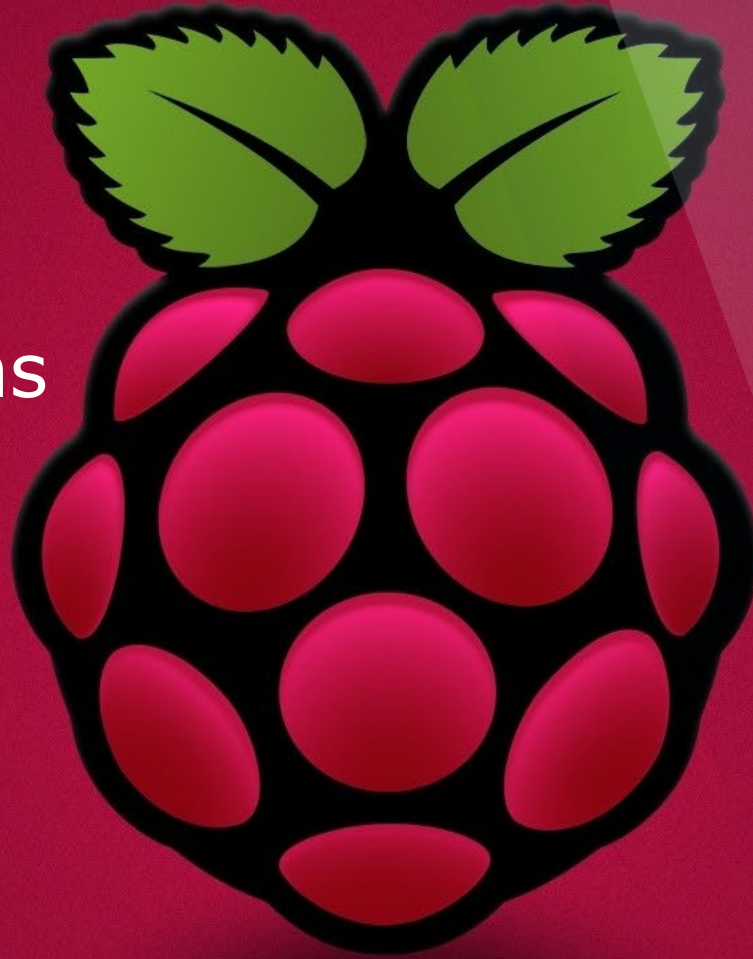


Zeiterfassungssystem

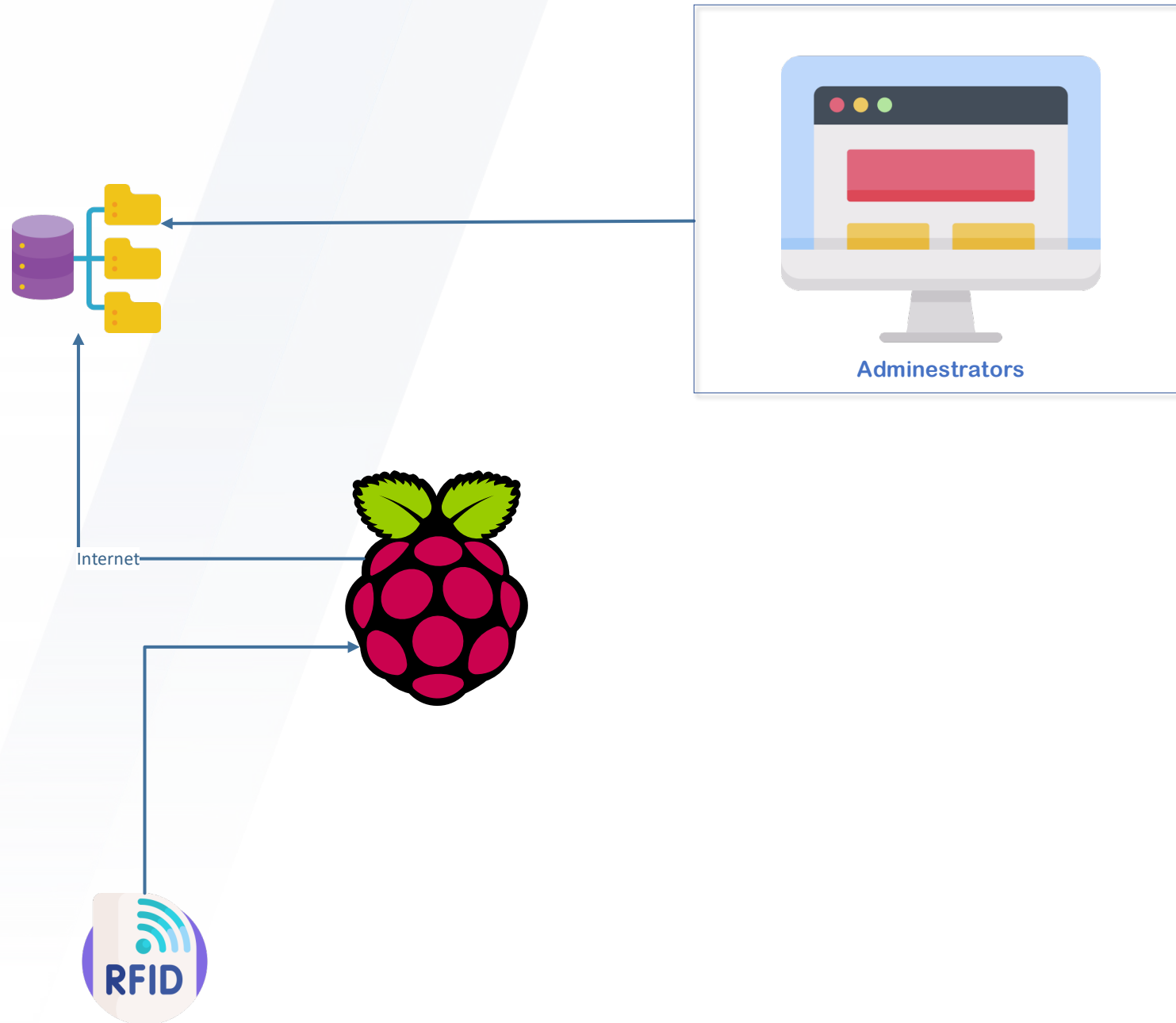


Die handschriftliche Erfassung der Anwesenheitszeiten von