Projects Report

Glucose monitoring system

Notes rev2

- add business canvas
- add progress development
- add engage methode
- add next dev

Specification Tabel

No	Specification	Detail
1.	Product Dimension	Product can Include electronics Component and etc, max 20cm*10cm*5cm.
2.	Internet Connection	Have an internet connection with server, min 10 kbps.
3.	Glucose Meter	Non-invasive, Acc : 80% compare to (alat/lab) mg/dL
4.	Server	Min. RAM 4 GB storage min 200GB
5.	User Interface	Can provide Glucose information to Users on mg/dl
6.	Power	as long as it works and doesn’t damage to device max (5volts 2 ampere) 10 watt

Specification Details

Spect	Product Dimension
Details	Product can contain electronics Component and etc.max 20cm*10cm*5cm
Measurement Method	The box used will include the components that have been formed
Test Procedures	When the box is brought does it damage to electrical component and others or not?

Specification Details

Spect	Internet Connectivity
Details	Have internet access communication with server min 10KBps
Measurement Method	The internet will be tested with a speed tester.
Test Procedures	Wifi will be connected to the cellphone then the cellphone will access the speed tester site

Specification Details

Spect	Glucose Meter Accuracy
Details	The minimum threshold accuracy for testing is 80 percent
Measurement Method	the data will appear in the user interface
Test Procedures	The result of the 10 tests will be compared with laboratory data.

Specification Details

Spect	Server
Details	the server can accommodate a collection of glucose meter data and other related data
Measurement Method	After 1 month, the storage availability and server access quality will be checked. Min. RAM 4 GB storage min 200GB
Test Procedures	If in 1 month storage < 8% data then the server is enough for a year. Scalability is planned once a year to reduce maintenance costs

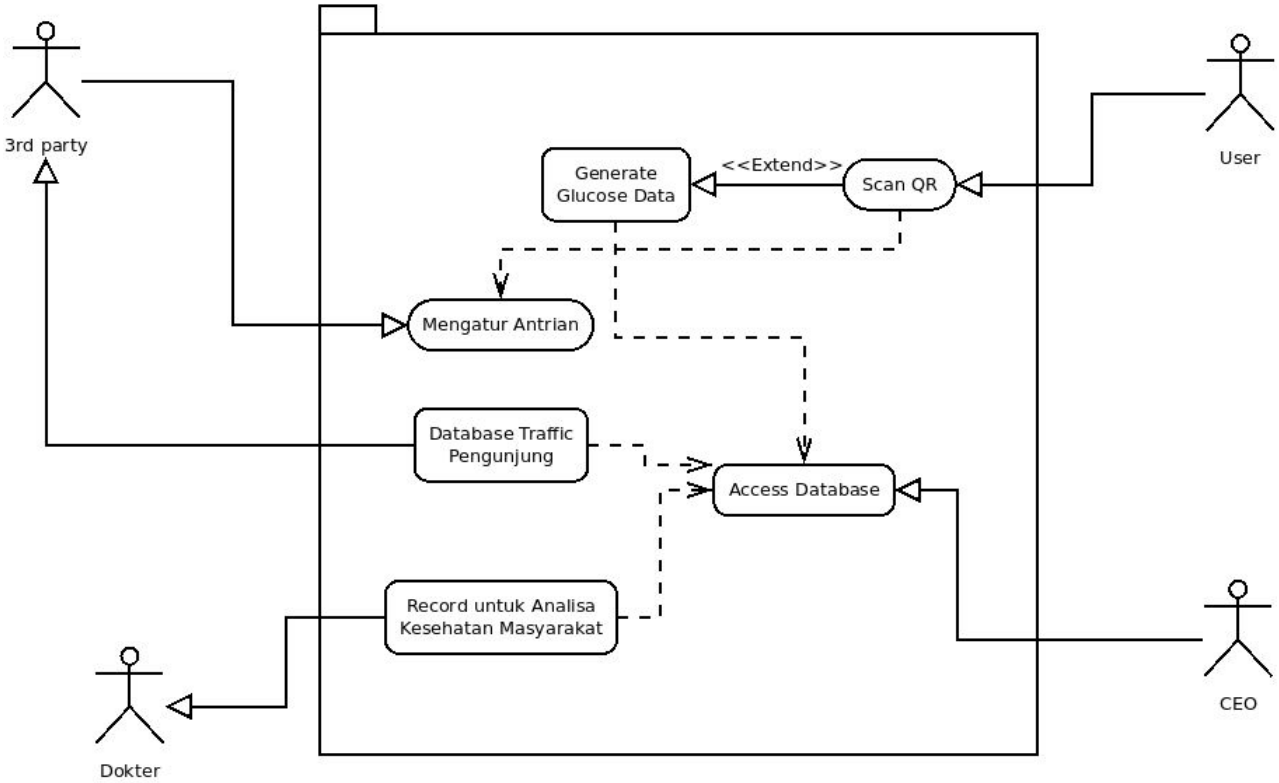
Specification Details

Spect	User Interface
Details	Can display glucose data to the user on mg/dL
Measurement Method	The data that appears in the user interface is true user data.
Test Procedures	Comparison with lab data for 10 users.

