DEVELOPMENT OF A MICROCONTROLLER-BASED BODY STATISTICS ANALYZER

THESIS

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ABSTRACT

HERNANDEZ, JUMEL R. and LUNGCAY, KEVIN I., Development Microcontroller-Based Body Statistics Analyzer. Undergraduate Design Project. Bachelor of Science in Computer Engineering and Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. April 2014. Adviser: Engr. Michael T. Costa

The main objective of the project was to develop a microcontroller-based body statistics analyzer. Specifically, it aimed to design and construct the circuit of the device. The interfacing of the sensors, specifically the load cell, ultrasonic sonar sensor, and pulse oximeter; LCD module; thermal printer; coin slot; and keypad to the microcontroller of the device. The test and evaluation of the design project was done by the comparing the results obtained in the digital body statistics analyzer to actual measurements and computations. The cost computation of the study was also conducted.

The microcontroller-based body statistics analyzer consisted of GizDuino X microcontroller as the processing unit. The microcontroller was responsible for the entire operation of the system.

The testing and evaluation of the project was done at the Engineering Science Building of the Department of Computer and Electronics Engineering by 30 participants to determine the accuracy, consistency, efficiency, and reliability of the designed project. The adviser, technical critic, some faculty member of CvSU tested the functionality of the device. Based on the results of the evaluation, the device proved to be accurate by the statistical analysis from the results of the evaluations.

The total cost of the design project was PhP 22,725.25.

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INTRODUCTION

The assessment of body statistics involves using the most appropriate, and accessible, method possible to 'estimate' a person's body composition. Body composition was analyze by means of evaluating one's height, body weight, age, body mass index, ideal weight, body fat percentage, body age, oxygen saturation in blood, heart rate and a lot more of parameters. Body statistics analyzer for most people was used to screen health composure categories that may lead to health problems if not given prior attention.

Body Mass Index (BMI) was a simple, quick calculation meant for use in classifying people who were not physically active and who have an average body composition, and was generally considered a good indicator of whether people were at a healthy, normal weight for their height. Body Fat, in its simplest form was the amount of fat in the body, compared to everything else (which includes organs, muscles, bones, tendons, water, and so on). The ideal weight on the other hand was the lean weight of the