Deliverable C

GNG 2101
Submitted by: Group 5

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C1.

1. The client stated a number of constraints that must be kept under advisement over the duration of the project. The client stated that they would like to contact the University of Ottawa GNG2101 group 5 to construct a device that can enable the patients of Saint-Vincent Hospital to access the internet with ease, without having to reconnect and accept the terms and conditions every time they wish to use the internet. Bocar stated that the hospital changes the password every month but they receive the next two months of passwords in advance. Bocar also stated that the internet connection drops the users out and requires them to reconnect every 4 hours or so, this can be frustrating for those individuals that are physically impaired, and cannot easily reconnect to the internet and go through the login page with ease. Bocar also mentioned that there are a number of patients that have a variety of disabilities, entailing that one generalized solution may not be as beneficial, so the idea of having it applicable to all patients increases the effectiveness of the program. The project revolves around the ideology of a multiplatform autofill password system. Conceptually, the project will be implemented through a combination of a software application, and hardware modulus devices, which are tailored specially to individuals, depending on their needs. Theoretically, the software portion of the project will remain constant throughout, and then hardware components would be the ones that would change. The following diagram represents the functional decomposition for one idea as an example:

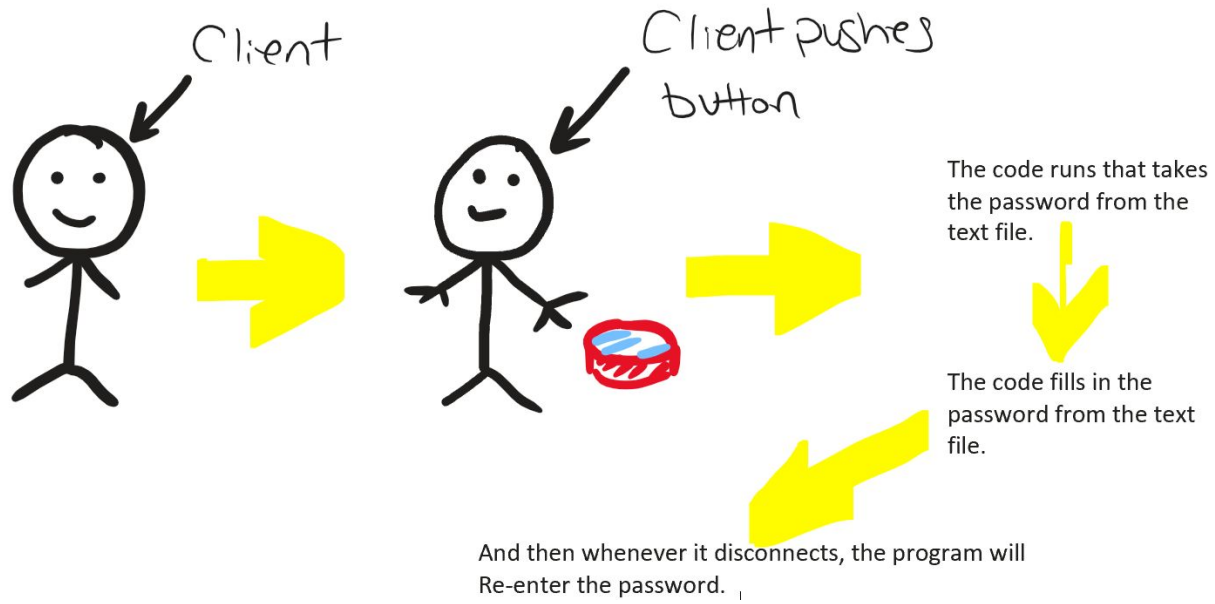

Figure 1.

2. The following are the project ideas:

- The devices can follow procedures for trusted devices so when it is connected to the wifi it does not have to be connected again, follows the same concept of smartwatches when

they are on your wrist they remain unlocked, the same concept will follow for the password management program. (Himanshu)

- The device can be physical so the patient can click a button and they can without ease sign in without the hassle of connecting every time. (Himanshu)
- The device can be app so they open the app and then it can override the login page and connect without disconnecting. (Himanshu)
- We can have a physical device which when present in the hospital (can be put on the wrist or in their medical equipment) that prompts the wifi and connects to it. (Adi)
- Wifi can be connected to the appliances in the room, so we can just have a button (regular such as fan or light which turns on the wifi and connects to the device. (Adi)
- You can sync devices to automatically connect to wifi by an NFC chip, so all you do is tap the device on an NFC chip and it would connect without login. (Kassem)
- All devices can be connected to wifi through a cloud network, that way all of the devices connected to the cloud account would automatically connect when in range of the connection. (Kassem)
- A password manager application will store the password for two months, and without the initialization of the program, it will always run, at every restart, and then whenever the connection drops it will reconnect without any command needed from the client. (Lemuel)

3. According to Deliverable B, we had some great ideas,

The devices can follow procedure for a trusted devices so when it is connected to the wifi it doesn't have to be connected ever again which is one of the basis on how smartwatches function, this was the very first idea and the most workable one, we could simply recreate the wifi connection by knowing simple source code.