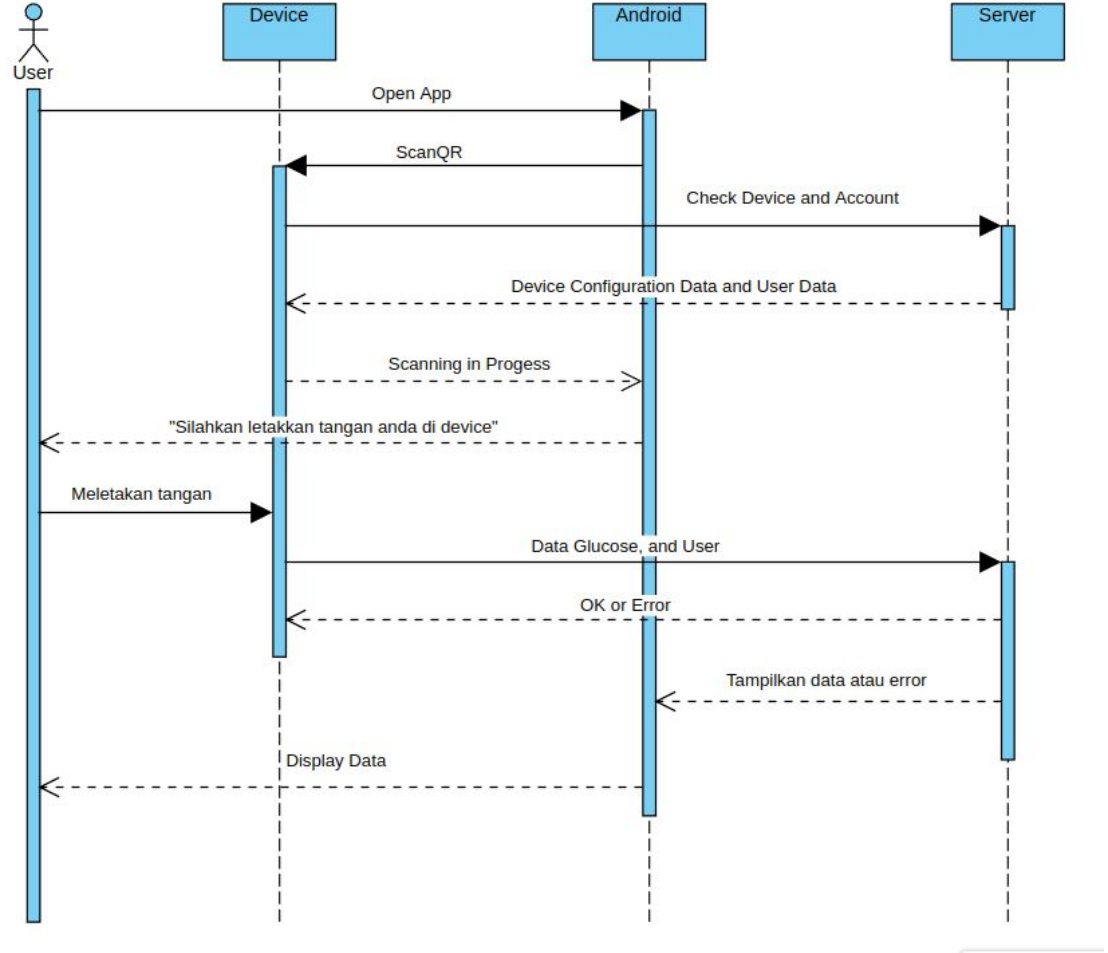
Specification Details

Spect	Power 10 watt
Details	The device is supplied with the correct power.
Measurement Method	Voltase tidak melebihi batas perangkat diukur dengan voltmeter.
Test Procedures	The device can work well max operating voltage 3.3v

Activity Diagram



Sequence Diagram



Patient Persona

Photo		
Name	Indrawan Firdauzy	Budi Rahardjo
Age	27 years old	52 -55 years old
Income	3 - 4 juta /month	5 - 6 jt/month
hometown	Purbalingga	Bandung
likes	Coffee, Juice	Coffee
dislikes	-	Toxic Relationship
homelife detail	Like gowes	Make youtube video, teaching and another.
Relate to my product	need check blood glucose	Use our product to enter the market on his youtube

MD Persona

Gagah Brilian (Entry Level MD)

- MD (exp 1 years after held medical certificate STR)
- 28 Years Old (Male).
- Need tools for accurate and non-Invasive tools to collect Blood glucose data

MD (Mrs. Suhartono Tj)

- Retired MD
- Need tools for accurate and cheap to collect blood glucose data data.

