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REAL TIME DATA FETCHING AND HEALH PREDICTION SYSTEM

(Stage- II)

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Abstract: each Country's biggest plus is individuals and their contribution towards nation. This Contribution helps the country to grow the long run as we tend to referred to as it as GDP of nation. Gross domestic product (GDP) is a financial live of the value of all the ultimate merchandise and services created in a very specific fundamental quantity. GDP definitions ar maintained by variety of national and international economic organizations. This Organization collects the big variety of hands and contribute equally to nation. Any growing of Organization should have labor-intensive peoples United Nations agency puts best to figure for betterment of organization. and therefore the best Organization is taken into account to be best on condition that they lookout of worker health and supports them. For a business to reach its endeavors, its workers should be match and healthy. for excellent geographical point productivity, the health of your workers is that the determinant issue. Having physiological state within the geographical point motivates employees. It additionally reduces absence. Chronic sicknesses scale back productivity, ar chargeable for rising healthcare prices, and will be managed by the leader to cut back attention expenditures. this could be done through worker health and well-being programs, and well-designed health management initiatives. additionally, new info and communication technologies build it doable to watch worker health with wearable devices and tele-health power-assisted police investigation techniques. This paper introduces a singular new approach to Real time knowledge winning and health prediction system itself a monitor to predict the health conditions. The main benefits are: reduction within the variety of visits to the doctor throughout workplace hours; reduced dependency on institutionalized health setting like hospitals for check-ups; and previous data of worsening symptoms, thereby resulting in timely cure instead of moment hospital visits, rest home admissions, all of that result in lesser sick leaves, and a lot of productivity per worker.rather than last minute hospital visits, nursing home admissions, all of which result in lesser sick leaves, and more productivity per employee.

I. INTRODUCTION

II. PROBLEM DEFINITION

Our objective is to design Any organisation has employee working where we can monitor each and every one's health by using mobile application. Also keep track of their health using normal and critical value using web application application. Heart Rate,Oxygen Saturation,Electrocardiogram,Blood pressure etc..

III. PROJECT SCOPE

In the 21st century, Let us emphasize once more that the IoT can be nothing short of a revolution in the field as important on the global scale as healthcare. there are still many difficulties, peculiarities, and technological obstacles to overcome. And even though there are, currently, downsides as well as advantages to the concept, things seem to go very well for this technological innovation.

We are pretty confident that if you ask most medical professionals about their opinion on the subject, they will say that full IoMT integration and adaptation is the only logical way of development for advanced medicine of the future.

IV. USER CLASSES & CHARACTERISTICS

- **Proposed Methodology**

Figure 1 illustrates the system which consists of following modules: Data Collection (DC) Module (Hardware), Data Processing (DP) Module (Software), Data Storage (DS) Module (Software), Decision Support System

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(DSS) (Software), Data Presentation and User Interaction (DPIU) Module (Software). Apart from this, there are two layers: ENC/ DEC and SEC to enforce data security.

Fig 1: System Module

- **Data Collection (DC) Module**

This is the only hardware module and consists of a wrist health band, physiological sensors which measure – pulse rate, pressure, calories and SpO2.

The wrist band provides a convenient interface for the collection of physiological data, while the worker completes their normal tasks.

The wrist band offers at least two advantages for this application:

1) Proximity to hand and surrounding areas to which the above mentioned sensors can plug into to tap vital patient data.

2) Less complicated to use compared to a new-in-the-market complicated-to-learn health gadget.

3) Easy to carry the band as it looks cool. The wrist band attaches itself to the mobile and communicates with it through the Bluetooth technology. The communication between the Application dashboard and the wrists band occurs over a Bluetooth and cloud technology, and shall be one of the two types:

1) **Command messages**: intended to issue commands to the Bluetooth.

2) **Data messages**: contain raw patient data, related to one of the following: Spo2, pressure, pulse rate and calories.

- **Data processing module**

This module is entrusted with performing multiple tasks of filtration, extraction, conversion.

Filtration: Clear raw data of 'noise' and redundancy.

o **Extraction**: Derive meaningful and useful pattern from data. o **Conversion**: Convert data into an understandable format such as JSON, XML for easy, reliable and efficient interchange between modules. These formats are also easily understood by the presentation layer, and by the graphic and visualization algorithms.

- **Data storage module**

This module stores two kind of data:

1) User related info which is further sub-divided into: a)
user profile

b) who can access patient data
and

c) in what roles 2) Patient's
processed health data.

User related information enters this module through the interaction between a user and interaction module, whereas processed patient data comes directly from the decision support module. The database used for this purpose could be relational, nonrelational or cloud based depending upon the requirement. Examples of traditional databases include: MYSQL and SQL while No-SQL databases like Mongo DB which make it easy to store and retrieve machine generated data can also be used for the purpose. Furthermore, cloud based databases such as Amazon WS, Google Cloud SQL, and Microsoft Azure provide scalable data storage and can be used only when large number of patients are involved, and the data space requirement is expected to grow rapidly.

