

**De La Salle University- Manila**

**Gokongwei College of Engineering**

PROLOGI

Programming Logic and Design

Project Proposal

Project Poseidon

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**Project Description**

As we continue to live our busy lives filled with jobs, chores, academics, and activities we tend to forget what needs to be done in the following days, even the smallest things like our medication can be forgotten. Medication or taking the prescribed medication and vitamins given by our personal doctors may be something small to us but Health and self care is the most important things to prioritize every single day. A 2021 blog by omcare.com stated that “They found that of the 600,000 patients, 39% simply forgot to take their meds, 20% did not renew scripts on time, and 10% put off refills resulting in multiple missed doses.” and ”In 2014, non-adherence was the [6th most common cause](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6139792/) of premature death in America. That’s an incredible, and expensive, statistic. These preventable hospital visits, stays, and deaths cost the healthcare industry hundreds of billions of dollars per year.” This and several more statistics was presented in this blog. It is apparent that medication given by our doctors isn't taken daily or what was prescribed to them. This is proven to be an issue since it has also affected our health.

Our project aims to create an app that connects both doctor and patient. Instead of the doctor prescribing medications in a piece of paper he can give the proper medication sent in his phone and set notifications when to take the medication whether maybe daily, weekly or monthly. The doctor can now also send the notification when their next checkup will be. We plan to get a base notification (python or C) code and modify it in a that will complete our objective in creating our desired app

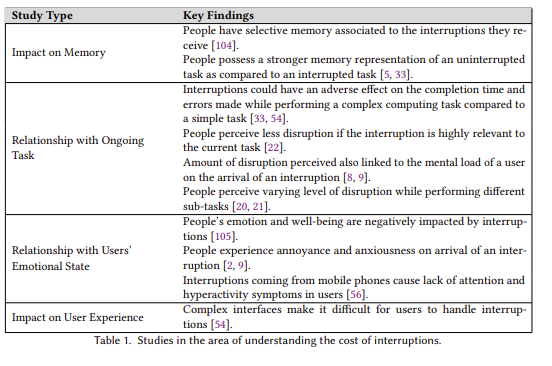
Medication reminder for an individual that is under a health risk or condition is incremental for the survivability of a patient. May it be teachers, students, lawyers, children or the elderly, taking medication at the right moment is key no matter the age or circumstances. A team of researchers based from the Gandhinagar Institute of Technology (Deepti Ameta, Kalpana Mudaliar, and Palak Patel, 2015). Developed a medication reminder Android-based application which its main goal is to focus on a doctors medicine prescription/dosage for their current patient. The features have set alarms, timings, set dates with specific medicine description. The patient is notified through email or message which is personally chosen by said patient.

Statistically speaking 66% residents of the USA take one prescription medication. With medication being one of the largest expenditures in the medical healthcare industry. As the average prescription per person is 4 per person with the figure rising for those dealing with chronic conditions and other severe health conditions. Taking statistical data provided by Omcare.com, over 600,000 patients around 39% simply forgot to take their medicine 20% did not renew their prescriptions on time while 10% held off refilling their current medications. Taking medication on time is important as it is solely responsible for the death of 125,000 people per year.

Another medication based system based on pill dispensing has been developed by researchers Nurmiza Othman and Ong Ek (2016). Proposed the idea of a smart pill dispenser system with an alarm through the use of a smartphone notification system. With a general description of how the system works, is that the system utilizes a Real Time Clock module (RTC) to provide information on time and date, paired with an IR sensor to count the medicine pills dispensed from the contraption. The input and output are controlled by a Arduino Mega 2560 microcontroller. It serves the brains of the operation while a Raspberry Pi B+ is used to receive signals from the Arduino Mega 2560 which would then send a notification to the patient's smartphone.

A use case of a notification based system during a medical emergency has been documented by researchers Archanaa Krishan and Yaling Yang (2020) last October 7th of 2020 during the global epidemic of the Covid-19 virus. Digital contact tracing became a necessity as it was a much needed aid due to the influx of infected patients that manual tracers had trouble keeping track of said infected individuals. The main system is to use an app which would collect and store its users location data. Then after giving a diagnosis, infected individuals report their location which would be then stored to a central exposure database server. Lastly any user can access the server to calculate their exposure risk in their present area. A positive exposure means that the system implies possible exposure to infection while a negative presents no known exposure.

The final impact of a notification system is important due to its lasting impact on the person. Random exposure to distractions such as a loud knock on the door can distract a person from the important information being displayed on the notification. Abhinav Mehrotra and Mirco Musolesli delve upon the intricate process of a notification system impact on the psychological effect it would have on a person. Taking a short excerpt from Zeigarnik’s psychological study done in 1927. It examined the process of humans remembering things with and without interruptions. The key findings are presented within this table from the paper.



**IPO**

Input

Prescribed medicine

Next Checkup

How many days, weeks and months to be taken

Hour intervals during the day

Process:

Set Notification of needed medicines,

Set Notification for next checkup

Set time alarm for hour interval of taking medication.

Set time alarm until when user needs to take their medicine

Output:

Notification for prescribed medicine

Notification next checkup

Notification hour interval of taking medication.

Notification until when needed to take medication

**Methodology**

How are you going to do it? Present an overall system flowchart on how your project should work. Include a description of the C or Python concepts that will be used to develop the project.

We plan to get a base notification (python or C) code and modify it in a way that will complete our objective in creating our desired app. Since it would be an app connecting both doctor and patient this would be also a communication type for both sides but only in terms of sending notifications settings and alarms for the patients. So we would also look into a communication code that would only send notification settings to the users.

**Schedule of Activities**

| Week | Activity | Assigned Member |
| --- | --- | --- |
| March 27- April 2 | Finding the Right Codes to be put into use and edit it to the way we desired. | All Members |
| April 3-9 | Documentation and Code Editing | Documentation(Member 1)  Code Editing(Member2, and Member 3) |
| April 9-16 | Finalizing Coding and Debugging and video | All Members |
| April 9-16 | Complete Documentation | Member 1 |

**References**

Ameta, D., Mudaliar, K., & Patel, P. (2015). Medication reminder and healthcare – an Android application. *International Journal of Managing Public Sector Information and Communication Technologies*, *6*(2), 39–48. https://doi.org/10.5121/ijmpict.2015.6204

Krishnan, A., Yang, Y., & Schaumont, P. (2020). Risk and architecture factors in digital exposure notification. *Lecture Notes in Computer Science*, 308–319. https://doi.org/10.1007/978-3-030-60939-9\_21

Mehrotra, A., & Musolesi, M. (2018). Intelligent Notification Systems: A Survey of the State of the Art and Research Challenges. https://arxiv.org/pdf/1711.10171.pdf; Association for Computing Machinery.

Othman, N., & Ek, O. (2016). Pill dispenser with alarm via smart phone notification. *2016 IEEE 5th Global Conference on Consumer Electronics*, 1–2. https://doi.org/10.1109/gcce.2016.7800399

Ōmcare. (2022, June 15). *4 telling medication adherence statistics [2022 update]*. Ōmcare. Retrieved from https://omcare.com/medication-adherence-statistics/#:~:text=The%20top%20reason%20for%20medication%20non%2Dadherence%20is%20forgetfulness&text=They%20found%20that%20of%20the,resulting%20in%20multiple%20missed%20doses