Questioner Rank for MD

Quesioner Rank	Senior MD	Junior MD
1	Accuration	Accuration
2	Price	Non-Invasive
3	Non-Invasive	Wearables
4	Wearables	Dimension
5	Dimension	Prices

Functional Decomposition Score

{Accuration, Dimension, Cost, Wearables, Non-Invasive Score}

0 = have not effect to score
1 = Less effect
2 = Normall
3 = more effect

Functional Decomposition (MD)

{Accuration, Dimension, Cost, Wearables, Non-Invasive}

Function\Con	1 the main way (default)	2 the simple ways	3 the hards way
Activate Device	QRscan {0, 1, 2, 1, 0}	Push Button {0, 3, 3, 2, 0}	Wakeword Push Button {0, 3, 1, 3, 0}
Active Indicator	LCD {0, 1, 2, 1, 0}	LED {0, 3, 3, 2, 0}	Sound {0, 2, 1, 3, 0}
Package	Acrilic {0, 2, 2, 1, 0}	Simple box(paper based) {0, 1, 3, 2, 0}	molding {0, 3, 1, 3, 0}
Internet	Wifi {0, 3, 2, 1, 0}	GSM/Wifi {0, 1, 3, 1, 0}	wifi/gsm/nbiot {0, 3, 1,3 , 0}
Methode	Saliva/Breath {2, 2, 2, 1, 3}	SB/Raman Spec {1, 1, 2, 1, 3}	Electromagnetics {3, 3, 1, 3, 3}
Display	Android {0, 3, 2, 1, 0}	LCD {0, 1, 2, 1, 0}	Sound Reply data {0, 3, 1, 3, 0}
Circuit	PrintPCB {0, 2, 2, 1, 0}	Breadboard {0, 1, 2, 1, 0}	PrintPCB {0, 3, 2, 3, 0}

