National University of Computer & Emerging Sciences, Lahore
Department of Electrical Engineering (Fall 2020)

EE419- Embedded Systems

Assignment # 2 (Total =50) PLO- 5 + CEA

Section: BEE-7A **Due Date:** 19th December, 2020

Problem Statement:

We want to design a home automation system using TM4C Controller. This system detects an intruder, abnormal temperature condition inside a house and any smoke that is hazardous to human life. On detecting any abnormal activity, an alarm should be turned on for few seconds to notify the resident. The system sends status of each sensor continuously to a PC connected with it. User can control devices via PC as well. For example, user can turn off the alarm from PC. Your system should not cost more than PKR 2000.

Tasks: (All these 13 points should be covered in the assignment report)

Sr. No.	Description	PLO
1.	Decide which devices should be used as inputs and output for this system	5.1
2.	Identify an efficient method/technique of interfacing these devices with microcontroller	
3.	Mention all the software tools used	
4.	Compare different sensors for intrusion, temperature and gas detection and chose the best for your system	5.2
5.	Draw a hardware block diagram of your system with all the chosen components	5.3
6.	Draw flow chart of your software	
7.	List all the on chip modules you have used	
8.	Mention all the details for programming each module (including all the register settings and calculations involved)	
9.	Write an efficient code for your system with minimum wastage of CPU resources	
10.	Simulate your code in software before testing it on hardware. If it is not working, improve your solution	5.4
11.	Justify that your code is working during evaluation. Also add screenshots of working code in your report	5.5
12.	List down all the shortcomings in your implemented system	
13.	Suggest improvements in this system to develop a better solution for home security.	

Report Format: A4 size, 12 Font Size, Times New Roman. All figures must be made using MS VISIO.