Cardio' Bend

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Summary of the project

The "Cardio' Bend" project is a brand new project that our team has thought about and decided to carry out. Our team being passionate about artificial intelligence and the field of health, the "Cardio'Bend" is a project that takes advantage of both fields to create something new that we hope will help people.

The ultimate goal of this project is to use a connected watch to collect vital information from a user in order to monitor their health and predict whether the user is at risk of a heart attack.

After much research on pathologies such as chronic migraines, strokes, epileptic seizures and many others, we therefore decided to focus on the case of cardiac arrest.
For this, we have created a mobile application that uses data collected by means of a connected watch . These data formed our dataset which will be processed to build a machine learning model to detect future heart attacks.

Our application was coded in Java on Android studio, and the design was first made on paper and then on Figma.
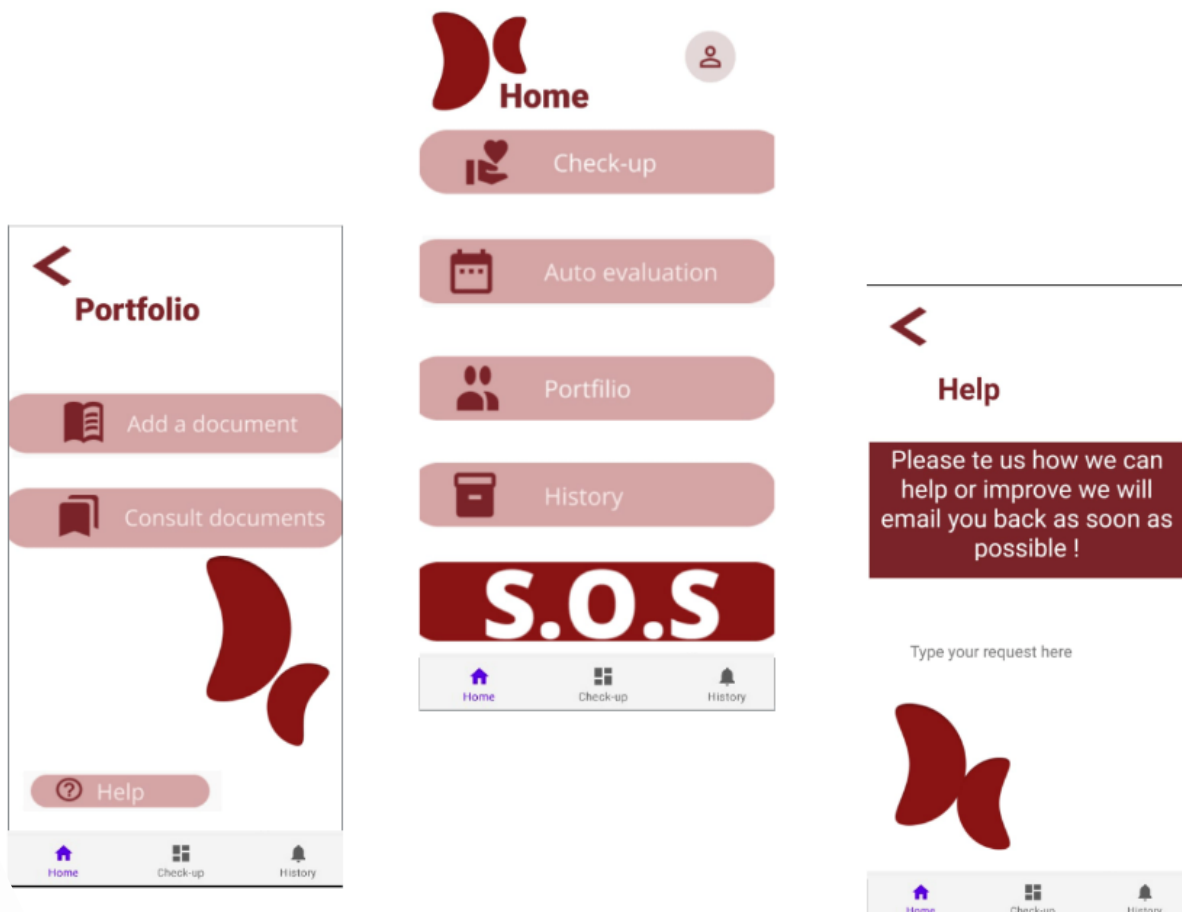
Our DataBase

