Unterrichts-Ablauf:

Dauer	Thema	Schueler Aktivitaet
3 Minuten	Einfuehrung in das Thema mit “01-intro.py”	Zuhoeren
10 Minuten	Vorstellung von Gueligkeitsbereichen mit “02-scopes/”	Zuhoeren und wenn noetig Fragen stellen
10 Minuten	Erklaerung des ‘return’ Befehls mit “02-scopes/04-hoch.png” und “./03-loesung.py”	Zuhoeren und wenn noetig Fragen stellen
15-20 Minuten	Experimentieren mit “./04-example/01-beispiel.py”	Verschiedende Anwendungen von Gueltigkeitsbereichen und dem ‘return’ Befehl ausprobieren
10 Minuten	Vorstellung eines echten Beispiels anhand von “./04-example/example.py”	Zuhoeren und wenn noetig Fragen stellen
≈ 10 Minuten	Zeitpuffer fuer moeglichen Verzug	

Code:

01-intro.py:

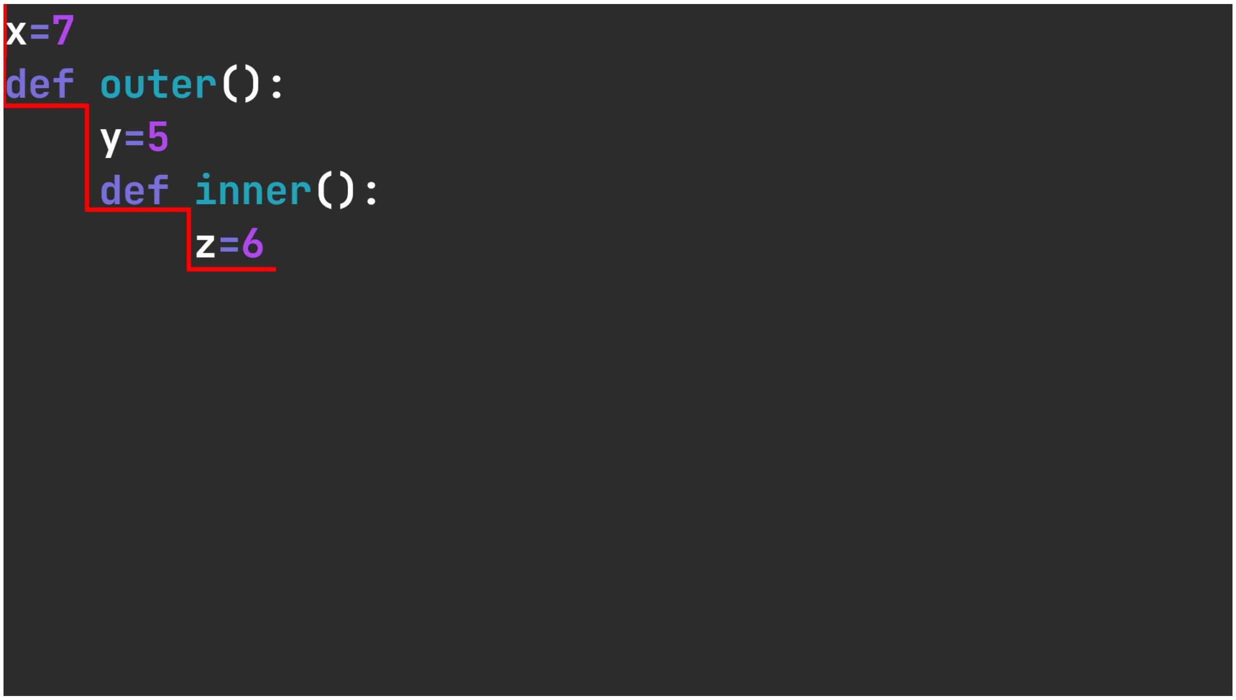
```
from turtle import *

def rect(laenge):
    for ii in range(2):
        forward(laenge)
        right(90)
        forward(laenge)
        right(90)

def dach(laenge):
    for jj in range(3):
        forward(laenge)
        right(120)

def change_pos(laenge, back):
    if back:
        left(30)
        backward(laenge)
    else:
        forward(laenge)
        right(30)

def haus(laenge):
    rect(laenge)
    change_pos(laenge, back=False)
    dach(laenge)
    change_pos(laenge, back=True)

def strasse(laenge, num_hauss):
    for kk in range(num_hauss):
        haus(laenge)
        right(90)
        forward(laenge)
        left(90)

        laenge += 20
        laenge += 20

def main():
    left(90)
    speed(100000)

    laenge = 100
    laenge = 50

    strasse(laenge, 5)

    #haus(laenge)
    done()
if __name__ == "__main__":
    main()
```

