```python
# unter ownturtle.py  speichern,
# damit der Programmtext eingebunden werden kann
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from tkinter import *
from math import *

master = Tk( )
w = Canvas(master, width=1500, height=800, bg='gray')
w.pack( )
winkel = 0
x_old = 300
y_old = 200
def ball(diameter):
        global x_old,y_old
        w.create_oval(x_old-
diameter/2,y_old,x_old+diameter/2,y_old+diameter,fill="red",outline="red")
def goto(x,y,degree):
    global x_old, y_old,winkel
    x_old = x
    y_old = y
    winkel= degree
def move(entfernung):
    global x_old, y_old
    radiant = -1*pi/180*winkel
    x_new = x_old + entfernung * cos(radiant)
    y_new = y_old + entfernung * sin(radiant)
    w.create_line(x_old,y_old,x_new,y_new, fill="black", width=1)
    x_old = x_new
    y_old = y_new
def turn(Drehwinkel):
    global winkel
    winkel = winkel + Drehwinkel
    if winkel >= 360:
        winkel = winkel-360
    if winkel <= -360:
        winkel = winkel+360
def getx():
    global x_old
    return x_old
def gety():
    global y_old
    return y_old
def getangle():
    global winkel
    return winkel
```

```
#  hier beginnt das Programm

import ownturtle
a = "F[-FFb]F[+FFb]FFB"
stack = []
for k in range(2):
      a=a.replace("F",a)
ownturtle.goto( 750,800,90)
for k in range(len(a)):
      if a[k]== "F":
             ownturtle.move(8)
      elif a[k] == "-":
             ownturtle.turn(40)
      elif a[k] == "+":
             ownturtle.turn(-40)
      elif a[k] == "[":
             stack.append(ownturtle.getangle())
             stack.append(ownturtle.gety())
             stack.append(ownturtle.getx())
      elif a[k] == "]":
             ownturtle.goto(stack.pop(),stack.pop(),stack.pop())
      elif a[k] == "B":
             ownturtle.ball(8)
      elif a[k] == "b":
             ownturtle.ball(2)
      else:
             print("Error: unknown command")
```