**BE : Project Abstract 24 July 2017**

**Group Number:** **23**

**Priority : 2**

**Project Title : Digital On-Body Detection Kit Using Arduino**

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**Abstract of Project:** This project proposes a new hardware system to measure blood glucose count, body temperature and heart rate using IoT. Arduino is used because it can sense the environment by receiving input from variety of sensors and can affect its surroundings by controlling lights, motors and other actuators. This system has the characteristics of being non-invasive, simple and quick. Digitally sensing body temperature, blood pressure and glucose level using Arduino can show the accurate results that will be displayed on the LCD monitor.

**a) Motivation*:***In the present scenario it is not possible for a doctor to monitor a patient regularly at home. Various on-body detections like heartbeat monitor, body temperature monitor and glucose level in blood are possible today only through different single purpose devices that are sometimes hard to procure and in case of detection of glucose level in blood there are invasive (needle) methods that have its own disadvantages. Diabetes being a chronic disease, in India, the number of diabetics is only increasing. With the help of this “easy to use embedded system” basic on-body detections will be possible at your fingerprints and that too at a very low cost.

**b) Problem Statement**: This project effectively removes the necessity of using invasive procedures to detect glucose level and using different devices to obtain different results. Cost of acquiring such devices is also high and in some places quite difficult. A multipurpose IoT device will help obtain these results quickly. Monitoring and having a log of these results will prove useful when approaching doctors for quick assessment.

**c) Approach:** The microcontroller on the board is programmed using the Arduino programming language. LM35 sensor is used to sense body temperature. Heart beat sensor is used for sensing heart rate. This device will allow one to measure their mean arterial pressure (MAP) in about one minute and the accurate body temperature will be displayed on the Android. Infrared sensors will be used to detect glucose count in blood.

**Reference papers*:*** *1)* ***A Non-invasive Blood Glucose Measurement System by Arduino and Near-infrared***Tuhong Zheng, Weixi Li, Yuwei Liu and Bingo Wing-Kuen Ling, Senior Member, IEEE School of Information Engineering Guangdong University of Technology

*2)* ***Sensing Heart beat and Body Temperature Digitally using Arduino***

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