THE SMART FITNESS MACHINE USING IOT

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ABSTRACT:- The sensible Fitness Machine is associate aftermarket product that's designed to mechanically track a user's performance for a selected exercising machine. The system offers a standard resolution for any fashionable weight lifting machine that doesn't have a "smart" or web connected feature. This product is cheap and offers a perfect resolution for athletic facilitys to form their machines "smart" and upgrade a gym with fashionable specifications. This technique eliminates the necessity for a user to manually record weight, sets, and repetitions throughout a exercising. The system con-jointly permits for a private trainer or healer to watch a consumer's progress additionally as provides a client specific directions while not being gift. The info gathered is displayed in a very helpful manner via automaton phone and on-line. The system consists of microcontroller that's connected to multiple sensors on the machine.

Keywords: Smart fitness, IOT based fitness; Web based fitness, Model trend fitness

I. INTRODUCTION:-

In order to assist users track their progress in exercise performance and win their objectives, it's necessary to style new technologies which will track performance from effort to effort. Having your effort logged is very important once managing individual performances. It'd be ideal for a gymnasium user to possess his or her performance tracked and compared to goals given by a trainer mechanically throughout a effort while not the trouble of manually work info. Having these results tracked and displayed provides the user with the flexibility to handily track progress and set and reach goals. On the opposite hand, upgrading gymnasium instrumentality is dear and also the quantity of cash that's required to possess this feature isn't definitely worth the price of upgrading the machine, there must be a less expensive answer

II. LITERATURE SURVEY:-

Due to the widespread quality of fitness in today's society, there square measure several applicable patents involved with chase a user's performance during a athletic facility setting. Most of those, however, are more focused on chase performance because of cardio or bodyweight exercises by exploitation body sensors or GPS. tho' still relevant, there square measure so much less patents that upset tacking the performance of weight coaching.

III. DESIGN AND DEVELPMENT:-

We set to follow a Use-Case driven style method. Every Use-case identifies a selected Stimulus-Response pattern that's triggered by Associate in Nursing actor (user of the system). For every Use-case, we have a tendency to known events of the system, the info that's transmitted throughout the system, and what controls should enforced. This kind of thinking helped to investigate and perceive a system, in order that system necessities is known, clarified, and arranged . each Use-case shows the interactions between a user and therefore the system associated with a selected goal – the user's trigger is named the stimulation and therefore the action of the system is that Response. Our Use-cases embrace user interfacing events, processing, knowledge and management of the system. The Use-case additionally shows those functions that ar internal to the system that method the info, and send controls to the hardware.

