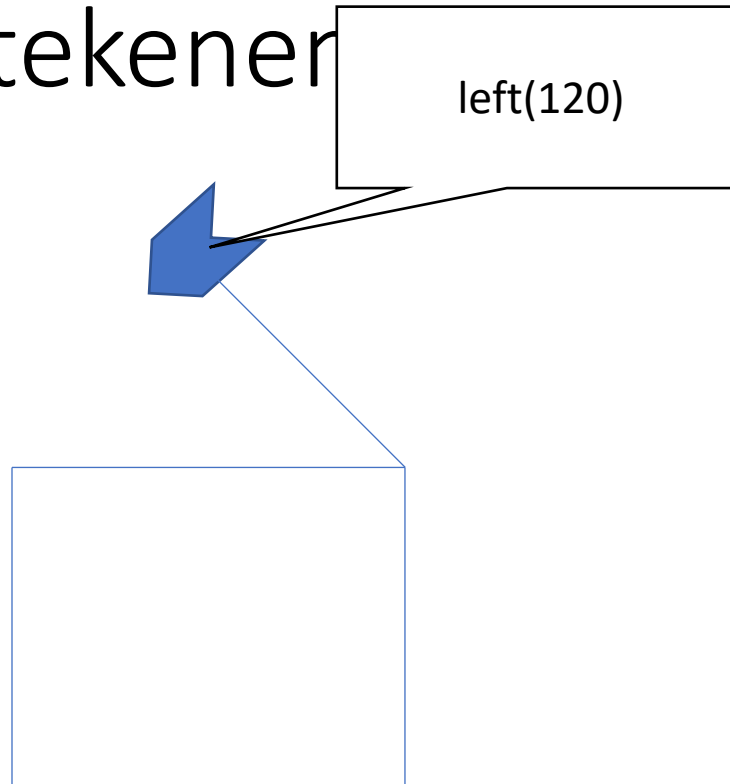
Een huisje tekenen ...