SchülerInnen und Studierenden nicht mehr der Zeit entspricht.

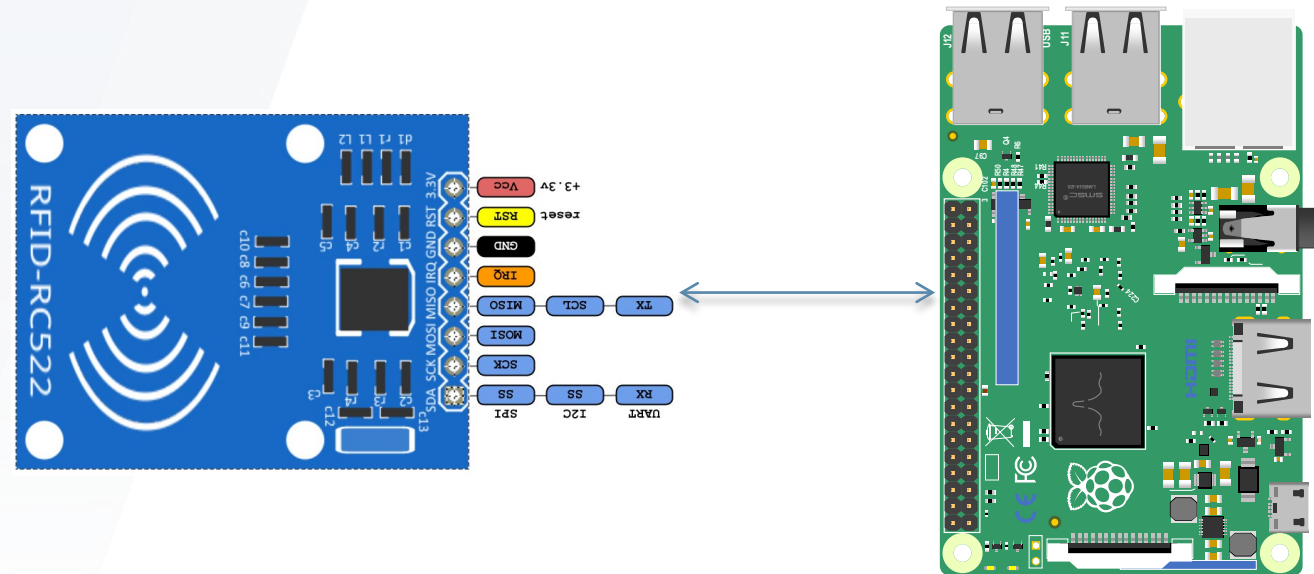
Hier soll sich etwas ändern!

Anwesenheitszeiten soll Digital werden!