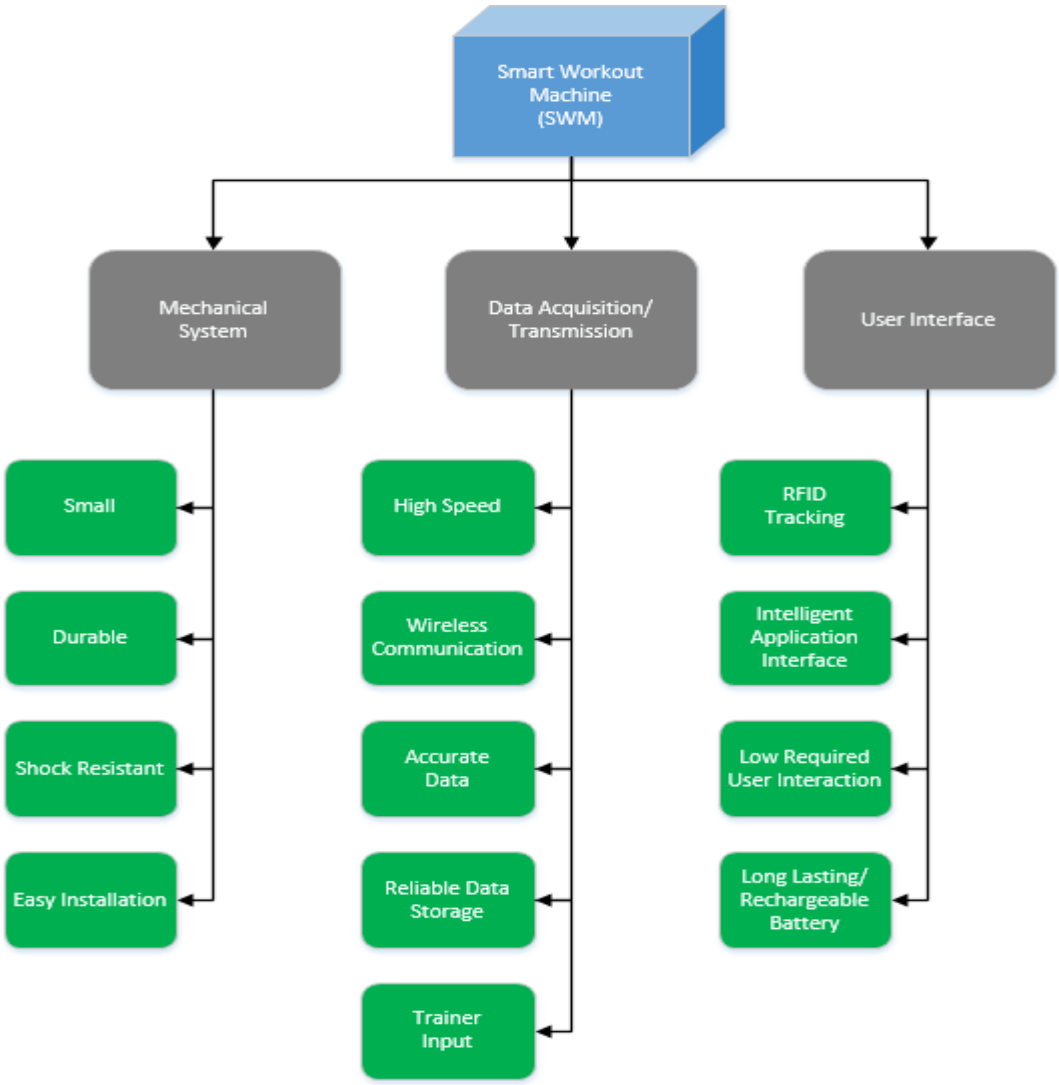

Fig 1: Smart Workout flow system

Based on this analysis, our team identified the following Use-cases for the system:-

1. RFID Records Entry to the System
2. RFID Records Exit from the System
3. Data Management
4. Data Management and Display

IV. RFID RECORDS ENTRY TO THE SYSTEM

The first event within the system is once a user signs into the system. The LED can at the start be lit red indicating the system is actively finding out a user. If the LED is presently inexperienced another user should register triggering the previous user to be logged out and their information to be sent to the information. If the LED is lit yellow the information affiliation is lost and therefore the user is to grasp that no information are going to be recorded till affiliation is repaired and that they area unit ready to register. The user places their RFID band close to the clearly marked RFID sensing element. The microcontroller pulls information from the RFID sensing element at a rate of 50ms. The microcontroller takes that information and searches the information for the user account. If the user is genuine a inexperienced LED is lit. If the user isn't genuine the red LED can flash thrice. If no affiliation was created to the information a yellow LED can light-weight and stay lit till communication is repaired.