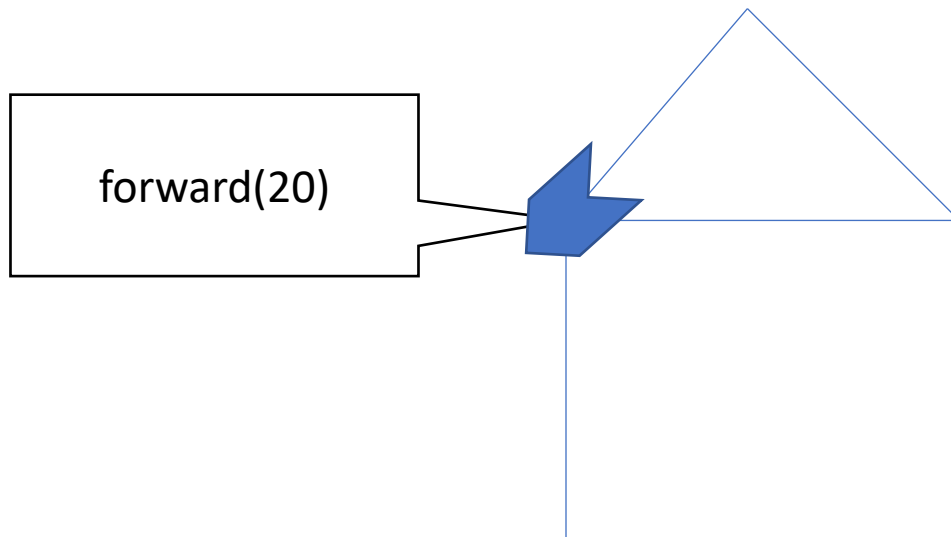
Een huisje tekener



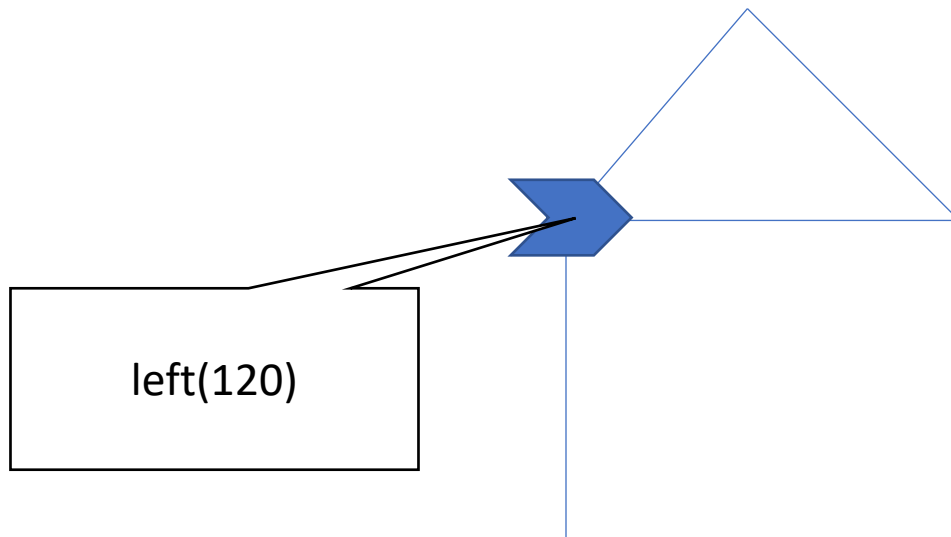
Een huisje tekener



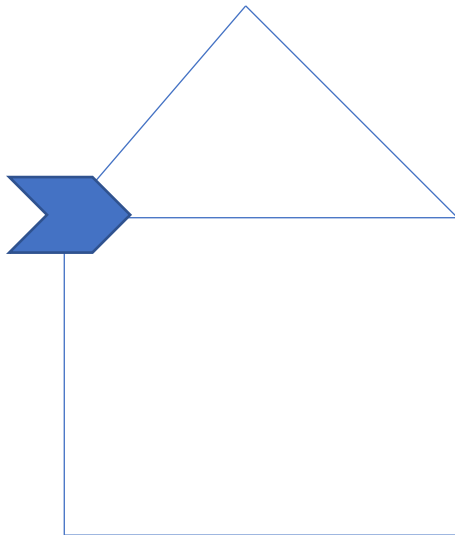
Een huisje tekenen ...



Een huisje tekenen ...



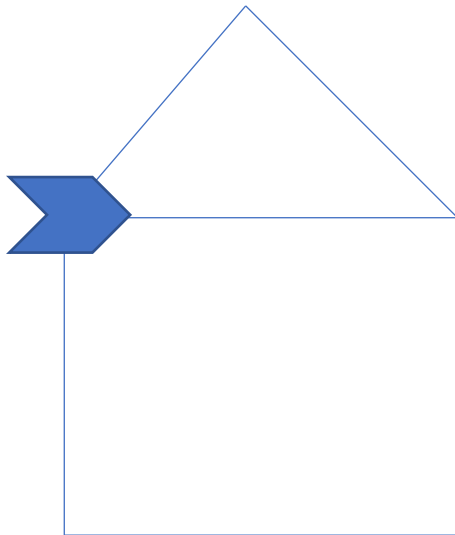
Een huisje tekenen ...



```
from turtle import *
```

```
forward(20)  
right(90)  
forward(20)  
right(90)  
forward(20)  
right(90)  
forward(20)  
right(90)  
forward(20)  
left(120)  
forward(20)  
left(120)  
forward(20)  
left(120)
```

Herhaling ...



from turtle import *

```
forward(20)  
right(90)
```

```
forward(20)  
right(90)
```

```
forward(20)  
right(90)
```

