**I.INTRODUCTION:**

The heart rate of a person depends on age, gender, daily physical activity, mental stress and many other activities/conditions. Furthermore, there is no proper equipment that can keep a track of heart beat rate. We intend to do a system that can collect the person’s daily heart rate activity, store it in a database, analyze the heart rate and the activity the person is performing. Moreover, the application can analyze the data and recommend mental or physical activities to be performed by the user to keep the heart rate optimal. It can also suggest the timings of the abnormal heart rate. All these would give a clear idea of the medical condition of the user and the better usage of it can help in a longer life.

**II.PROJECT GOAL AND OBJECTIVES:**

**OVERALL GOAL:**

The goal of the project is to build a system that can take care of the user’s health. This heart rate system is an android application which he can view even through the smart watch. This application works with the heart rate sensor embedded in the smart watch. It can observe the patterns of the heart rate and determine the health condition. It recommends the user with the necessary physical and mental activity.

**SPECIFIC OBJECTIVE:**

The objectives that would be achieved are as follows:

* Collect the heart rate and step count of the user
* Store the heart rate in regular intervals
* Get the heart rate onto HDFS per day basis
* Analyze it using machine learning algorithms.
* Notifying the health conditions using smart watch and smart phone
* Recommend the activities to be done by the user.
* Have a medical record, convenient and cost efficient.

**SPECIFIC FEATURES:**

The specific features designed in the project are:

* Heart beat analysis
* Step count analysis
* Notification of current health condition
* Recommendation of health care

**SIGNIFICANCE:**

The main significance of this application is it is a system that is required for every person in their daily life. It is a trending smart application which makes the life easier. It is beneficial and becomes a part of the life in the upcoming years.

**IV. FIRST INCREMENT REPORT:**

**EXISTING API:**

1. MongoLab API:

<https://api.mongolab.com/api/1/databases/my-db/collections?apiKey=myAPIKey>

This API is used to store the heart rate and step count in the database and get the heart rate from the database.

1. HeartRate and Step counter Sensor

The heart rate and step counter sensors are embedded in the smart watch which can be used to get the data. This data is sent to the Spark HDFS system on a per-day basis.

**DESIGN OF FEATURES:**

Dhb

zzScv

zScvZ  
Cv

zsdv

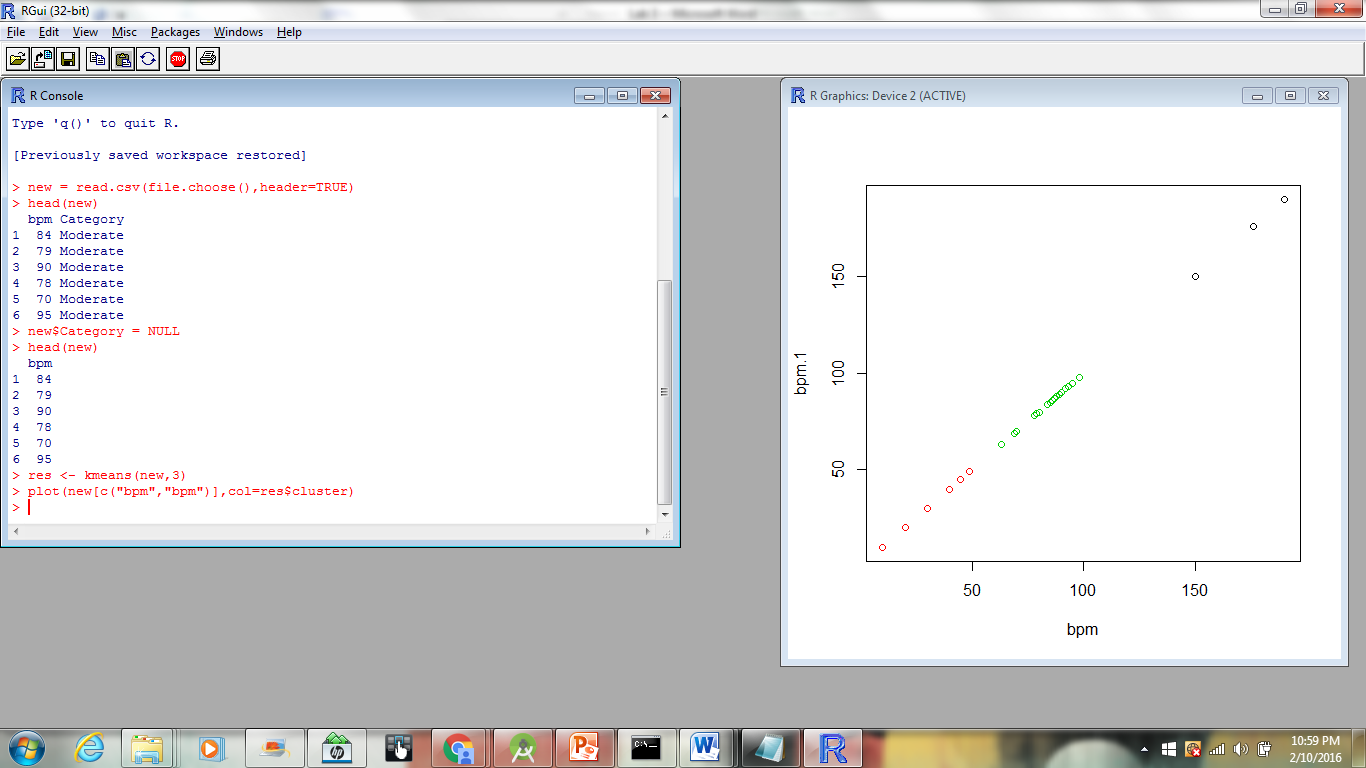
Zsd

**HADOOP/MACHINE LEARNING ALGORITHMS:**

In this application, we are planning to use the below machine learning algorithms to analyze the data.

1. **K-means Clustering:**

K-means clustering algorithm is a cluster analysis in which k clusters are formed with n observations. The similar observations are clustered determining the centroid. Here the similar heart rates are clustered and the patterns are determined.



1. **Apriori Algorithm:**

The Apriori algorithm is an algorithm for mining frequent datasets. Since the heart rate of the user when collected it produces similar data and frequent datasets are formed. This enables the use of this algorithm to determine the patterns.

**DATASETS:**

The datasets in the Heartfit application consists of heart rate data, the steps walked for the day, the timing, the geolocation where it is captured. These datasets are analyzed with the machine learning algorithms and the corresponding patterns are generated.

It would appear as Step Count, Heart rate, time stamp, geolocation. Few more features can be added.

**IMPLEMENTATION:**

Mobile Client Implementation:

This is smartphone-smartwatch application which