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DEPARTMENT: CHEMICAL ENGINEERING

COURSE CODE: ENG 224

COURSE: STRUCTURED COMPUTER PROGRAMMING

The name of my application is the joy2.0 disease detector, this application has the ability to detect things that aren't normal in the human body and display temperature, type of disease/infection, degree of infection.

My design is followed up by the software development cycle which is ;

- PLANNING
- ANALYSIS
- DESIGN
- IMPLEMENTATION
- TESTING
- MAINTENANCE.

The cycle of creation of my application starting from the planning and creation, my application design is inspired by pandemic affecting the world currently which is the covid-19 virus, which is aimed at creating an application that can precisely create a device that can effectively detect the symptoms of the disease.

I had thousands of bytes of data analysis which I integrated into my algorithm design which include;

. The average human temperature (analysing what range would be regular to detect any form of fever) which is around 36.7 degrees up to 37 degrees.

. Symptoms of various diseases.

. Average body system rates e.g heart rates, respiratory rates, pulse, blood pressure.

. Electrical activity, patient positions.

A representation of my design is shown below with a structured flowchart and a descriptive algorithm.

A python code was implemented to integrate the algorithm into instructions that could be understood by the computer system.

Since this is a prototype it was only tested on a mild flu it was able to come to a conclusion based on high temperature and respiratory failure, applying these sensors on a hardware device that appear like a box with a conical pin sticking out that will be attached to the measuran which will test for certain conditions.

HARD WARE COMPONENTS

The hardware components of my design consists of a digital box and a long conical pin which is an integrated sensor. The box displays various outputs like the concluded disease result, temperature , blood pressure and also a breakdown of the problem related to your result for example high blood pressure, temperature readings if you pulse exceeds the regular rate . The long conical pin is basically in the form of a clinical thermometer with a long and a pin like sensor at the tip.

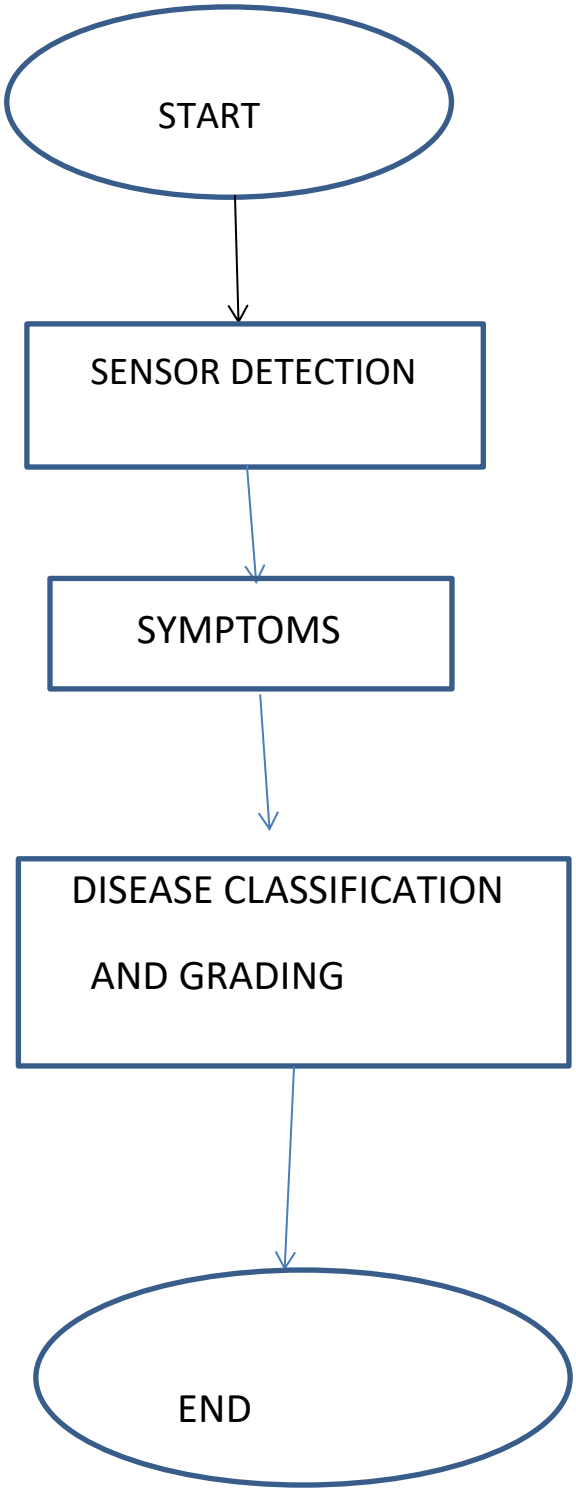
SOFTWARE COMPONENTS

The software components of my design consists of a program using a python coding system to execute the steps and also bring it to an end. Its entirety comprises of signals which attain certain conditions in this case is physical conditions of the measuran, it is connected to transducer with converts measured values into signals that can be understood and displayed. This integrates a well constructed set of instructions which executes with precision an accuracy with an installed mini data base to ensure body conditions are the regular observed readings otherwise we can say there is a problem.

Below is a table for the various sensors integrated into my designs and their various purposes.

The sensor	**Biometrics measured**
Pulse sensor	Heart rate (HR)
Sp02 sensor	Arterial oxygen saturation (sp02)
Airflow sensor	Respiratory rates (RR)
Body temperature sensor	Body temperature (TEMP)
Muscle /electromyography sensor (EMG)	Electrical activity of muscles
(ECG) sensor	Assess the electrical and muscular functions of the heart
sphygmomanometer	Diastolic blood pressure (DBP)

FLOWCHART


START
SENSOR DETECTION
SYMPTOMS
DISEASE CLASSIFICATION
AND GRADING
END

ALGORITHM

1. Start
2. Collect the required information from the measuran for processing .
3. Read through database of the system to determine body condition.
4. Breakdown data and analyse each body condition .
5. Transform the input from the sensors into a visual output.
6. Check for errors by debugging.
7. Stop

TOP DOWN APPROACH