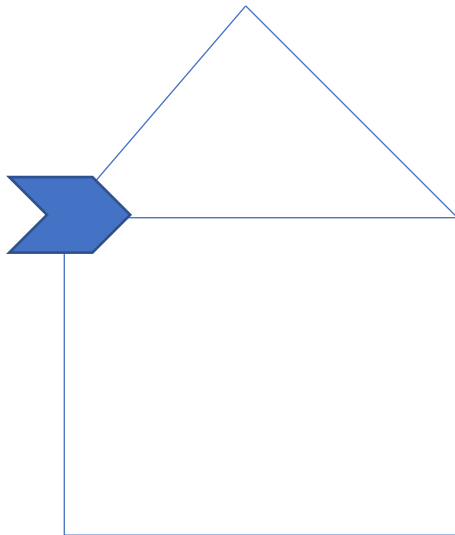
```
forward(20)  
right(90)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

For-loop



```
from turtle import *
```

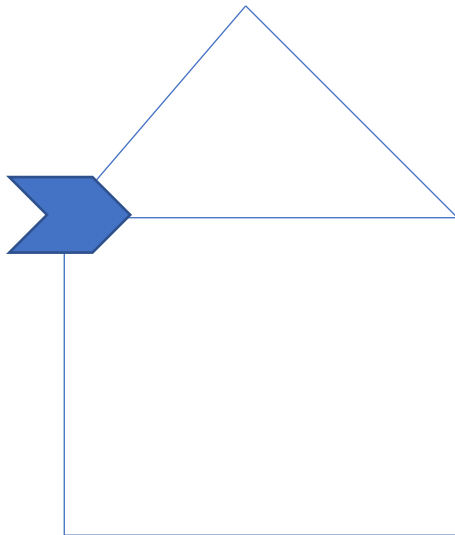
```
for i in range(4):  
    forward(50)  
    right(90)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

Herhaling ...



from turtle import *

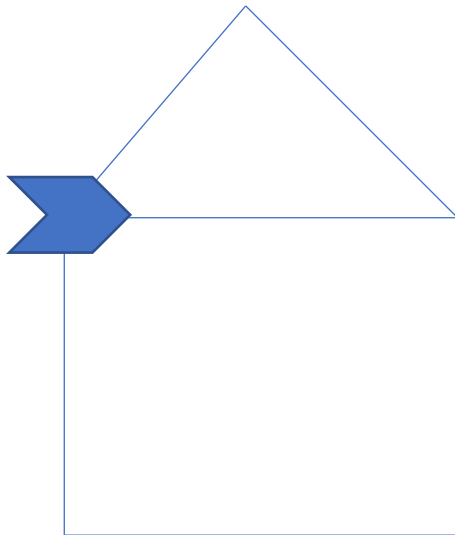
```
for i in range(4):  
    forward(50)  
    right(90)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

```
forward(20)  
left(120)
```

For-loop



```
from turtle import *
```

```
for i in range(4):  
    forward(50)  
    right(90)
```

```
for i in range(3):  
    forward(50)  
    left(120)
```

For-loop versus while-loop

- We kunnen ook een while-loop gebruiken:

from turtle import *

```
for i in range(4):  
    forward(50)  
    right(90)  
for i in range(3):  
    forward(50)  
    left(120)
```

from turtle import *

```
i=0  
while i<4:  
    forward(50)  
    right(90)  
    i=i+1
```

```
i=0  
while i<3:  
    forward(50)  
    left(120)  
    i=i+1
```

For-loop versus while-loop

- Exacte betekenis van *for* en *range*:

```
for i in range(4):  
    print(i)
```

```
i=0  
while i<4:  
    print(i)  
    i=i+1
```

0
1
2
3

For-loop versus while-loop

- Exacte betekenis van *for* en *range*:

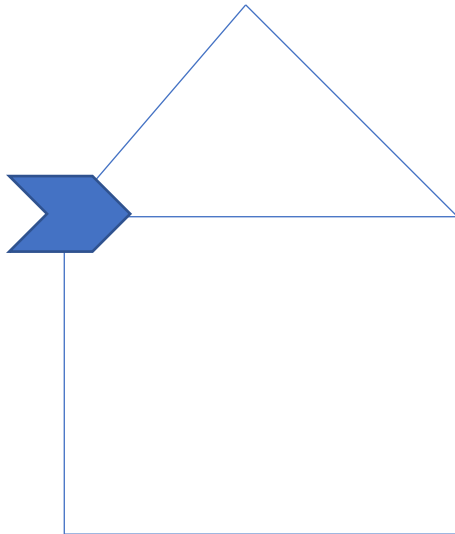
```
for i in range(2,10,3):  
    print(i)
```

```
i=2  
while i<10:  
    print(i)  
    i=i+3
```

2
5
8

Variabelen

- Variabele voor de grootte



```
from turtle import *
```

```
w=int(input("Grootte:"))
```

```
for i in range(4):
```

```
    forward(w)
```

```
    right(90)
```

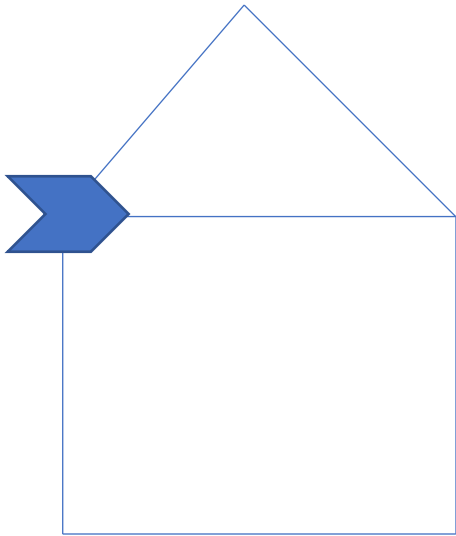
```
for i in range(3):
```

```
    forward(w)
```

```
    left(120)
```

Code herhalen

- We kunnen elk stukje code herhalen:



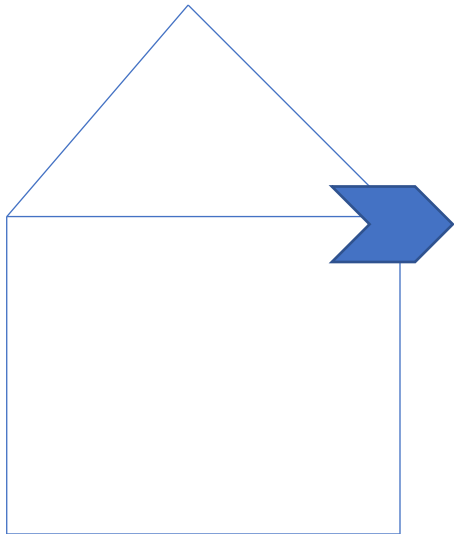
```
from turtle import *
```

```
for i in range(4):  
    forward(50)  
    right(90)  
for i in range(3):  
    forward(50)  
    left(120)
```

1 huis

Code herhalen

- We kunnen elk stukje code herhalen:



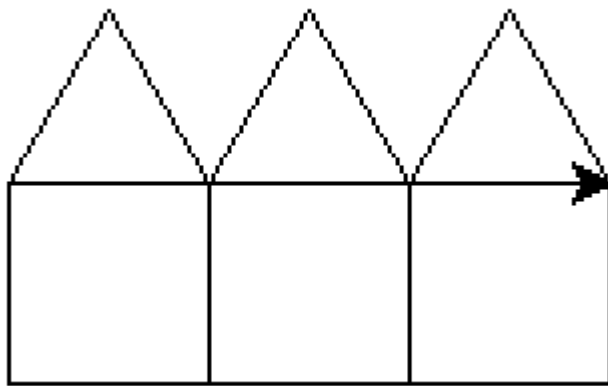
```
from turtle import *
```