02-scopes/

01-scopes.py

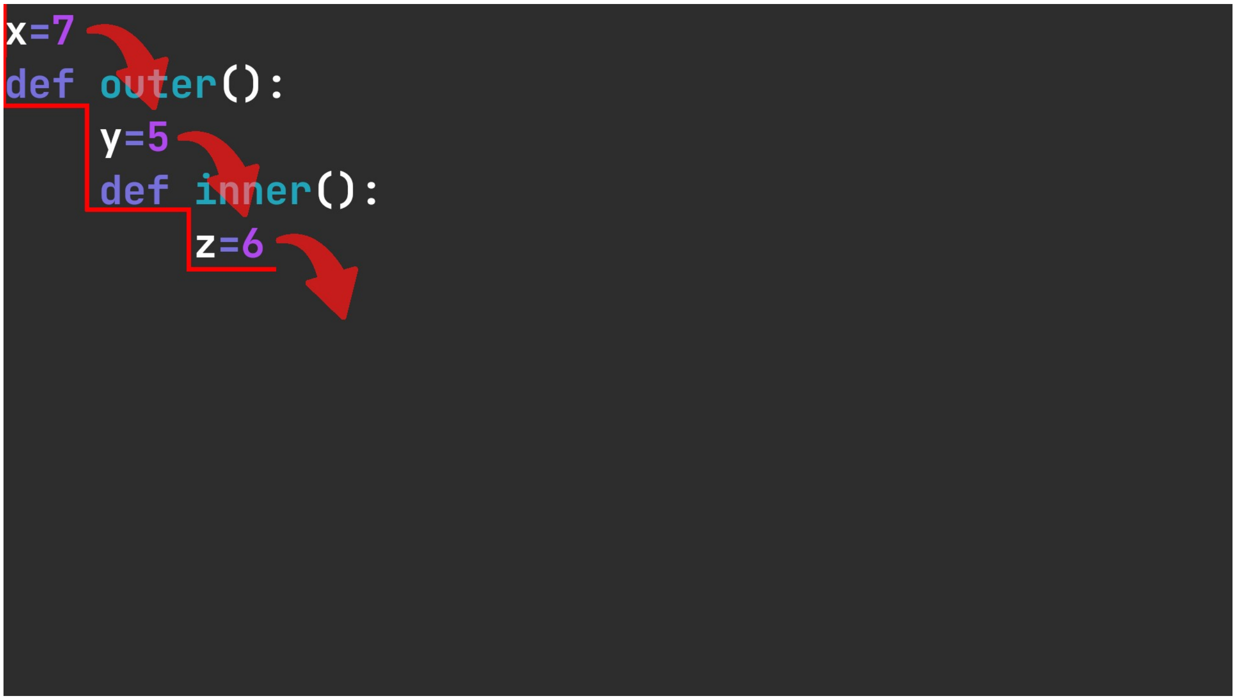
```
x = 7

def outer():
    y = 5

    def inner():
        z = 6

        print("x=", x)
        print("y=", y)
        print("z=", z)
    inner()

    print("x=", x)
    print("y=", y)
    print("z=", z)
outer()

print("x=", x)
print("y=", y)
print("z=", z)
```

02-treppe.png



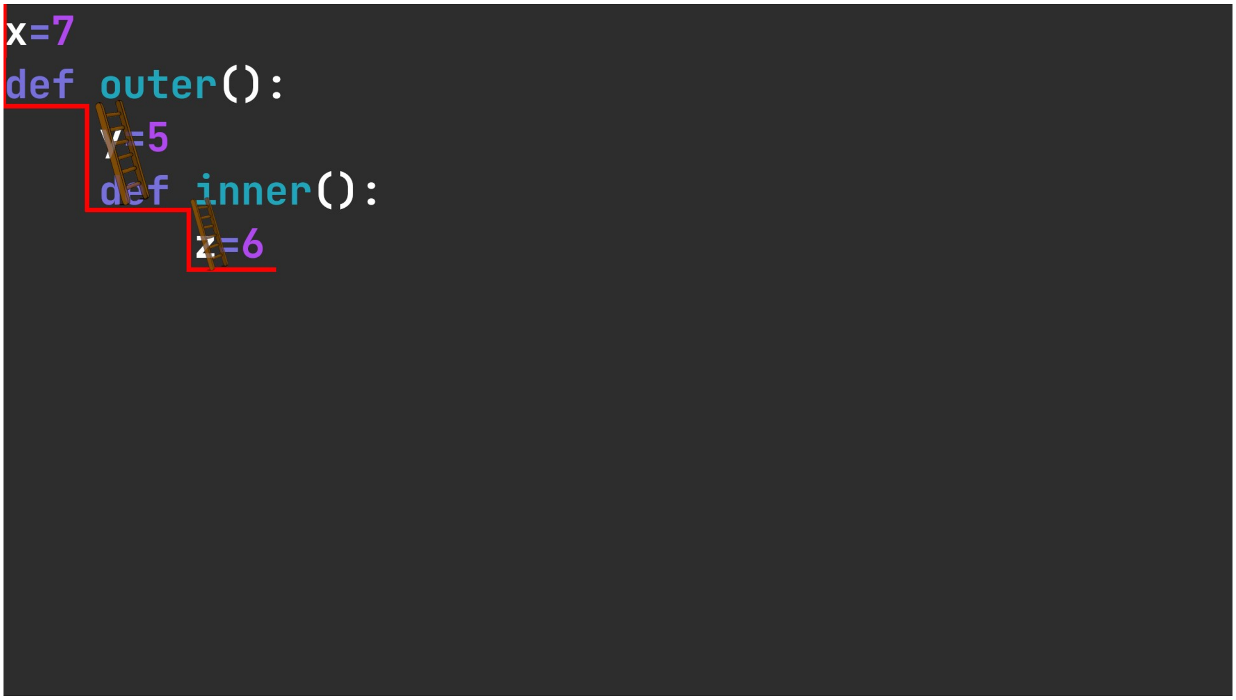
```
x=7
def outer():
    y=5
    def inner():
        z=6
```

03-runter.png



```
x=7
def outer():
    y=5
    def inner():
        z=6
```

04-hoch.png



```
x=7
def outer():
    y=5
    def inner():
        z=6
```

./03-loesung.py

```
from turtle import *


def rect(laenge):
    for ii in range(2):
        forward(laenge)
        right(90)
        forward(laenge)
        right(90)


def dach(laenge):
    for jj in range(3):
        forward(laenge)
        right(120)


def change_pos(laenge, back):
    if back:
        left(30)
        backward(laenge)
    else:
        forward(laenge)
        right(30)

def haus(laenge):
    rect(laenge)
    change_pos(laenge, back=False)
    dach(laenge)
    change_pos(laenge, back=True)

def strasse(laenge, num_hauss):
    for kk in range(num_hauss):
        haus(laenge)

        right(90)
        forward(laenge)
        left(90)

        laenge += 20
        laenge += 20

    return laenge

def main():
    left(90)
    speed(100000)

    laenge = 100
    laenge = 50

    laenge = strasse(laenge, 5)

    haus(laenge)
    done()
```

```

if __name__ == "__main__":
    main()
```

04-example/

01-bleispiel.py

```
num1 = 5
num2 = 6

def addition():
    solution = num1 + num2
    print(solution)

    return solution

print(addition())
```

example.py

```
import os.path
import time

from forex_python.converter import CurrencyRates
from forex_python.bitcoin import BtcConverter

from openpyxl import Workbook, load_workbook
from datetime import date, datetime

def save_to_xlsx(BTC_USD, BTC_EUR, USD_EUR):
    workbook = load_workbook('data.xlsx')
    sheet = workbook.active

    date = str(datetime.now())

    row = (date, BTC_USD, BTC_EUR, USD_EUR)
    sheet.append(row)

    workbook.save(filename="data.xlsx")

def setup_xlsx():
    workbook = Workbook()
    sheet = workbook.active

    sheet["A1"] = "date"
    sheet["B1"] = "1 BTC in USD"
    sheet["C1"] = "1 BTC in EUR"
    sheet["D1"] = "1 USD in EUR"

    workbook.save(filename="data.xlsx")

def usd_in_eur():
    c = CurrencyRates()
    EUR = c.get_rate('USD', 'EUR')  #convert USD to EURO
    return(EUR)

def btc_in_usd():
    b = BtcConverter()
    USD = b.get_latest_price('USD')  #convert BTC to USD
    return(USD)

def btc_in_eur():
    b = BtcConverter()
    EUR = b.get_latest_price('EUR')   #convert BTC to EUR
    return(EUR)



def main():
    if os.path.isfile('data.xlsx'):
        pass
    else:
        setup_xlsx()
    while True:
        BTC_USD = round(btc_in_usd(), 2)
        USD_EUR = round(usd_in_eur(), 2)
        BTC_EUR = round(btc_in_eur(), 2)

        save_to_xlsx(BTC_USD, BTC_EUR, USD_EUR)

        # Sleep for 24 hours
        # (For testing purposes you can set it to a lower number)
        time.sleep(24 * 60 * 60)

if __name__ == '__main__':
    main()
```