 We decided to use SQLite for all the data that the application needed to use. Since it is a database that is local (all data is stored on the user's phone) so very fast, and easier to manage with SQL. We created a class dedicated to managing database transactions with application pages. To view our database at any time, we used DB Browser for SQLite. Below is the ER diagram from our database.
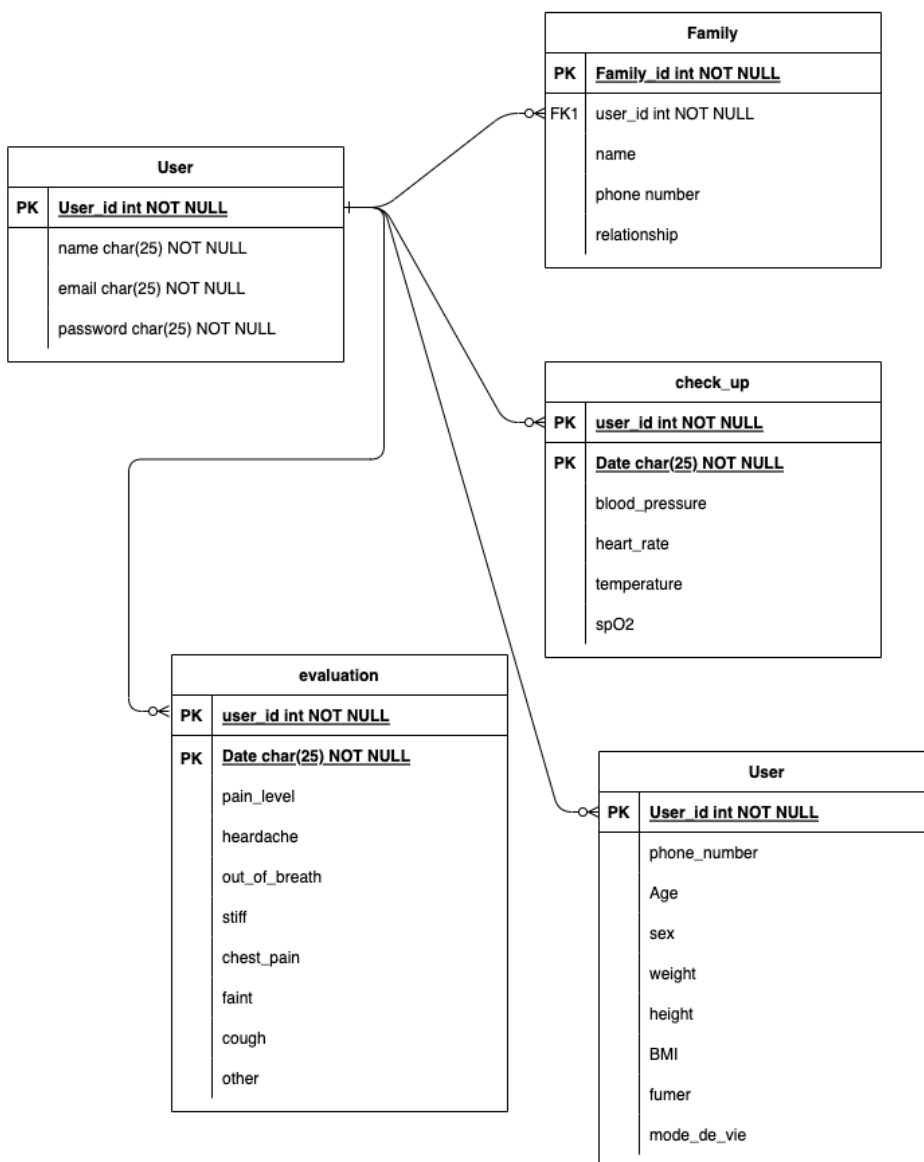
Front-end of our app

Everyone in the team first did a drawing of our design on paper to have a rough idea of what we needed. We then started working on the figma to get a clearer idea. We wanted to export the whole design directly to Android Studio but there was some problems with the APIs. So, to keep the design we wanted, we decided to only export the buttons we created on Figma as ImageButton on Android Studio.