```
for i in range(4):  
    forward(50)  
    right(90)  
for i in range(3):  
    forward(50)  
    left(120)  
forward(50)
```

1 huis

Code herhalen

- We kunnen elk stukje code herhalen:



from turtle import *

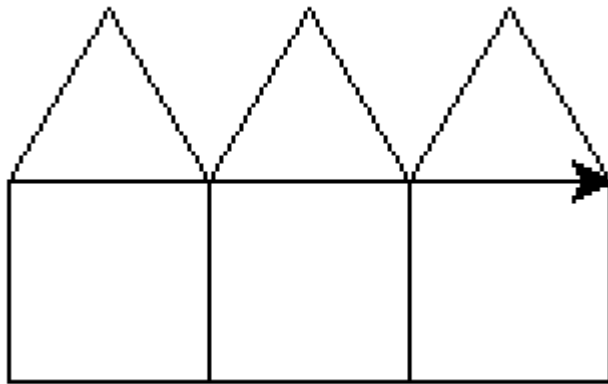
```
for k in range(3):  
    for i in range(4):  
        forward(50)  
        right(90)  
    for i in range(3):  
        forward(50)  
        left(120)  
    forward(50)
```

1 huis

3 huizen

Code herhalen

- We kunnen elk stukje code herhalen:



from turtle import *

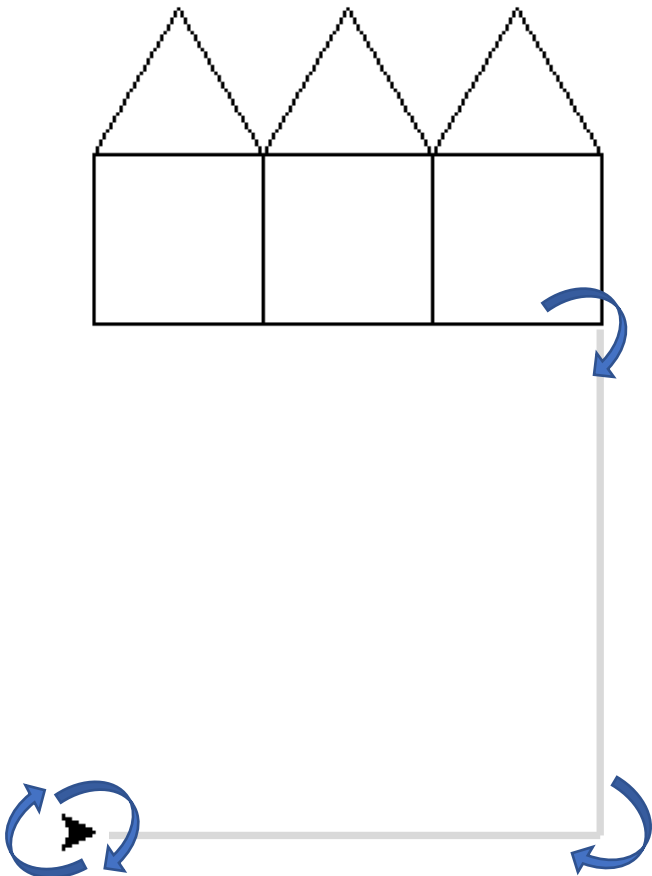
```
for k in range(3):  
    for i in range(4):  
        forward(50)  
        right(90)  
    for i in range(3):  
        forward(50)  
        left(120)  
    forward(50)
```

!! belangrijk !!
Gebruik **verschillende**
variabelen

1 huis

3 huizen

Code herhalen

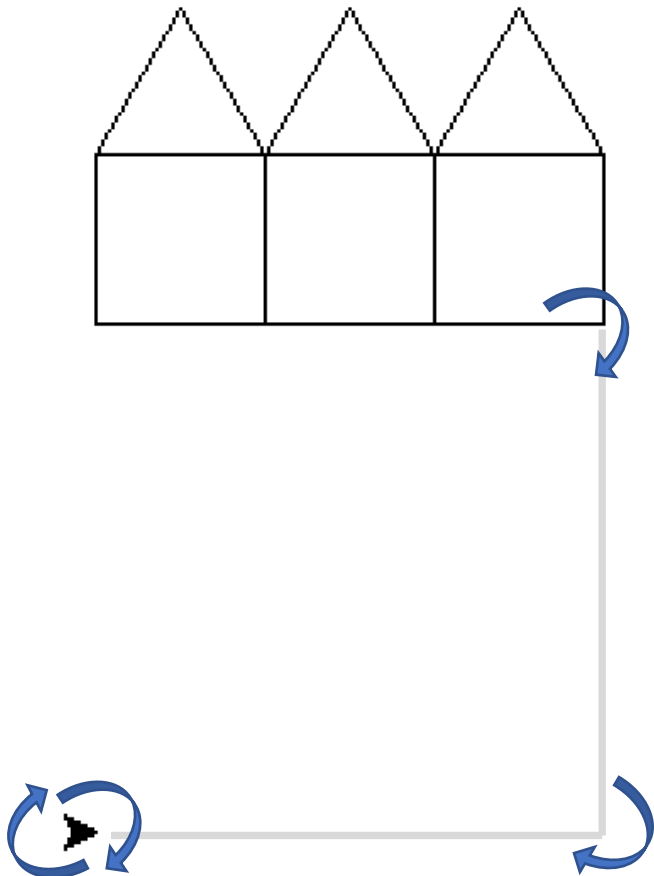