Scoring

f/c = {Accuration, Dimension, Cost, Wearables, Non-Invasive}

Score

a = {2, 13, 14, 7, 3}

b = {1,11,18, 10, 3}

c = {3, 20, 8, 21, 3}

Survey Score

md/j = {5, 2, 1, 3. 4}

md/r = {5, 1, 4, 2. 3}

Desain Index

Di = {1, 1, 2, 0, 0}

Convolution Score

md/j a= {10, 26, 14, 21, 12}

md/j b= {5, 22, 18, 30, 12}

md/j c= {15, 40, 8, 63, 12}

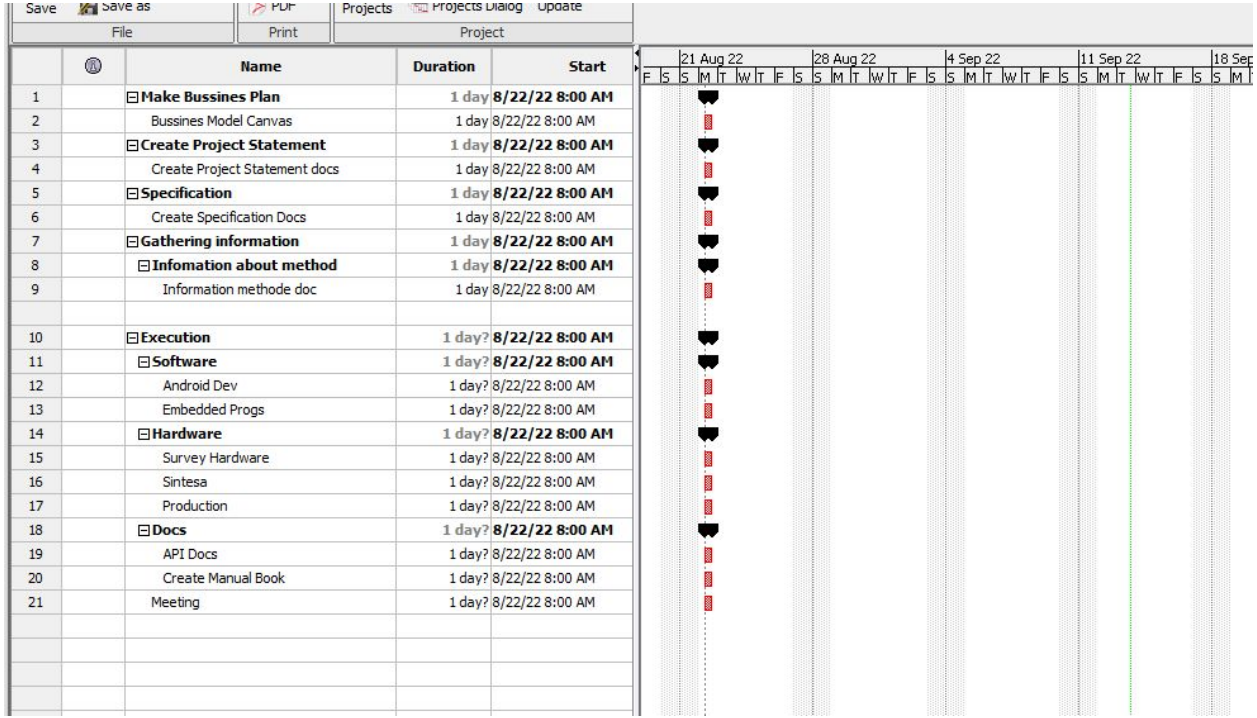
md/r a = {10, 13, 56, 14, 9}

md/r b = {5, 11, 72, 20, 9}

md/r c = {15, 20, 32, 42, 9}

Total Score :
a = {15, 14, 120, 0, 0 } = 149
b = {10, 12, 150, 0, 0 } = 174
c = {20, 21, 72, 0, 0 } = 113

Development



	Name	Duration	Start
1	**Make Bussines Plan**	1 day	**8/22/22 8:00 AM**
2	Bussines Model Canvas	1 day	8/22/22 8:00 AM
3	**Create Project Statement**	1 day	**8/22/22 8:00 AM**
4	Create Project Statement docs	1 day	8/22/22 8:00 AM
5	**Specification**	1 day	**8/22/22 8:00 AM**
6	Create Specification Docs	1 day	8/22/22 8:00 AM
7	**Gathering information**	1 day	**8/22/22 8:00 AM**
8	**Infomation about method**	1 day	**8/22/22 8:00 AM**
9	Information methode doc	1 day	8/22/22 8:00 AM
10	**Execution**	1 day?	**8/22/22 8:00 AM**
11	**Software**	1 day?	**8/22/22 8:00 AM**
12	Android Dev	1 day?	8/22/22 8:00 AM
13	Embedded Progs	1 day?	8/22/22 8:00 AM
14	**Hardware**	1 day?	**8/22/22 8:00 AM**
15	Survey Hardware	1 day?	8/22/22 8:00 AM
16	Sintesa	1 day?	8/22/22 8:00 AM
17	Production	1 day?	8/22/22 8:00 AM
18	**Docs**	1 day?	**8/22/22 8:00 AM**
19	API Docs	1 day?	8/22/22 8:00 AM
20	Create Manual Book	1 day?	8/22/22 8:00 AM
21	Meeting	1 day?	8/22/22 8:00 AM

Timeline Projects

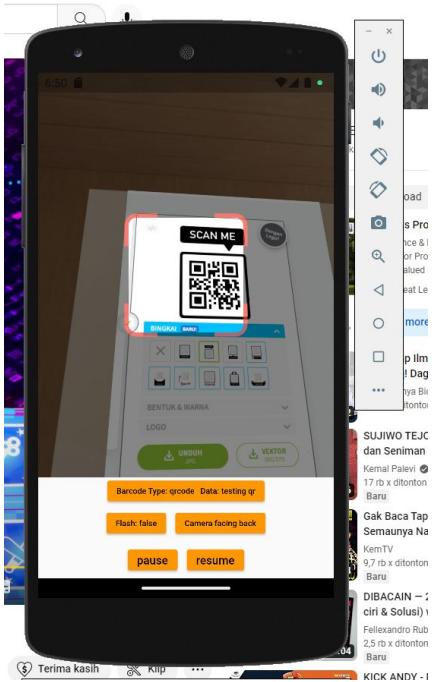
until 31/10/2022

- Starting Android Development (https://github.com/faoziaziz/abd_gms/)
- HW development (https://github.com/faoziaziz/abd_gms/blob/master/documents/gms_concept.org)
- Server Development (https://github.com/faoziaziz/abd_gms/tree/master/server)

Finished ?