All our buttons are therefore images that we created on Figma, on which we can click to go to another page.
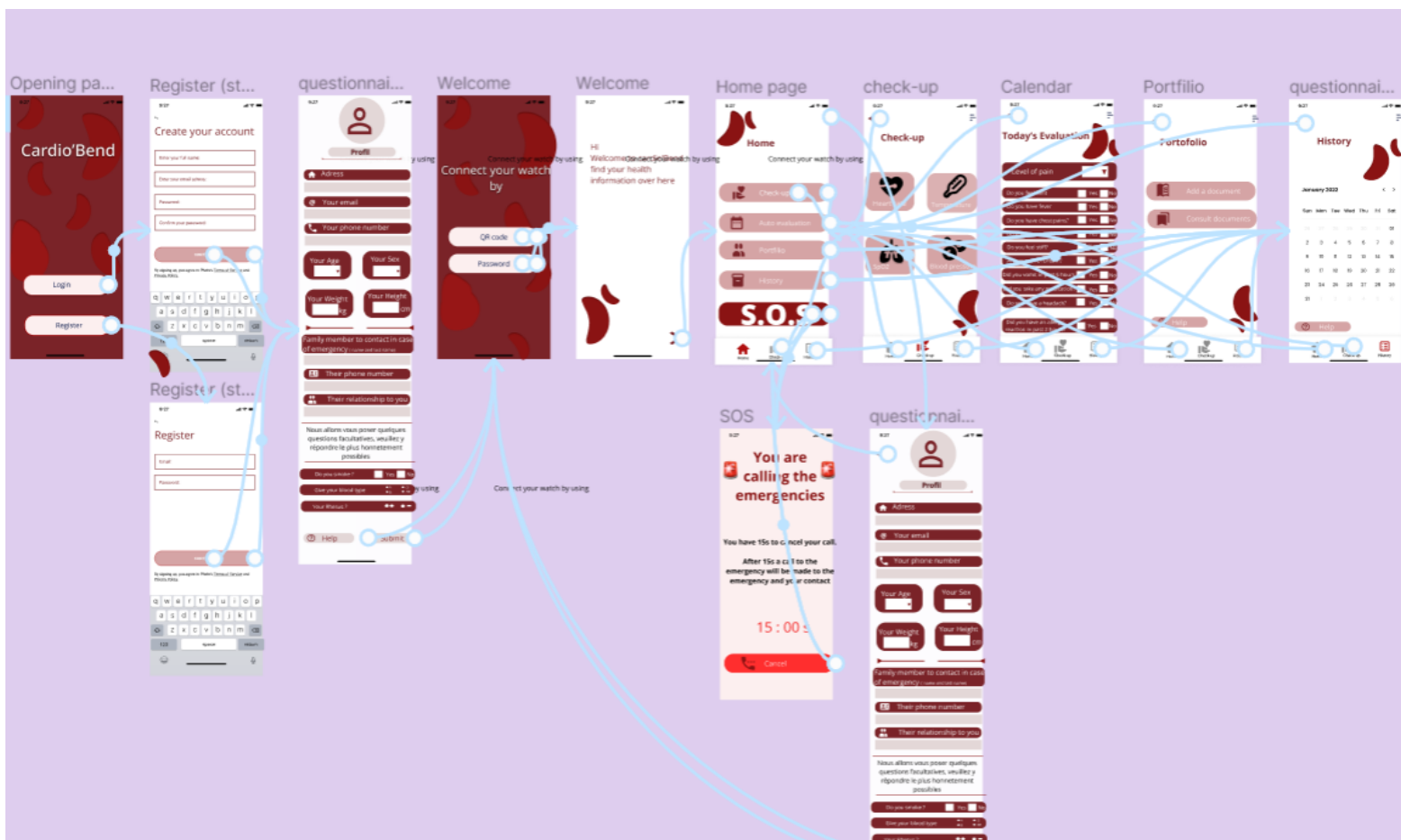
Back-end of our app

Here is the UML diagram of our the java Part of our project:
https://app.diagrams.net/#G19zRcaW11YetiNu4KFWTjhiGxYmBbebV9

DataBaseHelper

-Users : List<User>
+USER_TABLE: String ="user"
+CHECK_UP_TABLE: String ="check_up"
+EVALUATION_TABLE: String ="evaluation"
+FAMILY_TABLE: String ="family"
+COLUMN_USER_ID: String ="USER_ID"
+COLUMN_EMAIL: String ="EMAIL"
+COLUMN_PASSWORD: String ="PASSWORD"
+COLUMN_NAME: String ="NAME"
+COLUMN_PHONE_NUMBER: String ="PHONE_NUMBER"
+COLUMN_AGE: String ="AGE"
+COLUMN_SEX: String ="SEX"
+COLUMN_DATE: String ="DATE_TIME"
+COLUMN_BLOOD_PRESSURE: String ="BLOOD_PRESSURE"
+COLUMN_HEART_RATE: String ="HEART_RATE"
+COLUMN_TEMPERATURE: String ="TEMPERATURE"
+COLUMN_SPO2: String ="SPO2"
+COLUMN_PAIN_LEVEL: String ="PAIN_LEVEL"
+COLUMN_HEAD_ACHE: String ="HEAD_ACHE"
+COLUMN_OUT_OF_BREATH: String ="OUT_OF_BREATH"
+COLUMN_STIFF: String ="STIFF"
+COLUMN_CHEST_PAIN: String ="CHEST_PAIN"
+COLUMN_FAINT: String ="FAINT"
+COLUMN_COUGH: String ="COUGH"
+COLUMN_OTHER: String ="OTHER"
+COLUMN_FAMILY_USER_ID: String ="FAMILY_USER_ID"