However while using any of these it should be remembered that, health data should be kept confidential hence, extra care must be taken to encrypt/ decrypt it before every storage/ retrieval process, in accordance with HIPAA/ HITECH security policies. The security (SEC) and encryption/ decryption (ENC/ DEC) layers take care of this requirement.

- **Decision support system**

This module has three threads running simultaneously:

(Thread 1) collects incoming data from data collection module, and pushes it to data processing module; (Thread 2) collects processed data, checks for anomalous conditions, informs alarm generator module if something is wrong and (Thread 3) Collects processed data, passes to data storage module.

In case of emergency only (Thread 2) is performed because (Thread 3) is not required. Below is figure 2.

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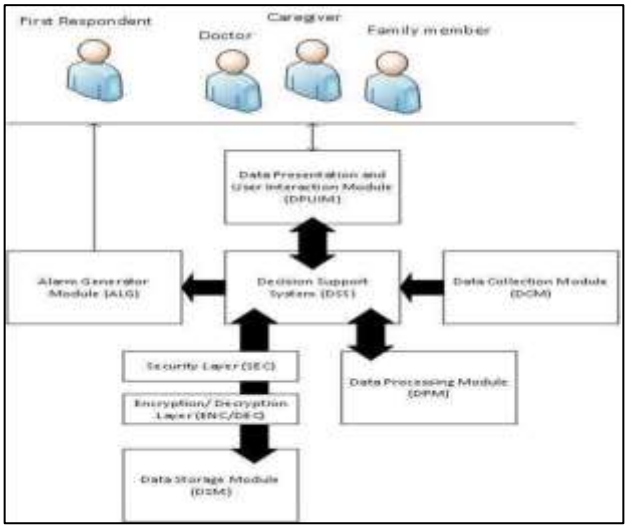

Fig 2: Decision module Diagram

- Data Presentation and User Interaction Module

The two most important functions which this module performs are: enable user interaction and, present data to the user. User Interaction: interaction can be in two ways, user → system: obtaining user related information through webforms, permitting the user to communicate with the patient by writing an electronic prescription, sending an email or note over the internet. Or it can be system → user: emails, phone calls, texts directed towards a single user or a group of users, during emergency situations, based on settings preconfigured into the system.

Data presentation: involves obtaining formatted data XML/ JSON and converting them into visual representations, to in order to help the end-user interpret patient related data. The end user can be presented with Visual Representations such as charts, bar-graphs, real time feeds.

Data Presentation and User Interaction Unit can be a secure web app, running on a desktop or mobile version of web-browser such as Firefox Mozilla, Google Chrome or Safari.

V. SYSTEM ARCHITECTURE

- **System workflow**

Figure 3 shows the system working and data flow as t is anticipated to occur between modules.The data collection module is responsible for collecting vital data. It consists of physiological sensors, connected to a wrist band. The wrist band non-invasively collect and transmit data to the decision support system (DSS), which is part of a larger application running on the web server . DSS is the core of the whole system, and capable of taking various decisions in real-time. The incoming data from Data Collection Module (DCM) is fed to DSS which in turn passes the raw data to Data Processing Module (DPM). After this, stage, the processed 'useful data' makes its way to the Data Storage Module (DSM), while the 'useless data' is discarded. The 'useful data' needs to pass through DSS during the previous step, mainly because DSS runs a separate thread to check for anomalous health situations. In the event, that an abnormal condition is detected, the DSS immediately calls, emails, or texts emergency responders and/ or family members via the Alarm Generation Module (ALG). If everything is normal, another thread running on the DSS pushes the cleaned data to Storage Module for back up. This Data Presentation and User Interaction Module (DPIU) use stored data to present bar graphs, charts, to the end-user, or to send auto-generated health reports to the doctor or patient family member.

