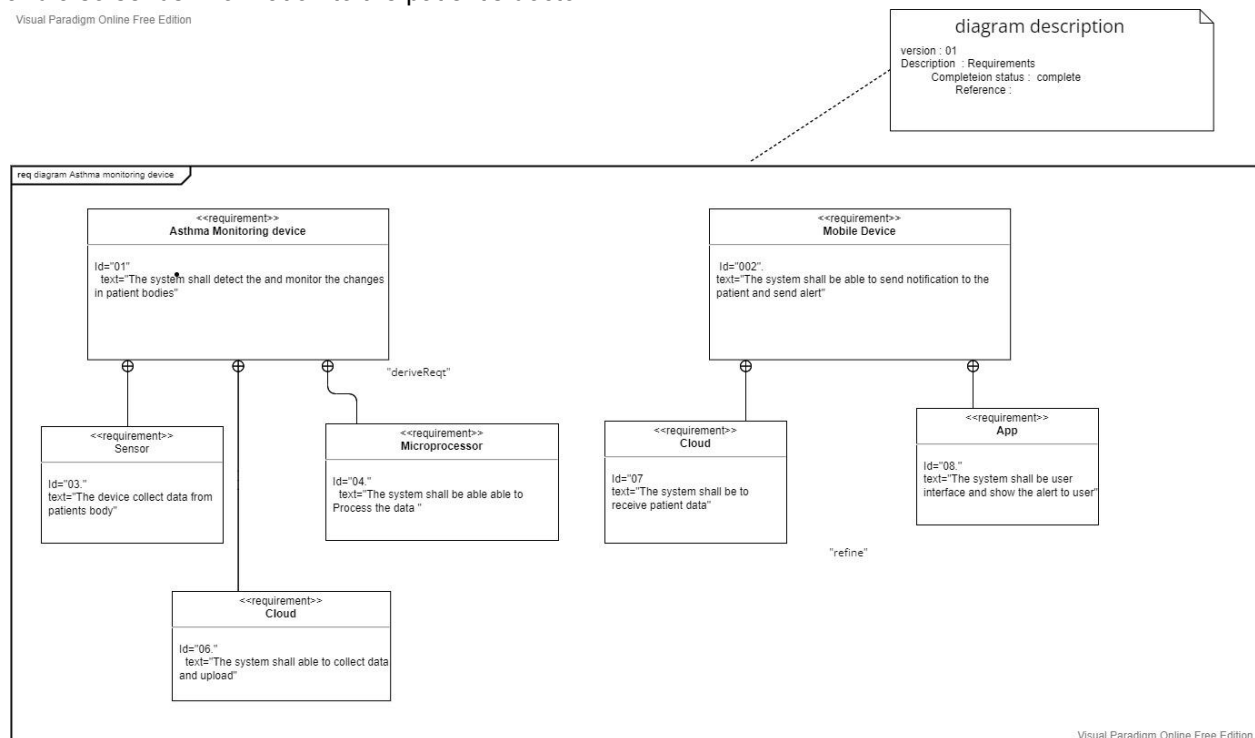# *Asthma Monitoring Device*

- ### **Requirement**

The Device is based on monitoring asthma in patients body and the device is portable. This device is going to measure the asthma rate of patients using sensors. Device collects from the sensor and sends it to the cloud. The patient's mobile phone will be connected and get data from the device and help the patient to check his asthma level in his body. It alerts the patient via mobile device in case of emergency and also sends information to the patient's doctor.
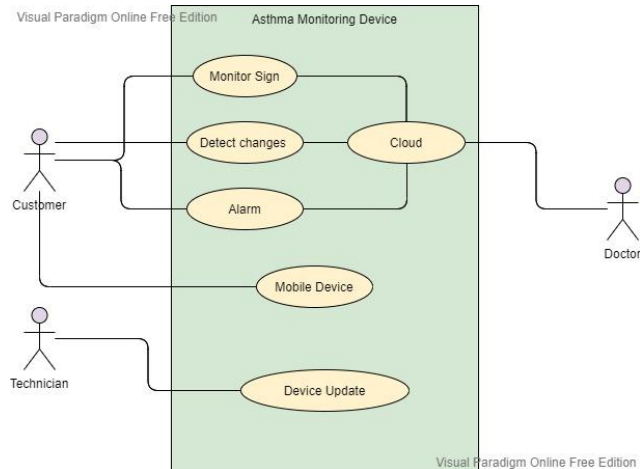
- ### **Devise Monitoring Factor**

    1. Tracking Cough
    2. Respiratory Pattern
    3. Presence of Wheeze
    4. Heart Rate

- ### **Use case**

Monitoring asthma in patients' bodies. And detecting changes and sends data to cloud

Asthma Monitoring Device

Monitor Sign

Detect changes   Cloud

Alarm

Customer

Doctor

Mobile Device

Technician

Device Update

- **Sensors**

 location sensor, ambient temperature and humidity sensor, air pressure sensor, embedded MEMS microphone.
Air pressure sensor is used to detect the breathing capacity of the patient and check if its in proper rate.
 ambient temperature and humidity sensor is used to detect the body temperature of the patient
Location sensor is used to detect the location of patient
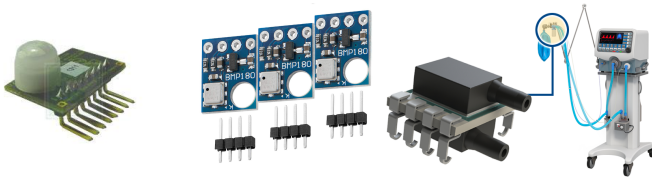
- **Microprocessor**

Microprocessor used is Raspberri Pi. Huge processing power in a compact board.
Many interfaces (HDMI, multiple USB, Ethernet, onboard Wi-Fi and Bluetooth, many GPIOs, USB powered, etc.). Supports Linux, Python (making it easy to build applications)
Readily available examples with community support. Developing such an embedded board is going to cost a lot of money and effort. Raspberry Pi collects the data from sensors and sends the data to MQTT Broker. The mobile device and the patient doctor gets subscribed and receives alerts.

- **Power Supply**

Rechargeable battery with 5v power supply(the power needed to run microprocessor and sensors are within 5v)

● Communication Protocol

MQTT (When using the MQTT protocol, network traffic is consumed at a very low rate. Low latency is achieved by transferring less data from the publisher to the subscriber in less time. You can simply design IoT projects that offer real-time results because it allows asynchronous communication. MQTT Client gets data from processor and sends data to MQTT broker and the subscribers gets the data to there devices