The device can be an actual physical button which could simply be pressed and the patient connects on without any hassle, this being more of a hardware approach, could also what we as a group would like to include in our targets.

The device can also be presented as an app so they open the source app and the source code can override the wifi popup page and connect without disconnecting, something which is very common and is the first idea that the companies look at since it is very cheap and doesn't require much source code to be used and implemented.

The device could be a physical device that could be attached to the medical equipment of the patients, one of the intuitive things about this device would be how would we as a team station it on the equipment and make sure the patients can use it without having problems.

The device could be connected to other electrical appliances in the room which would then prompt the wifi and connect it when the appliances are turned on, something very basic with no extra work required.

The device could be a wireless charging port which would be prompted when it is tapped. This device would be very complicated and something would require a lot of expertise in hardware and software

The device could just simply be a wifi-web login which automatically connects to the hospital wifi, again a very basic idea which is used all over the world.
In the end, we are looking for something unique, simple, and something that is reachable by every patient in the hospital.

4. The group had three promising ideas:

The devices can follow the procedure for a trusted device so when it is connected to the wifi it doesn't have to be connected ever again which is one of the bases on how smartwatches function.

The device can be an actual physical button which could simply be pressed and the patient connects on without any hassle.

The device can also be presented as an app so they open the source app and the source code can override the wifi popup page and connect without disconnecting.

5. The group came up with a bunch of ideas. The best three that stood out happen to be:
A concrete idea could be built up using all the ideas mentioned in question 4. For our target, we could be looking at a device that combines all of them together or is a mixture of two of them or only focuses on one of them. The key to a successful project is time management and how we as a group end up playing around with the software/hardware being used in the project. In the end, as a very strong knowledge about smartwatches and know how they function the group would be looking at trusted devices to be a very concrete plan and something we could say is our current target. This approach works the best we still have options if our targets don't meet the end product. Keeping these options open gives us room to move around and experiment more with our prototype.