- End of Course (Hope but Not Convidence)
- Need More Consultation about method.

Why use QR?



1. To Register user to the Device.
2. To identify place for scanning.

Value Proposition Canvas

Designed for:	Designed by:	Date:	Version:
MD, User, 3rd Party	Aziz Faozi	31/10/2022	1

Product

Benefits

- Easy to collect Blood Glucose Data (MD)
- Gathering people on spot (3rd party)
- Easy to check Blood Glucose Level (user)

Features

- Android app Comfortable User Interface for MD to analyze data.
- Inform glucose Level
- Traffic analyzer

Experience

Glucose Monitoring System will comfort to MD to access collection of glucose data of user according their ages, geographical distribution, and their daily activity.

For the user, check up data will fun and then sometimes the apps will pop up the suggest for the users which one to consume or not.

For 3rd party will get some information about the traffics of user, and get forecast policy to make the tenants for more crowd.

Customer

Wants

Need traffic information (3rd party)
Need Blood Gluccose Level Information (User)
Need Data for Research abouat Glucose Level Distribution (MD)

Needs

Increase the traffics to attend to their tenants (3rd party)
Make check up to be Fun, need check up not only for their health but also lifestyle (user)
Need to forecast about what should medical policy will make in some geographical area. (MD)

Fears

Privacy concern
Time delivery

Product

Blood Glucose Monitoring System.

Ideal Customer

MD, Who want to check up the

Substitutes

-

The Business Model Canvas

Designed for	Designed by	Date	Version	Paper size
abd_gms	@seve_py	11/18/22	1	A3

Key Partners

- Doctors
- Government
- Tenant
- People

Key Activities

- Glucose Checking

Key Resources

- Glucose meter

Value Propositions

- Government need to know the distribution of diabetic people
- Tenant need to know how to increase traffic
- Doctor need to track people health, when consule

Customer Relationship

- Android apps,
- Email,
- whatsapp

Channels

- Social Media
- Website

Customer Segments

- Diabetes People

Cost Structure

- Hardware development
- Software Developer contracts

Revenue Streams

- Goverment Projects,
- User subcribtions
- User Consultation
- Doctor Sharing consultation cost
- Tenant Pay for insight

Server Connections and Device

Curl

```
curl -X 'GET' \
  'https://www.simpade.com:4646/getdata?user=rahvanafaozi%40gmail.com' \
  -H 'accept: application/json'
```

Request URL

```
https://www.simpade.com:4646/getdata?user=rahvanafaozi%40gmail.com
```