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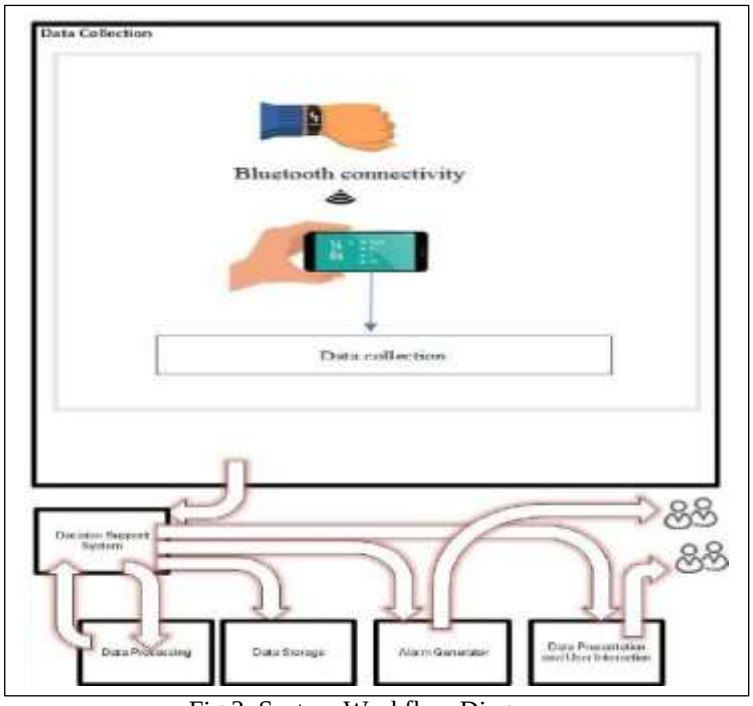


Fig 3: System Workflow Diagram

VI. TOOLS AND TECHNOLOGY USED

Front End:

PHP : To create API (Application Programming Interface).

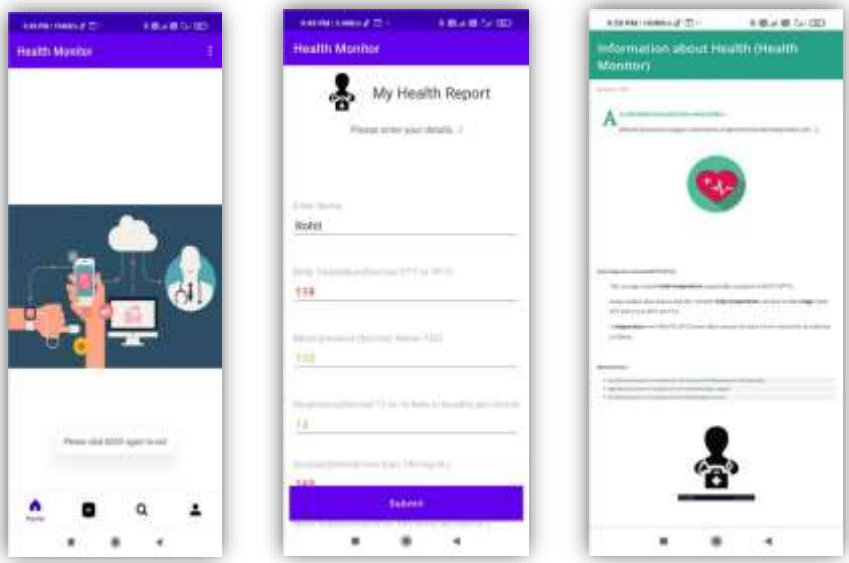
HTML & CSS (For Web Application Structure & Design), Alsoused third party librarie like Bootstrap for a better design.

C# ,Java .NET Framework for web application.

Back-End:

MySQL Database Microsoft SQL Server is a relational database manage- ment system developed by Microsoft. As a database server, it is a software product with the primary function

VII. PROJECT SCREENSHOTS



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VIII. ADVANTAGES

Get Accountable

Whether you're working out solo or "competing" with friends, a fitness trackerwill keep you accountable. Your fitness tracker will remind you every day to get in that physical activity. Ifyou get busy or simply forget, a reminder from your tracker will get you back on track.It can help you push a little harder with your workouts, too!

Daily Motivation

Another one of the advantages of fitness trackers is the visual progress. Your tracker can show you how many calories you've burned, how many steps you've taken, and how long you've beenactive.They can also remind you when you aren't getting that activity. This visual display of your progress can help you push harder, which leadsto the next item on our list..

IX. APPLICATIONS

1. This model is simple and easy to understand and use.
2. It is easy to manage due to the rigidity of the model,each phase has specific deliverables and a review process.
3. In this model phases are processed and completed one at a time.Phases do not overlap.
4. Waterfall model works well for smaller projects where require-ments are verywellunderstood

X. CONCLUSION

The proposed solution enables workplace health status monitoring, potentially reducing the impact of chronic diseases in office environments by utilizing the Mobile Application and web-App itself so it becomes a powerful health monitoring system. The main benefits are: reduction in the number of visits to the doctor during office hours; reduced dependency on institutionalized health setting such as hospitals for check-ups, advanced knowledge of worsening symptoms, leading to timely cure rather than last minute hospital visits. Together these will result in fewer sick leaves, and more productivity achieved per employee contributing a healthy work environment, minimized revenue losses for the companies, maximized overall output, and improved health outcome for the employees, all with minimum impact on their day-to-day activities.

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