+ onCreate(db: SQLiteDatabase): void
+ onUpgrade(db: SQLiteDatabase, oldVersion: int, newVersion: int): void
+ addOneUser(user: User): boolean
+ addEvaluation(eval: TodayEvaluation): boolean
+ getAllUsers(): List<User>
+ checkUser(userEmail, userPassword: String): boolean
+ checkUser(userEmail: String): boolean

<> SQLiteOpenHelper

Extends

Welcome 1
- login button: Button
- registerbutton: Button
+ opensignup(): void
+ opensignin(): void

Welcome 2
- buttonqr: Button
+ opensignup(): void

SosActivity
- buttoncancel: Button
+ OnClick(v: View): void
+ openMainActivity(): void

SignupActivity
- SignUpContinue: Button
- SignUpName, SingUpEmail, SignUpPassword, SignUpConfirmPassword: EditText
- SignUpNameError, SingUpEmailError, SignUpPasswordError, SignUpConfirmPasswordError: EditText
- dataBaseHelper: DataBaseHelper
+ OnClick(view: View): void
- validateName(): boolean
- validateEmail(): boolean

Welcome 3
- buttoner: ImageView
$ Oncreate(savedInstance: Bundle): void
+ openMainActivity(): void

checkupActivity
-Layout: ScrollView
-BloodPressure: ImageView
- Spo2: ImageView
-Heartrate: ImageView
-Temp
-Goback: ImageButton
- dataBaseHelper: DataBaseHelper
+ openMainActivity(): void
+ OnClick(v: View): void

MainActivity
-Check-up: ImageButton
- AutoEvaluation: ImageButton
-Portfolio
-History
-S.O.S
-Profil
+ validateName(): boolean
+ openProfil(): void
+ openAutoEvaluation(): void
+ openPortfolio(): void
+ openHistory(): void
+ openSOSActivity(): void
+ openChekUp(): void

AutoevaluationActivity
- Symptf1 to 6
- time
- date
- ButtonOrder
- openWelcome3(): void
-bottom buttons
- dataBaseHelper: DataBaseHelper
+weeklyAction(): void
+nextMonthAction():void
+previousMonthAction():void
+setMonthView(): void+OpenHistory()void
+OpenMain():void
+OpenCheckup():void
+addListeneronButtonClick(): :void
+initWidgets() :void

SigninActivity
- SignUpContinue: Button
- SingInEmail, SignInPassword: EditText
- SingInEmailError, SignInPasswordError: EditText
- dataBaseHelper: DataBaseHelper
+ OnClick(v: View): void
- openWelcome3(): void
- validateInput(): boolean
- openMain(): void

PortfolioActivity
-AddDoc: ImageButton
-ConsultDoc: ImageButton
+ openHelp(): void
-Goback: ImageButton
-Help: ImageButton
+ openMainActivity(): void
+ OnClick(v: View): void

CalendarUtils
+formattedDate()
+formattedTime()
+monthYearFromDate()
+daysinMonthArray()
+sundayforDate()

HelpActivity
-HelpUsImproved: TextView
-Helptext: MultiTextField
-Submit: ImageButton
+ openPortfolio(): void

HistoryActivity
+nextMonthView() :void
+OnitemClick() :void
+weeklyAction() :void
+addListeneronButtonClick()
+openMain() :void
+openCheck_Up() :void
+openHistory() :void
$ Oncreate(savedInstance: B

WeekViewActivity
+initWidgets() :void
+setWeekView() :void
+PreviousWeekAction() :void
+Onresume:void
+setEventAdapter:void
+newEventAction:void
+addListeneronButtonClick
+nextWeekAction :void

ProfilActivity
-adresse: EditText
-email: EditText
-number: EditText
-age: EditText
-weight: EditText
-height: EditText
-emergencyContact: EditText
-emergencyNumber: EditText
-smoking: boolean
- dataBaseHelper: DataBaseHelper
+ openHelp() : void

Event
+ setDate(): void
+ setName(): void
+ getDate(): LocalDate
+ setTime(): void
+ getTime(): LocalTime
+ getName():String

EventAdapter
+ EventAdapter(): void
+ getView(position: int):View()

CalendarViewHolder
+CalendarViewHolder()
+ onClick(): void

CalendarAdapter
+getItemCount():int
+ onitemClick(): void
+ onBindViewHolder(): v
+ onCreateViewHolder(:
+ onCreateViewHolder(:
+CalendarAdapter():voic

User
-id: int
-name: String
-email: String
-password: String
+ setId(): void
+ setPasword():void
+ getPassword():String
+ getName():String
+ setName(): void
+ setEmail(): void
+ getEmail(): String
+ getID(): int