Server response

Code	Details

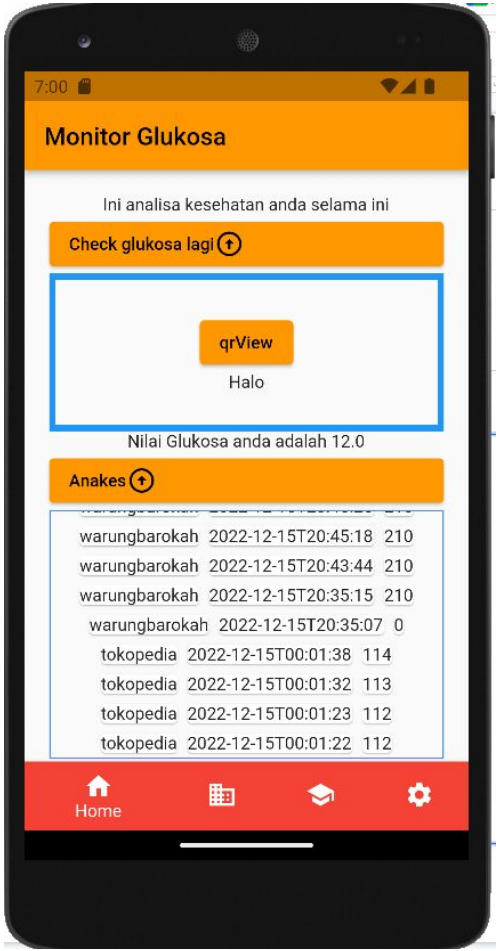
200

Response body

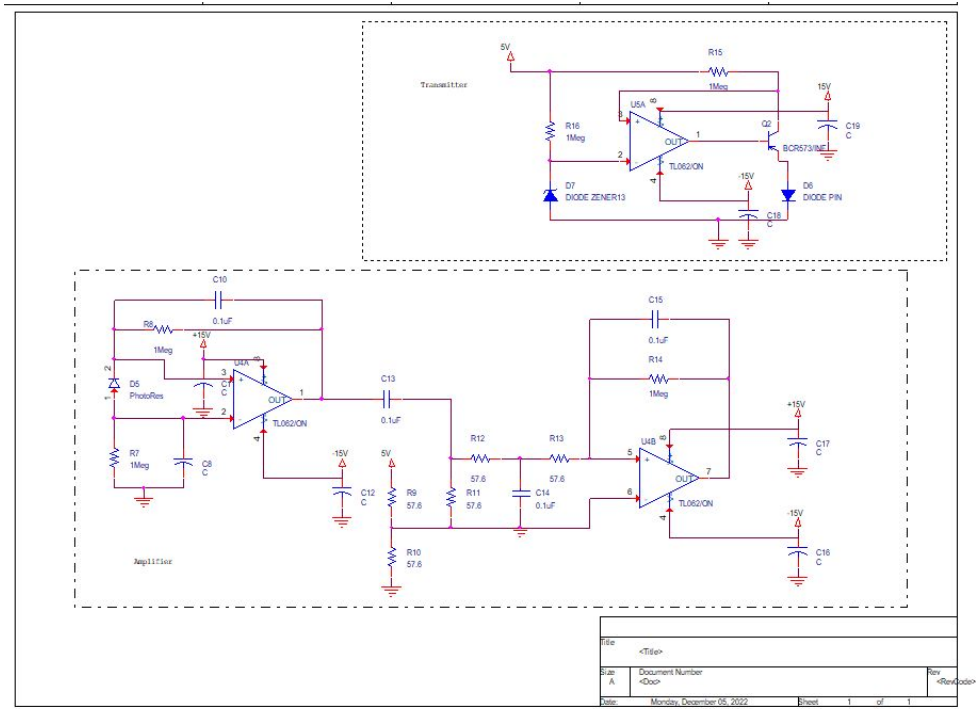

```
{
  "data": [
    {
      "idtrans": 3,
      "glucose_level": 112,
      "date_time": "2022-12-15T00:01:22",
      "user": "rahvanafaozi@gmail.com",
      "tenant": "tokopedia"
    },
    {
      "idtrans": 4,
      "glucose_level": 112,
      "date_time": "2022-12-15T00:01:23",
      "user": "rahvanafaozi@gmail.com",
      "tenant": "tokopedia"
    },
    {
      "idtrans": 5,
      "glucose_level": 113,
      "date_time": "2022-12-15T00:01:32",
      "user": "rahvanafaozi@gmail.com",
      "tenant": "tokopedia"
    },
    {
      "idtrans": 6,
      "glucose_level": 114,
      "date_time": "2022-12-15T00:01:38",
      "user": "rahvanafaozi@gmail.com",
```


Response headers

```
content-length: 1887
content-type: application/json
date: Thu,15 Dec 2022 23:59:36 GMT
server: uvicorn
```



Next -> Hardware (aim)