# SLD

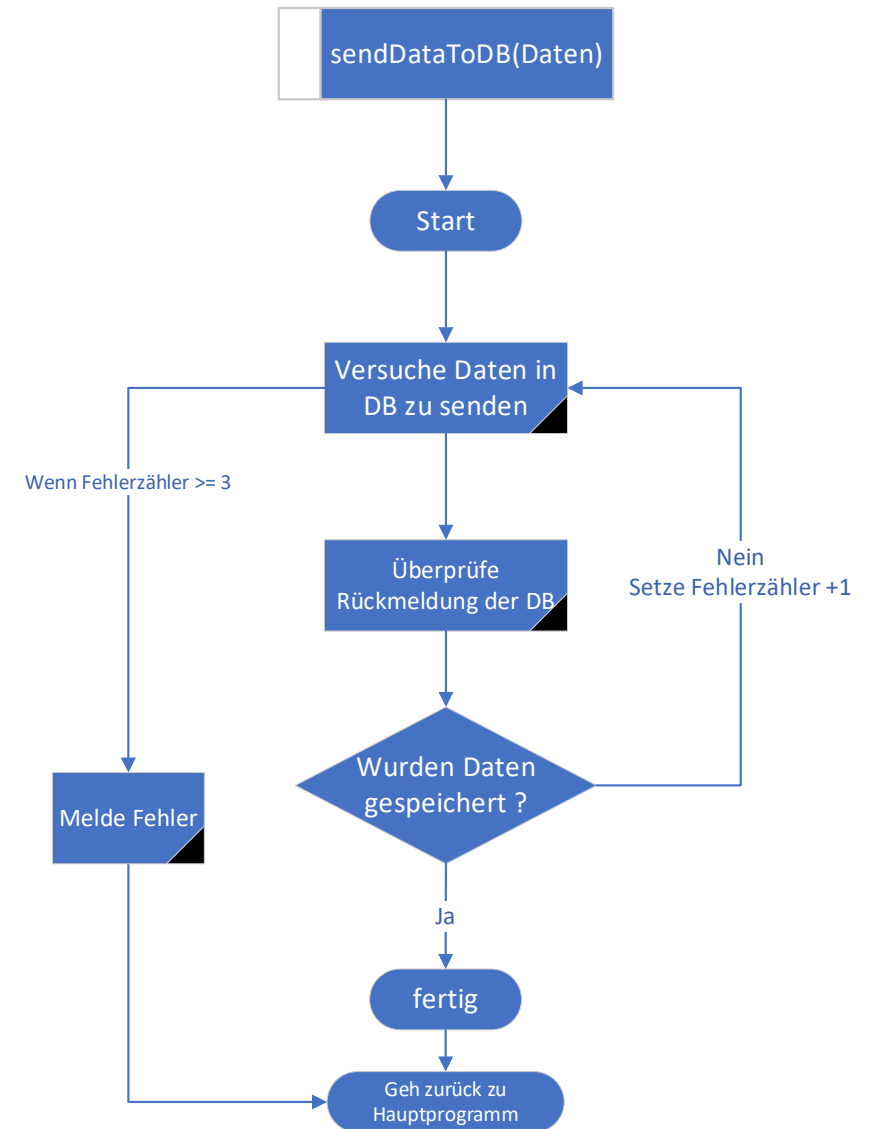
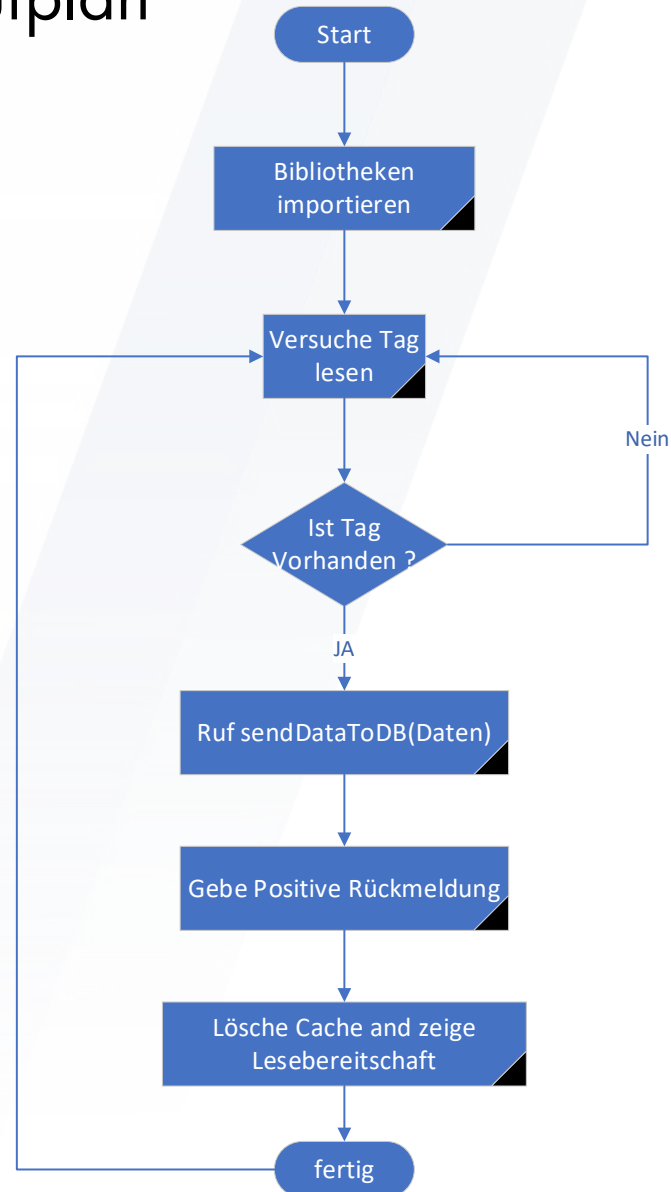


# Aufbau and Vorgehensweise



- 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

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



# 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
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)

| 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       |



Danke