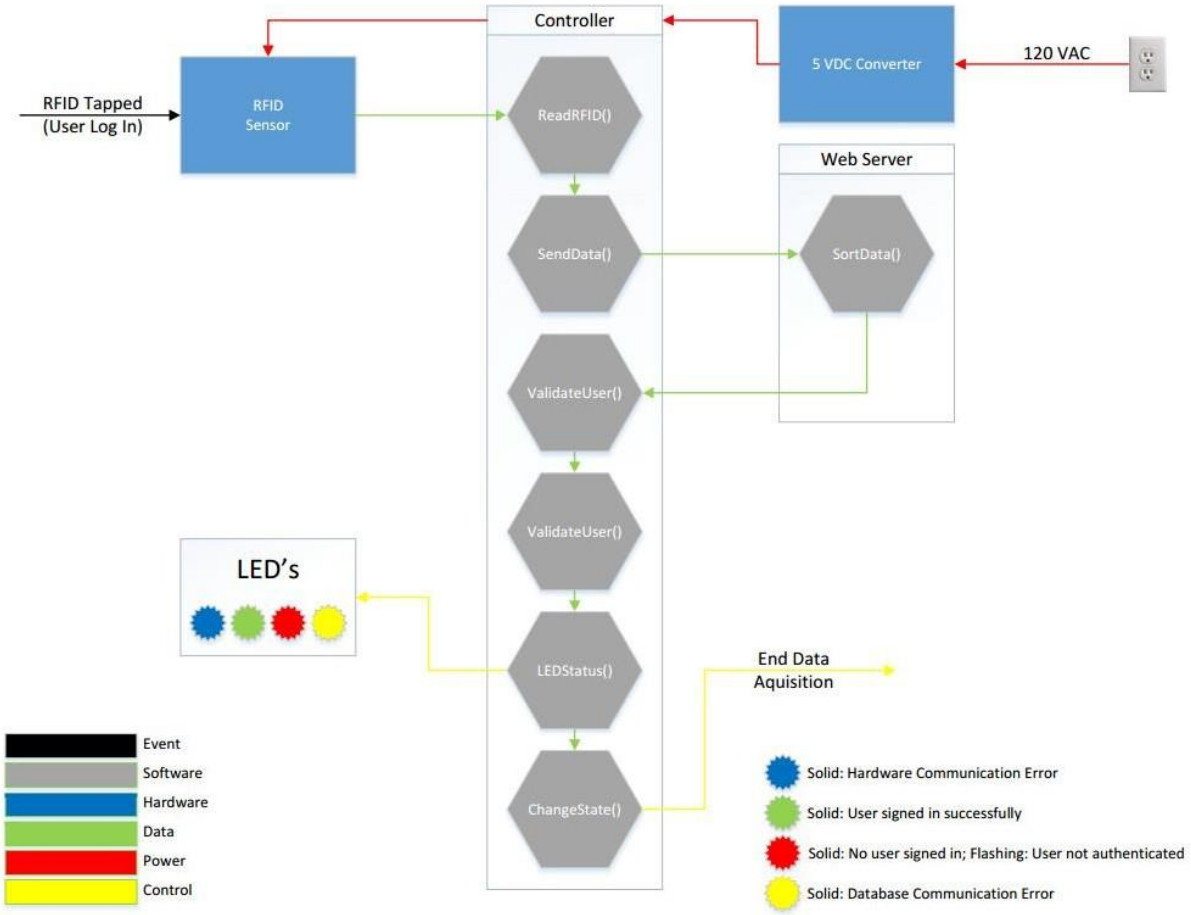

Fig 2: RFID Record Entry System

V. RFID RECORDS EXIT FROM THE SYSTEM

Similar to use case no 1, the system conjointly tracks once a user signs out of a machine. The junction rectifier is presently lit inexperienced indicating the user is with success echt and their performance is being caterpillar-tracked. The user once more places their RFID band close to the clearly marked RFID detector.

This triggers the microcontroller to prevent following knowledge for this user and sends any knowledge which will not are sent as a collection . At this time the junction rectifier is once more lit red indicating the system is trying to find a brand new user . These steps are diagramed in Figure three.