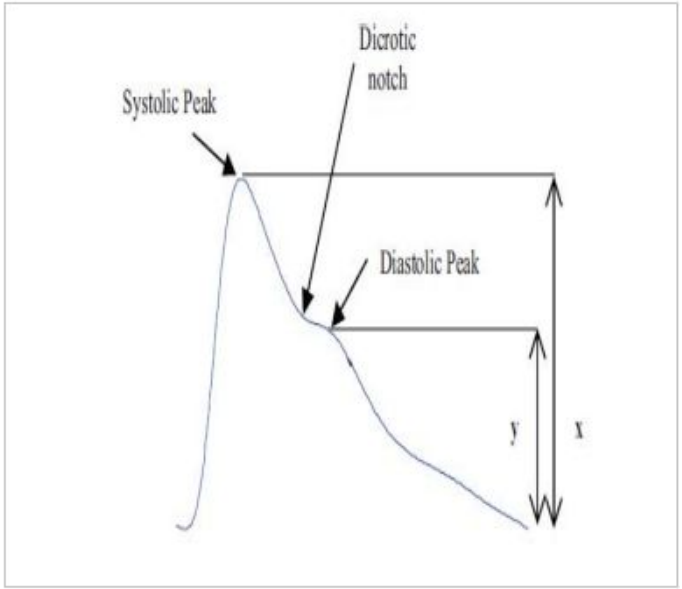


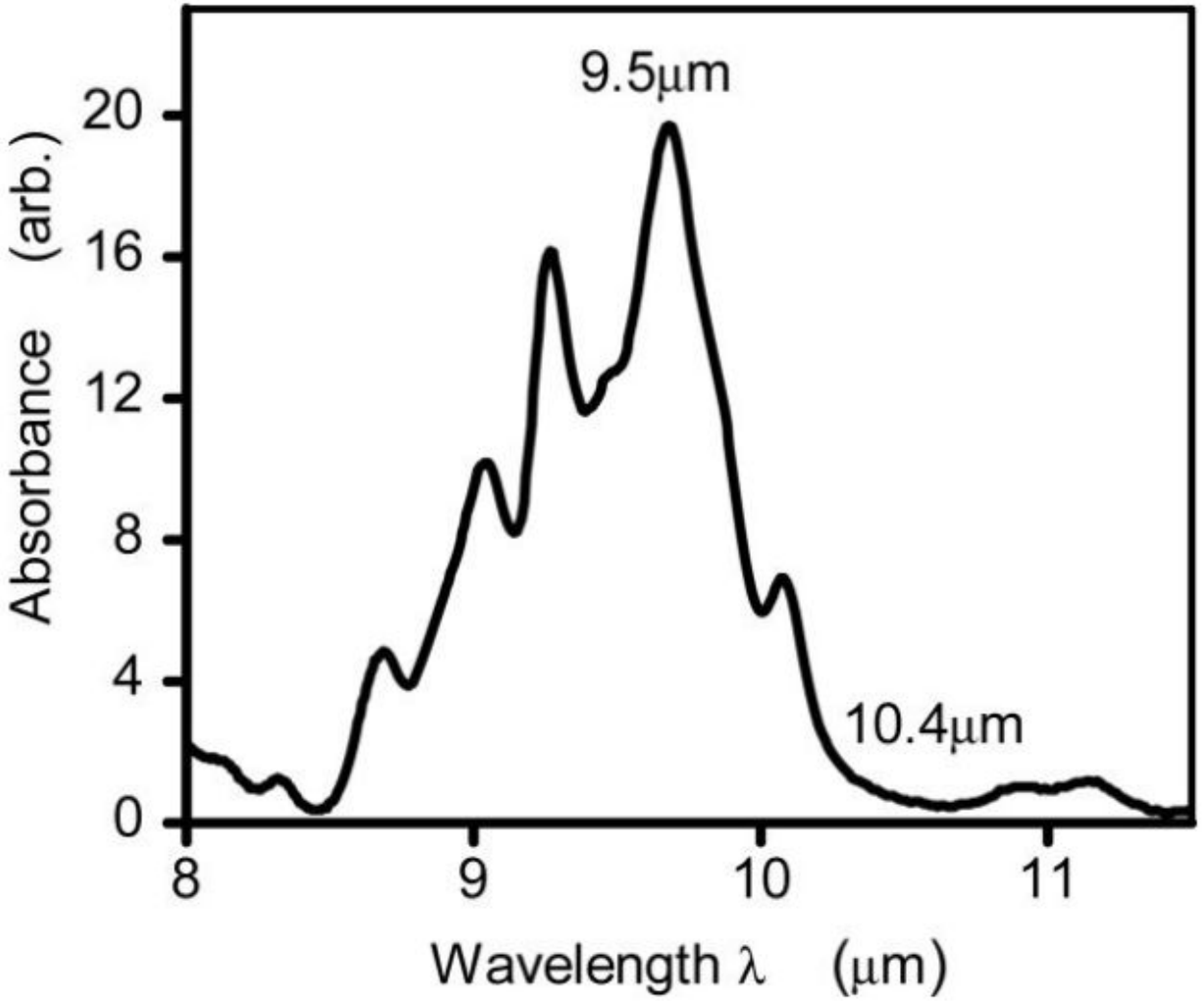
1. Improve accuracy to get index correction for some case on hardware.

Next -> PPG (Photoplethysmography)

