

Chapter one

Thesis Overview

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1.1 Project Idea Description

The proposed project aims to design a portable smart pharmacy consists of several chambers, each chamber for specific type of medicine and digitally locked and requires entering password to be opened.

The pharmacy has several features such as keeping the medicine at FDA standard storage conditions by measuring its temperature and humidity, and automatically activating the fan when they are out of range.

The user can specified the number of times per day the dose should be taken and the time for each dose according to the doctor prescription, then the system sends sms message to patient's mobile phone to remind him to take each drug in the specified time. Furthermore, the system gives the user an indication of the remaining drug pieces in each chamber and the expired date for each.

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1.2 Project Motivation

Medicines are meant to help make patients feel better. They also can help treat a medical condition. But if medicines aren't taken exactly the right way and time, they can be harmful. According to the Centers for Disease Control and Prevention (CDC), more than 60,000 young children [1]go to the emergency room each year because they got into medicines while their parents or caregivers were not looking. That's why it's so important to prevent the children from reaching the medicines. These side effects create the idea of this project to design a digital safe smart pharmacy that can keep all medicines out of child's reach and sight, and provide the user with counting and timing system that can count each medicine pieces remain in each chamber.

1.3 Project Aims

- The project to alert the medication on time or according to the doctor's prescription by timing system and Alert the patient in the event of a lack of medication via RGB-LED.
- keeping the pharmacy locked from reach of child and enabling the user to it by inserting password to the keypad also Enter the name and expiration date of the medicine.
- The pharmacy is portable so it will be available whenever the patient needs it
- Keeping the medicine at temperature (10-27) c, by controlling the temperature inside the pharmacy and running the fan when it is greater than 27c.
- Send a message to the patient's phone to Remember taking the drug, The mobile phone history shows: the name of the medicine, the doctor's prescription, the amount of the remaining and the expiry date.
- Alert the patient in case of lack of medication via RGB-LED.
- Show the time and date permanently, the name and the room of medicine when time of medicine occur by LCD-screen.

1.4 Literature Review and Related Work

The project study comes to accomplish many previous studies that include different techniques for the smart pharmacy, the previous design is about "smart pharmacy card"[2] which automates the patient's medical history and medical review so that each new description can be analyzed by drug makers Tudermine Ivet conflicts with diseases, with prescription and non-prescription drugs The card is documented, and the model that will appear will use the integrated circuit card ("smart card") and erasable data. [3]. There were many graduation projects for the smart pharmacy, and this is one of the projects used The pharmacy provides a product delivery service for patients, also products for all agegroups and all needs facilitate the choice and

availability of the product or not. Through that IPHON mobile application we deal with people especially in ABHA cityin this application[4].

This project has been designed to investigate and select the optimal methods to suit and meet the requirements of the drug by adding the time alert to avoid the expiration date of the drug by inserting the date of the medication with the carbide and the pharmacy locked by using servo motor. It alert the patient of medicine time or in case of medicine's decreasing by sending a message on the patient's mobile.

1.5 List of Abbreviation

The following list includes all of the abbreviation scripted in the project

Table 1.1: List of Abbreviation

Abbreviation	Full word
FDA	Food and Drug Administration
LCD	Liquid Crystal Display
RTC	Real Time Clock
AC	Alternating Current
DC	Direct current
PWM	Pulse Width Modulation
AM	After Midnight
PM	Past Midnight
GSM	Global System for Mobile Communication
C	Celsius
UV	Ultraviolet
RAM	Random Access Memory
SIM	Subscriber Identity Module
GND	Ground

1.6 Economical Study

The total project cost is shown in the table

Table 1.2:Component Cost.

no	Type	price	Quantity
1	Arduino Mega	80 JD	1
2	DHT11	60 JD	1
5	Fan	20 JD	1
6	RTC	30 JD	1
7	Keypad	5 JD	1
8	Servomotor	15 JD	5
9	GSM	50 JD	1
10	LED	0.5 JD	18
11	LCD	10 JD	1
Total		300JD	

1.7 Schedule Time

In this time plan for project tasks is due to the time zone for each of the 1.7
Schedule Time shown in the table 1.4 and table 1.5.

Table 1.4 Schedule Time For First Semester

Task \ Week	Week														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Collect Information															
Basic Design															
Specification Design															
Documentation															
Advance feature															

Table 1.5 Schedule Time For the Second Semester

Task \ Week	Week														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Full Designing															
Purchasing the components															
System Implementation															
System analysis															
Documentation															