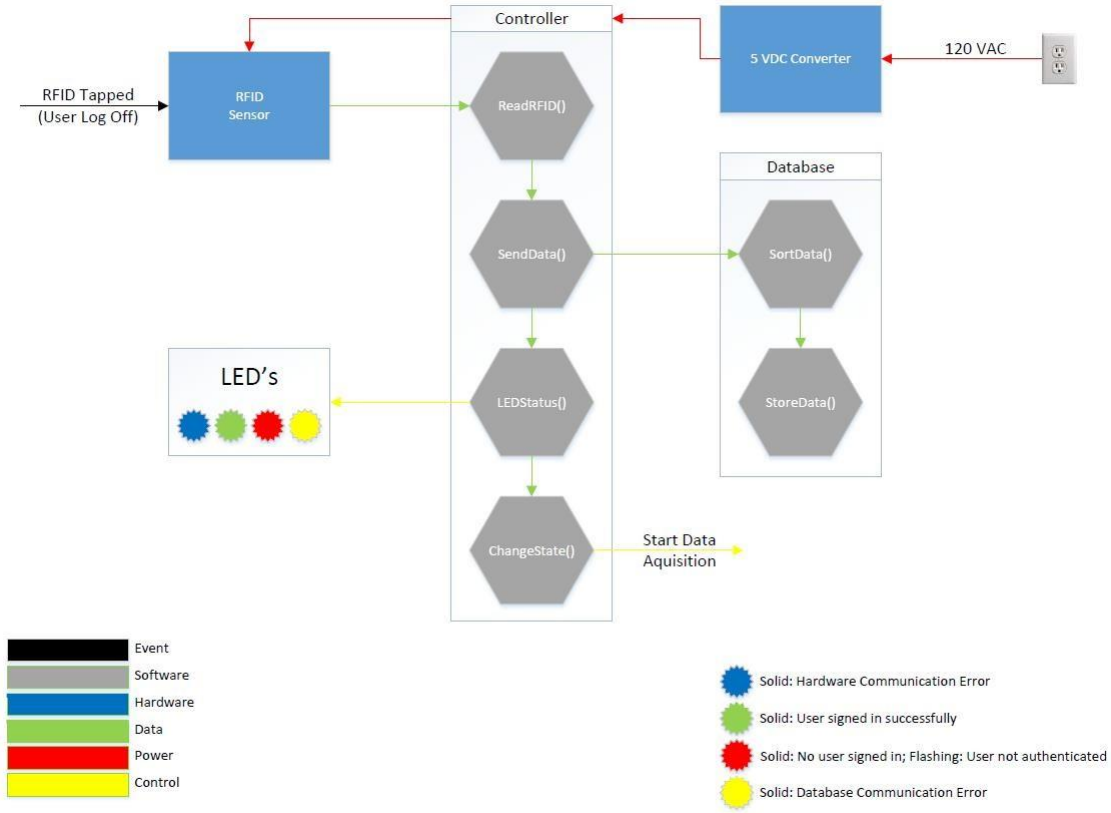

Fig 3: RFID Record Exist System

VI. RESULTS

Due to the fact that we will be using a USB in line power pack to provide our system the capability to maintain operational in the case of power failure, it is necessary to calculate an estimate of the minimum size of this device in order to keep the device operational for the necessary time of 4 hours. Due to the nonlinear decay of batteries a simple calculation of rated battery capacity (mAh) divided by the discharge current (mA) will not return an accurate estimate of the size of battery needed.

VII. CONCLUSION

The package is split into 3 parts: The microcontroller package, the information and webserver package, and therefore the package for the mechanical man Application. As seen in Figure twenty six the extent zero package diagram shows that the microcontroller package can get the info from the varied inputs and format the info to be sent to the information, then the webserver and mechanical man application will pull the up to this point information from the information and gift it to the user. Therefore the microcontroller indirectly updates the webserver and mechanical man application. The package will perform extra functions here not pictured within the diagram. one amongst the operate are setting the semiconductor diode to the proper state to gift the state of the machine to the user. Another operate are protective power; this can be done supported the quantity of activity that it's seen for a given period of time that dictate what proportion power ought to be consumed.

Fig 4: Package System

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