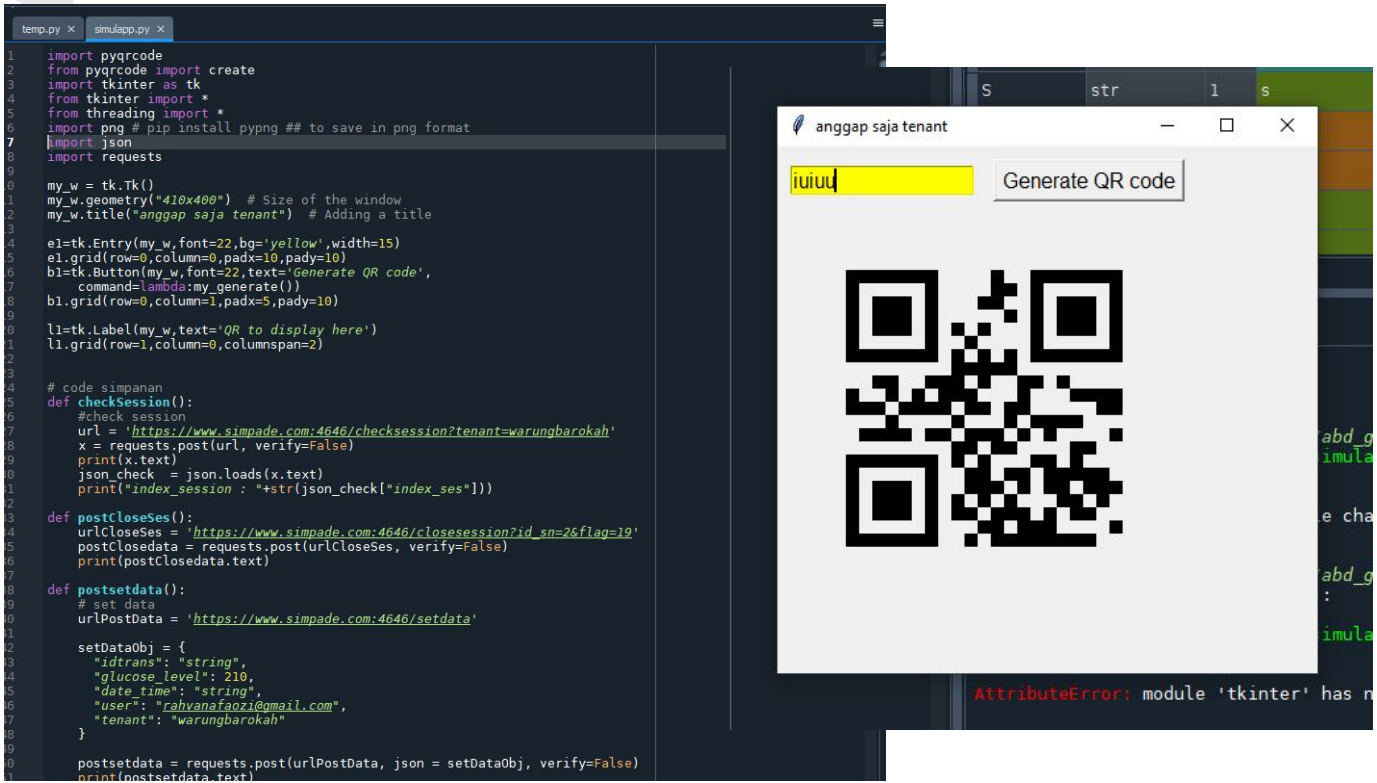
Skin on Finger

Sistolycs and diastolycs freq = 40 - 1100 Hz

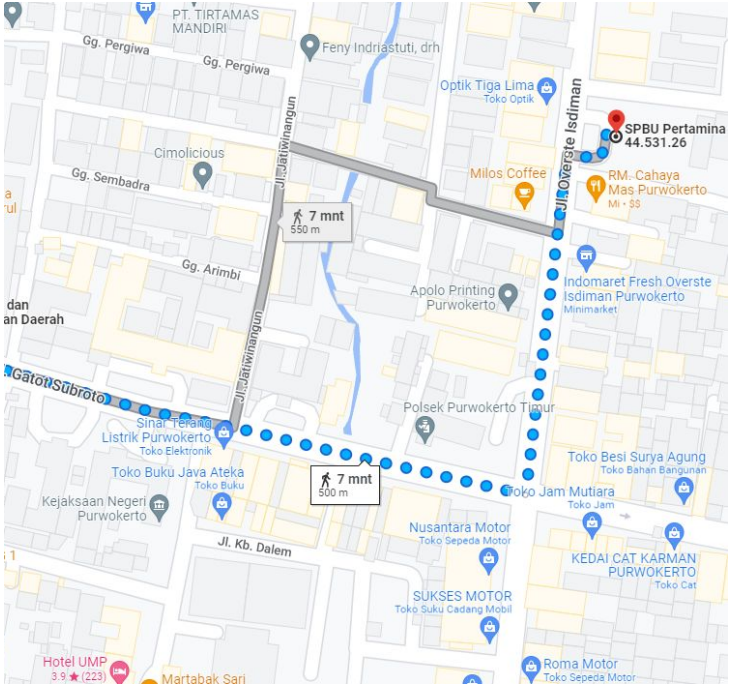



9.5μm
10.4μm
Absorbance (arb.)
0
4
8
12
16
20
8
9
10
11
Wavelength λ (μm)

Next -> Tenant Simulation



Next -> Engage User



- Treatment (Gamification)
- Tenant make sure only some spot under control.
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3438860/