6. Visually represent (sketch, diagram, CAD model, etc.) your group concept.

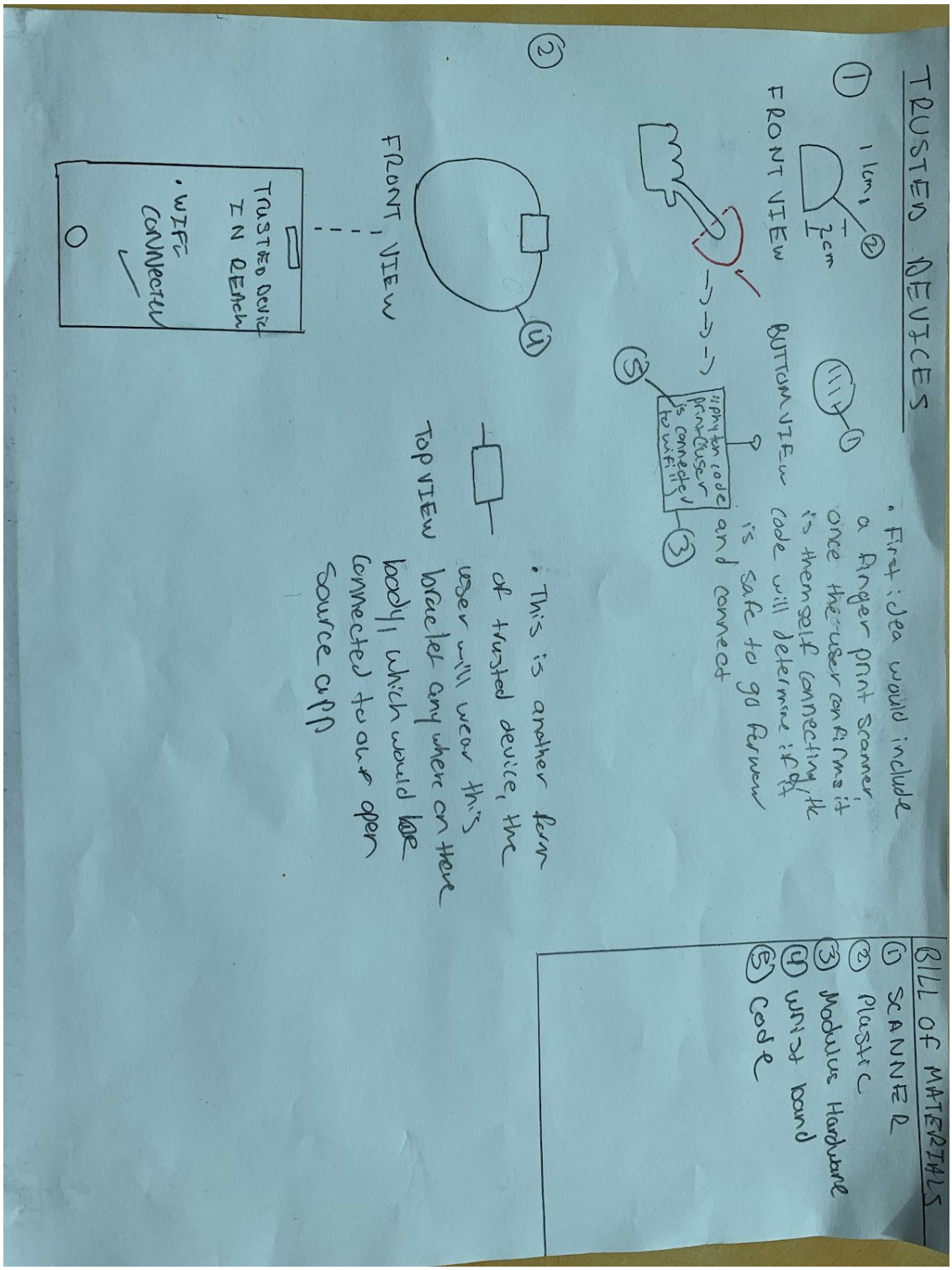

Figure 2.

7. Provide a few lines explaining your concept's relationship to the target specifications, as well as its benefits and drawbacks.

Our target specifications was efficiency, modulus of hardware and user-friendly, essentially we don't want our solution to be complex because that would defeat the problem so we have to create something very simple and easy to use. Also since our clients have disability issues and might have to be transported from room to room in the hospital, we have to ensure our solution was very easy to transport and small enough so the client can have it with them at all times. The benefits our concept design has is it was very small and easy to move around and doesn't cause any complications for our clients, it is effective and solves their problem in a minute or less. The drawback of having something very small and simple is it may get lost when a client is being transported or might even fall off the user's fingers and the user would not be able to pick it back up.

C2

1.

Two weeks project plan:

September 27, 2019 (Lab)

8:30-11:20 AM

8:30-8:45	Get into group, briefing about what should be accomplished during this lab period
8:45-9:00	Discussing initial thoughts on the project, basic brainstorming on structure and materials
9:00-9:45	Working as a group on the needs identification deliverable
9:15-10:00	Work on refining the basic design of our software, physical part or button and discuss our basic plan for the next few weeks. What milestones do we wish to reach and when? Should individual research be done for next week? Will we have a meeting next Wednesday as scheduled?

Table 1.

Notes: Meeting next Wednesday 5:30 at the SITE-building.

October 2, 2019 (Wednesday Meeting)

5:30-6:30 PM

5:30 - 6:15	Create a list of tasks that represent our “next steps” for the project. Devise a plan and a timeline that sounds realistic to complete these tasks. Decide who will be responsible for working on the tasks, or if we should be working on them as a group.
6:15 - 6:30	Discuss what additional skills we may be needing as a group for the construction process (ex. laser cutting or 3D printing). Who can train on for these and when?

Table 2.

October 4, 2019 (Friday Lab)

8:30-9:00 AM

8:30 - 9:00	Review previous work done for the project and find out if they are in line with our target specifications and satisfy all constraints.
9:00-10:00	Create more sketches and different models.
10:00-11:00	Start making possible card design on the solid works software for the hardware aspect of the project.

Table 3.

2.
Bill Of Material (BOM)

Materials	**Elements of device**	**Amount**	**Cost**
Microcontroller	Modulus hardware	2	$4.18x2
Breadboard	Terminal strip	1	$4.00-$9.15
Circuit board	Mechanically supports and electrically connects electronic components	1	$5.00-$40
PCL, 3D Printer, Laser Cutter, Hot glue gun	Provides with hardware support and something tangible in the project	1	$40-$45

Table 4.

3. A feasibility study of our group project discussing the five TELOS factors.

Technical: This group has skilled individuals in the mechanical engineering department. since the major aspect of this project is the software programming the individuals in this group are not well experienced in programming software application. there are well equipped technical resources that we need in other for this project to be successful in the Maker space labs at the university stem building.

Economic: We are giving a budget of $100 CAD, for this project. we are expected to maximize our budget and make sure it covers the materials required for the project. we made benchmarks and researches on materials and their cost and we used this to create our bill of materials, which we update as we gradually work on our project and also try to not exceed our budget.

Legal: We try to solve problems and not create more as engineers, therefore, we carry out this project through design process that ensures the efficiency of the solution and also the safety of the user in our mind. we will carry out a series of prototypes and test before users are allowed to make use of the solution. we believe that by carrying out the above design process there will be no legal issues with realizing our solution to the public.

Operational: We are working on a software application that can be operated with a hardware component. we believe that there are no organizational constraints that will prevent our success in this project.

Scheduling: We are giving a time range of three months from September - November to complete this project and we believe that the time giving is enough for the efficiency and productivity of our solution.