```
from turtle import *
```

```
for k in range(3):  
    for i in range(4):  
        forward(50)  
        right(90)  
    for i in range(3):  
        forward(50)  
        left(120)  
    forward(50)
```

```
penup()  
right(90)  
forward(200)  
right(90)  
forward(150)  
right(180)  
pendown()
```

Code herhalen



```
from turtle import *
```

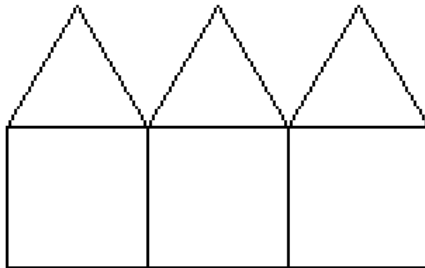
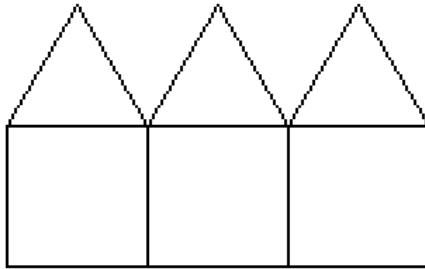
```
for k in range(3):  
    for i in range(4):  
        forward(50)  
        right(90)  
    for i in range(3):  
        forward(50)  
        left(120)  
    forward(50)
```

1 blok

```
penup()  
right(90)  
forward(200)  
right(90)  
forward(150)  
right(180)  
pendown()
```

Beweeg
om
volgend
blok te
starten

Code herhalen



```
from turtle import *
```

```
for x in range(2):
```

```
    for k in range(3):  
        for i in range(4):  
            forward(50)  
            right(90)  
        for i in range(3):  
            forward(50)  
            left(120)  
        forward(50)
```

1 blok

```
    penup()  
    right(90)  
    forward(200)  
    right(90)  
    forward(150)  
    right(180)  
    pendown()
```

Beweeg
om
volgend
blok te
starten

Opdracht samen

- Vraag aan de gebruiker:
 - Aantal huizen per rij
 - Aantal rijen
 - Per plaats: staat er een huis op deze plaats?
(dit gebeurt terwijl we tekenen)

Opdracht

- Teken volgend patroon met turtle:

