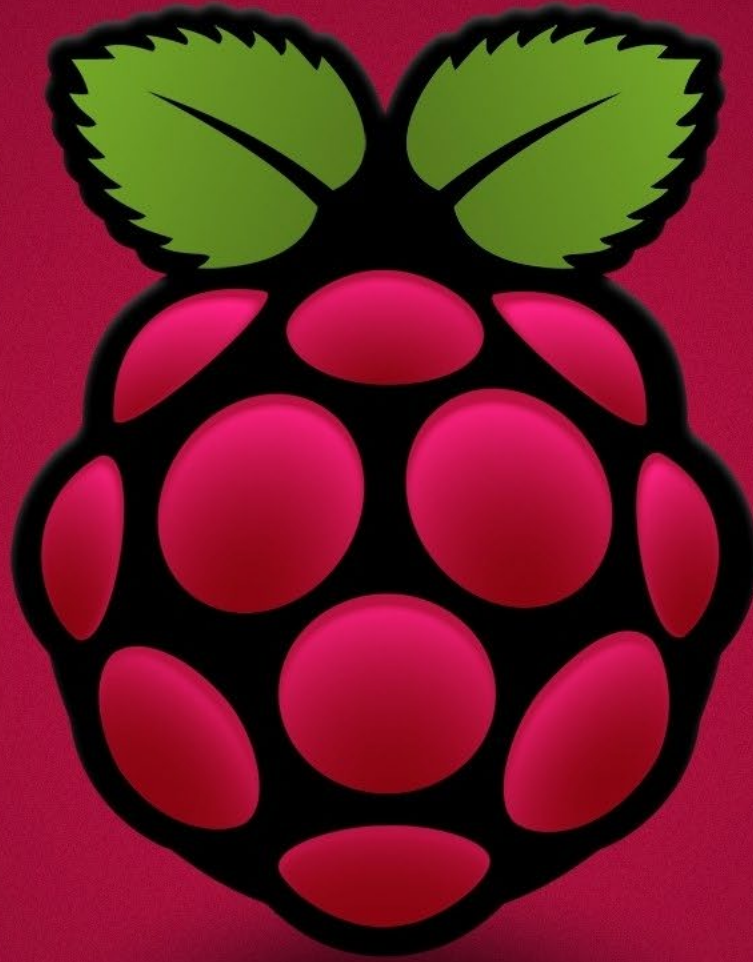


Zeiterfassungssystem

Martin, Hedayat

24.09.2022

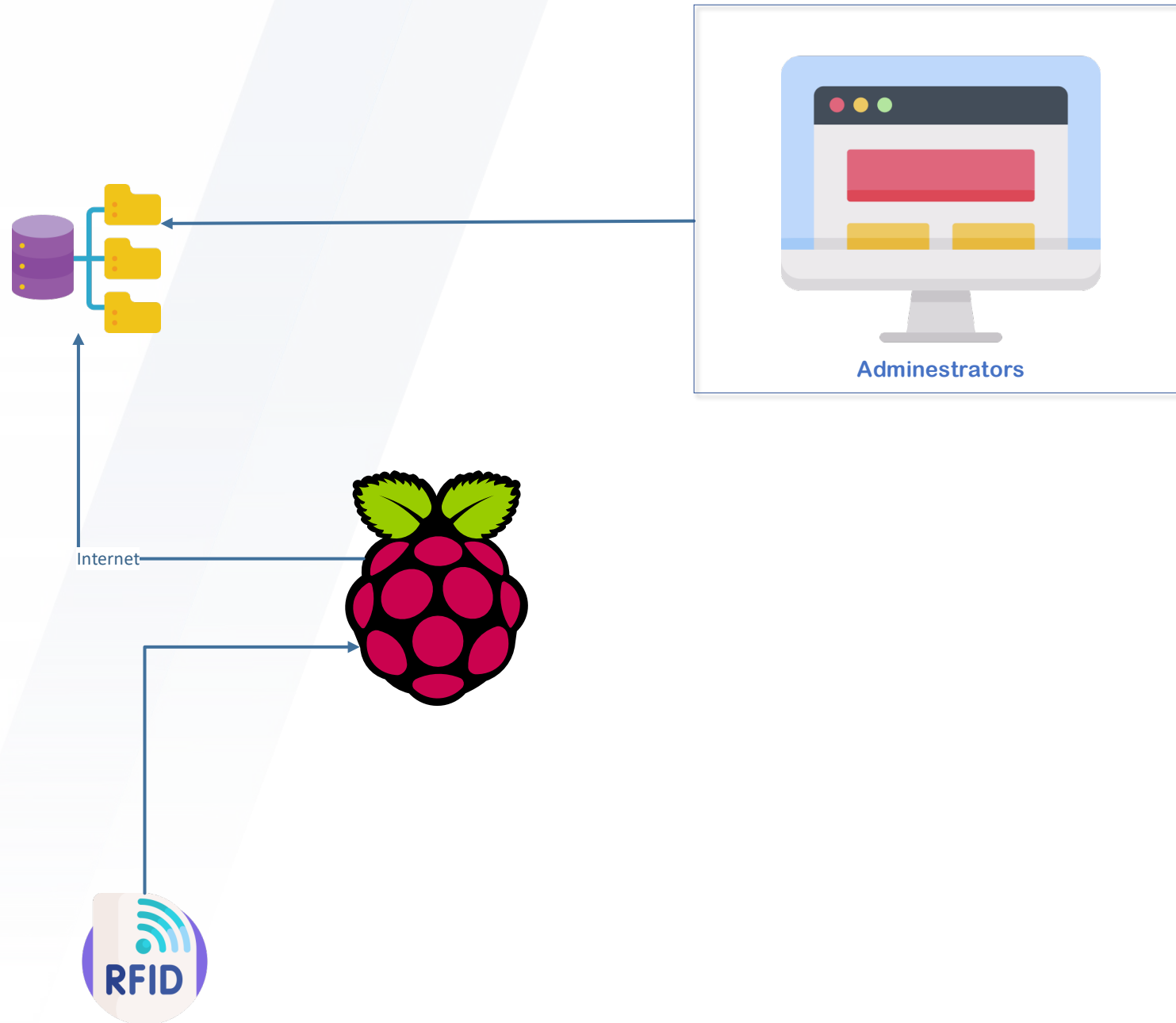


Die handschriftliche Erfassung der Anwesenheitszeiten von SchülerInnen und Studierenden nicht mehr der Zeit entspricht.

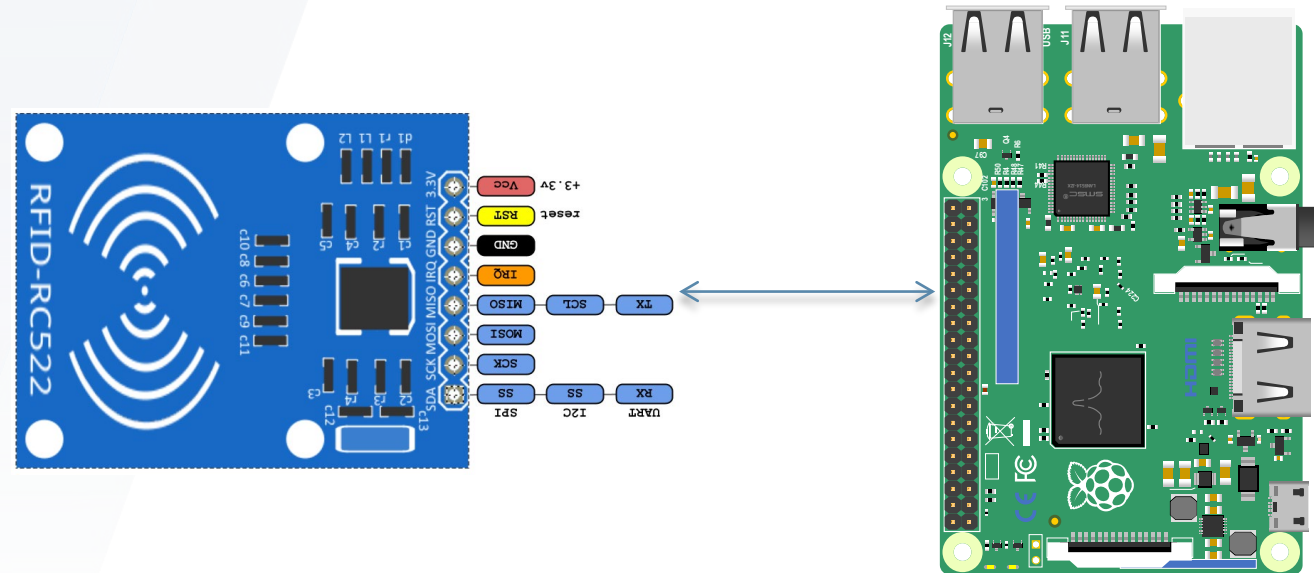
Hier soll sich etwas ändern!

Anwesenheitszeiten soll Digital werden!

SLD

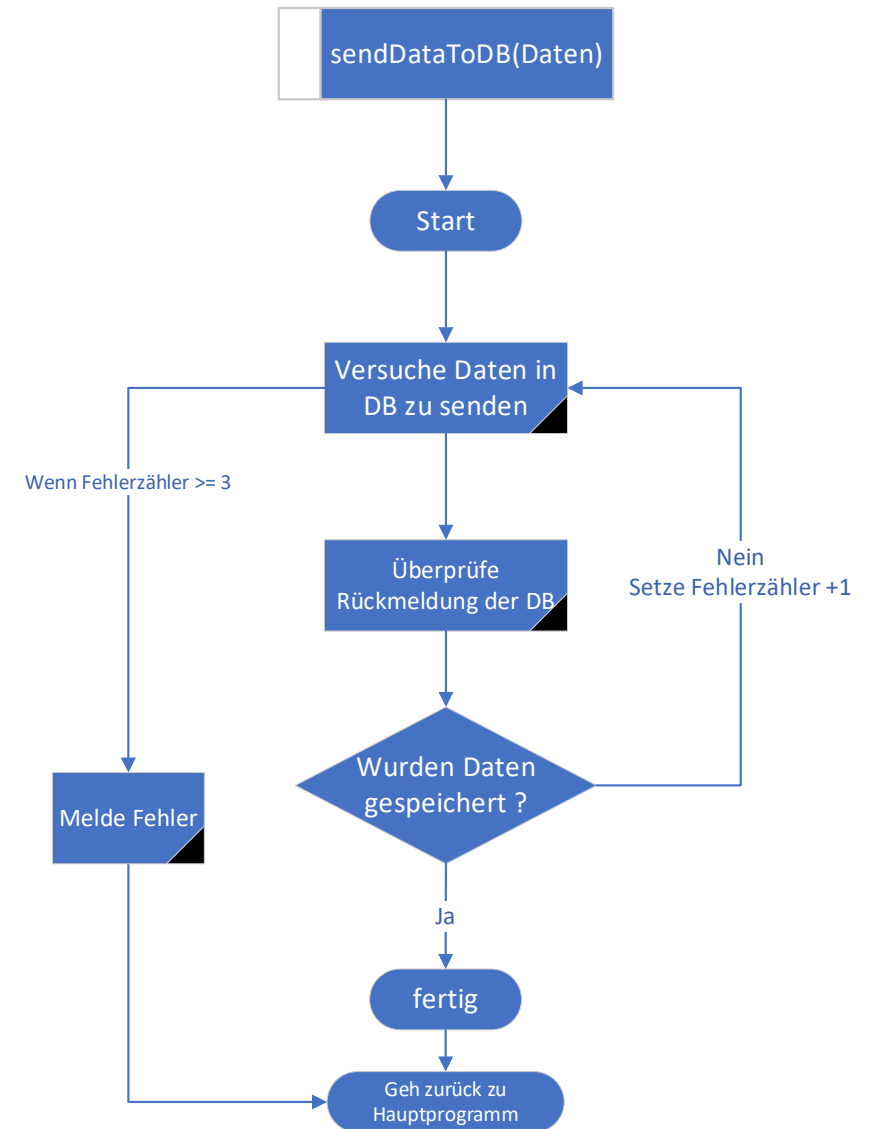
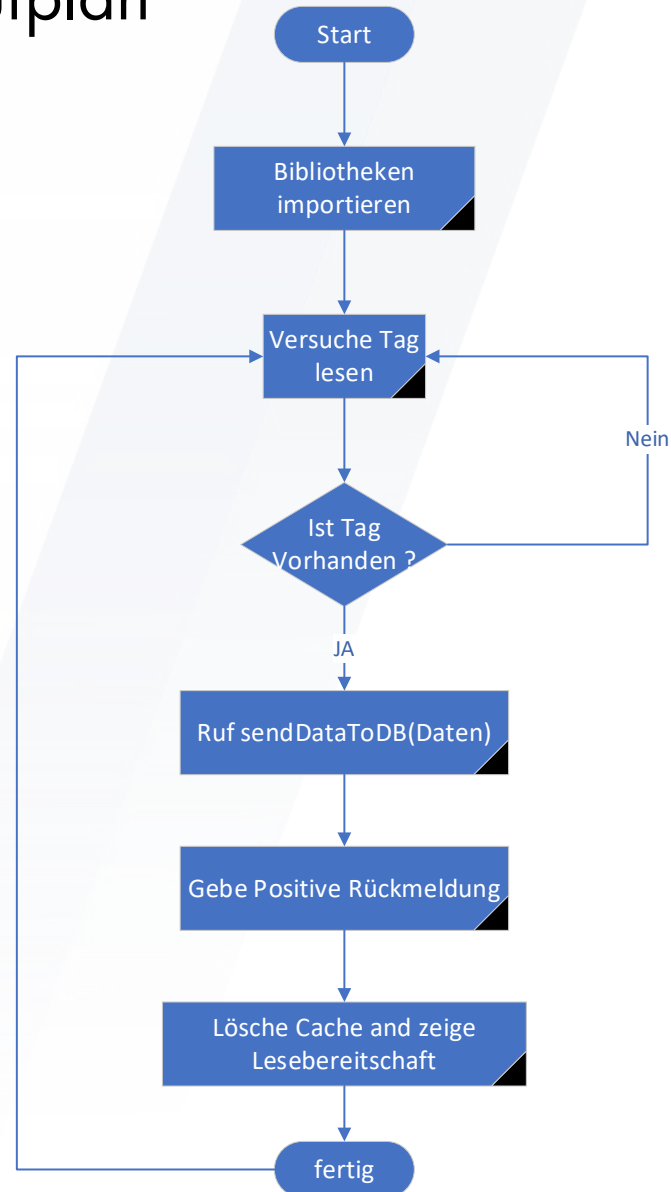


Aufbau and Vorgehensweise



- Schnittstelle: SPI, UART, I2C
- Betriebssystem: Raspberry Pi OS (linux)











Programmablaufplan



Datenbank Concept Users Entity

🏠 > UsersEntity > af5407e0-3fc2-4			☁ More in Google Cloud ▾	
🏠 rfid-e3ab5	📄 UsersEntity ⌵ ⋮	📄 af5407e0-3fc2-439f-b231-fdeb32279e4b ⋮		
+ Start collection	+ Add document	+ Start collection		
TR	08f00210-f43c-4ade-9f3f-91d74d60dee	+ Add field		
UsersEntity >	abaa5623-8c4f-482e-94f6-674d9a80dfb	FirstName: "Galadriel"		
	af5407e0-3fc2-439f-b231-fdeb32279e4	ID: "af5407e0-3fc2-439f-b231-fdeb32279e4b" (string) ✎ 🗑		
	d80f40b5-ea9c-4bb8-b663-19dbbea4695	LastName: "Elf"		

Datenbank Concept Data Entity

<div><div> >  TR > 3f13a41c-b739-...</div><div> More in Google Cloud </div></div>		
<div><div> rfid-e3ab5</div><div><div>+ Start collection</div><div>TR ></div><div>UsersEntity</div></div></div>	<div><div> TR  </div><div><div>+ Add document</div><div>0c2ae5dd-04ff-43ee-9cd5-cd42f2d5b04</div><div>3f13a41c-b739-4661-a9a7-13942e238708</div><div>65a09cc7-f809-4439-8f9f-2181696a986</div><div>8c69f85b-b5e2-42a1-abc4-60b7393ec76</div><div>93e743eb-4fe1-4a84-8f63-ea98bcad38d</div><div>cb48c928-fdb0-49e5-ba37-f3a7cff2872</div><div>d2653ac9-b14b-4c1f-9713-3b238038d19</div></div></div>	<div><div> 3f13a41c-b739-4661-a9a7-13942e238708 </div><div><div>+ Start collection</div><div>+ Add field</div><div>time: "1663934243.5387774"</div><div>uuid_User: "abaa5623-8c4f-482e-94f6-674d9a80dfb0"</div></div></div>

Programm Files

/home/admin/main/main/				
Name	Größe	Geändert	Rechte	Besit...
..		14.09.2022 10:4...	rw-rwxrwx	root
__pycache__		23.09.2022 14:0...	rw-rwxrwx	root
buz.py	1 KB	23.09.2022 13:5...	rw-r--r--	root
buzzer.py	1 KB	23.09.2022 13:4...	rw-r--r--	root
checkInternet.py	1 KB	25.08.2022 15:5...	rw-rwxrwx	root
connectToFB.py	1 KB	25.08.2022 15:5...	rw-rwxrwx	root
is_valid_uuid.py	1 KB	25.08.2022 15:5...	rw-rwxrwx	root
LEDModule.py	1 KB	22.09.2022 20:0...	rw-rwxrwx	root
LEDModuleold.py	2 KB	23.09.2022 14:0...	rw-rwxrwx	adm...
localStorage.txt	1 KB	23.09.2022 14:1...	rw-r--r--	adm...
RFID.py	1 KB	25.08.2022 15:5...	rw-r--r--	root
saveDataLocal.py	2 KB	23.09.2022 13:5...	rw-r--r--	root
sendToFirebase.py	2 KB	22.09.2022 19:5...	rw-rwxrwx	root
serviceAccountKey.json	3 KB	25.08.2022 15:5...	rw-rwxrwx	root

Save Data Lokal (IoT edge)

/home/admin/main/main/saveDataLocal.py - iotadmin@172.25.1.141/iotadmin@172.25.1.141 - Editor - WinSCP

```
from is_valid_uuid import is_valid_uuid
from RFID import RFIDReader, GPIO
import LEDModuleold
import time
import json

continue_reading = True

def saveDataLocale():
    while continue_reading:
        try:
            print("Versuche ID aus RFID-Tag zu lesen...")
            id, uuid = RFIDReader.read()
            uuid_User = uuid.strip()
            print("id: ", uuid_User)
            LEDModuleold.blueOne()

            # check if uuid-User is valid
            if is_valid_uuid(uuid_User):
                print("ID ist gueltig!")
                userEntity = {
                    "uuid_User": str(uuid_User),
                    "time": str(time.time()),
                }
                # generate a Localstorage
                with open('localStorage.txt', "a") as filehandle:
                    json.dump(userEntity, filehandle)
                    filehandle.write("\n")
                print("Daten zu User lokal gesichert")
                time.sleep(1)
                LEDModuleold.green()
            else:
                time.sleep(1)
                LEDModuleold.red()
        except Exception:
            print("Error: ", Exception)
            LEDModuleold.red()

    GPIO.cleanup()

saveDataLocale()
```

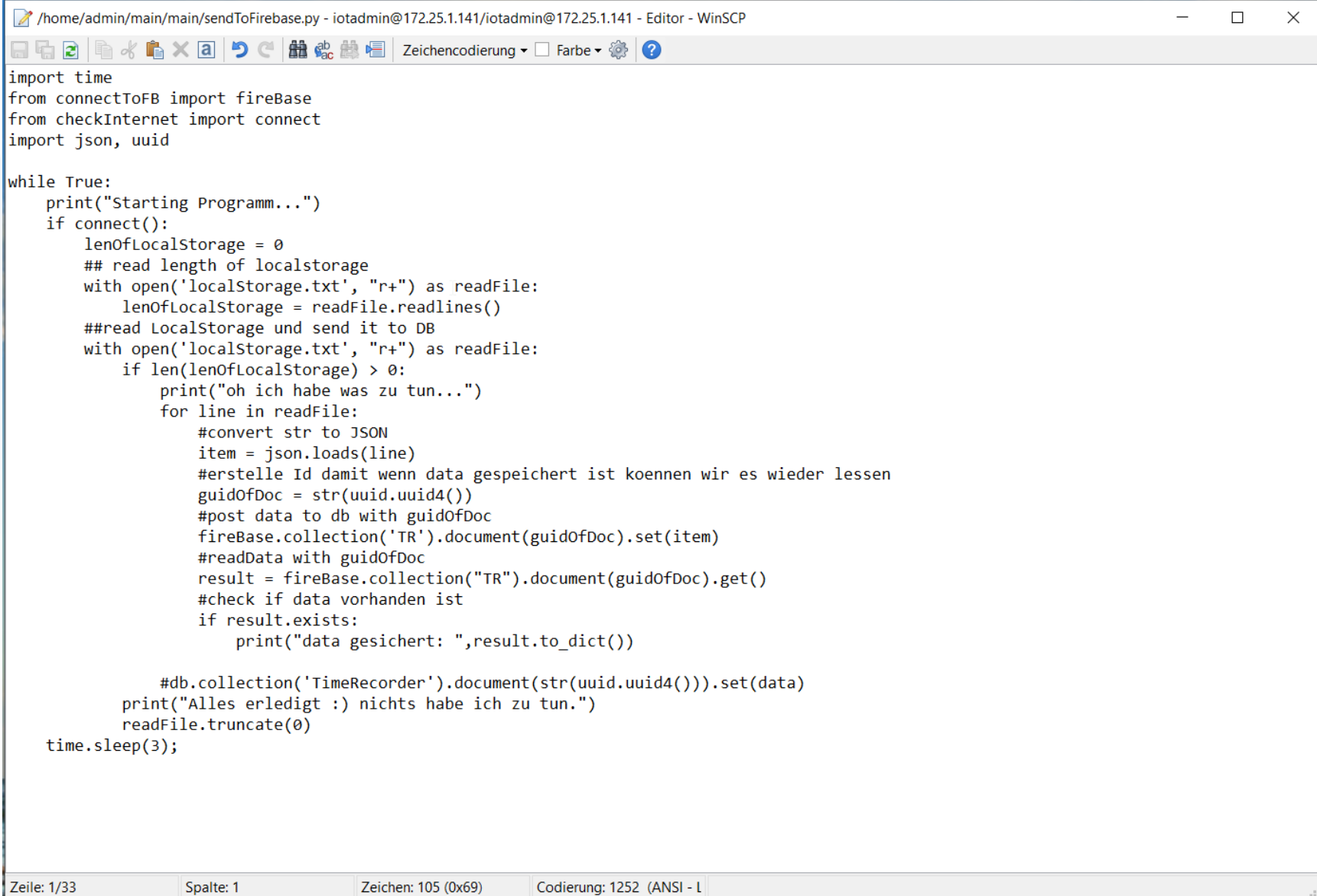
Zeile: 1/42

Spalte: 1

Zeichen: 102 (0x66)

Codierung: 1252 (ANSI - L

Save Data To Cloud



```
/home/admin/main/main/sendToFirebase.py - iotadmin@172.25.1.141/iotadmin@172.25.1.141 - Editor - WinSCP
Zeichencodierung ▾ □ Farbe ▾ ⚙ ?

import time
from connectToFB import fireBase
from checkInternet import connect
import json, uuid

while True:
    print("Starting Programm...")
    if connect():
        lenOfLocalStorage = 0
        ## read length of localstorage
        with open('localStorage.txt', "r+") as readFile:
            lenOfLocalStorage = readFile.readlines()
        ##read LocalStorage und send it to DB
        with open('localStorage.txt', "r+") as readFile:
            if len(lenOfLocalStorage) > 0:
                print("oh ich habe was zu tun...")
                for line in readFile:
                    #convert str to JSON
                    item = json.loads(line)
                    #erstelle Id damit wenn data gespeichert ist koennen wir es wieder lesen
                    guidOfDoc = str(uuid.uuid4())
                    #post data to db with guidOfDoc
                    fireBase.collection('TR').document(guidOfDoc).set(item)
                    #readData with guidOfDoc
                    result = fireBase.collection("TR").document(guidOfDoc).get()
                    #check if data vorhanden ist
                    if result.exists:
                        print("data gesichert: ",result.to_dict())

                    #db.collection('TimeRecorder').document(str(uuid.uuid4())).set(data)
                print("Alles erledigt :) nichts habe ich zu tun.")
                readFile.truncate(0)
            time.sleep(3);

Zeile: 1/33   Spalte: 1   Zeichen: 105 (0x69)   Codierung: 1252 (ANSI - L)
```

Startup

Beim Start des Systems werden folgende Services von systemd gestartet:

rzef-collector.service (RFID-Chip auslesen)

rzef-sender.service (Daten übertragen)

Tag	Name	Last Name	gekommen	gegangen
23/9/22	Gandalf	Grey	2:42:19 PM	nd
23/9/22	Frodo	Baggins	2:42:04 PM	nd
nd	Galadriel	Elf	nd	nd
23/9/22	Legolas	Greenleaf	2:42:16 PM	nd

Demosystem



Danke