Faculty of Computing and Informatics (FCI)

Multimedia University

Cyberjaya

# PSP 0201 – Mini IT Project

**Trimester 2, 2018/2019**

# Title: ReturnNFound

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Finally, the group wishes to thank various people for their contribution in methodology part of the project. Their willingness and patience to fill up the methodology form and answering multiple questions are very much appreciated.

## Abstract

Based on personal experiences, the group noticed that the security department of Multimedia University (MMU) Cyberjaya are still using the traditional way of writing in a book to list down the lost and found items. Therefore, the group decided to develop a lost and found program that uses lockers as a way to store and retrieve lost items. MMU students and staff need to sign in before they can perform any other actions. They are required to enter their MMU ID and password to log in. After the user logged in successfully, the user interface will have two buttons, which are "Deposit" and "Retrieve". If the user wants to deposit something that he found, he needs to press "Deposit". The program will then display an automatic-generated case code and some details for the user to fill in. The user has to enter the type of the item that he found and basic descriptions of the item. Then the user needs to place the item in front of the camera that comes built in the kiosk and click "Capture" to take photo and upload it into the program. The program will then open an empty locker for him to place the lost item. After the student closes the locker, he needs to press "Done" in the program to lock the locker. the group will have a merit point system that rewards the users merit points when they deposit a lost item. The program will then show the merit points that the user has accumulated (first calculation). For retrieving items, the user needs to press "Retrieve" in the program after he logged in. He will be shown a search module where he can enter the item type that he lost. After he clicked "Search", the program will search for the item entered and show the corresponding amount of results (second calculation). If the user found his lost item, he needs to click on "Retrieve" button beside the item list. The program will open the locker for the user and he needs to click "Done" after he took the item. Then, the user is required to log out. The user can click on "View History" to see the history (third calculation). The history will show the information about the case code, the user who deposited the item, the user who retrieved the item, the item type and a basic description of the item. The user can report the case if he found out the other has taken away his belonging. A report will be sent to MMU Student Affair Division (STAD) to do the manual investigation.

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# Chapter 1: Introduction

## 1.1 Background of the program

The program that the group created is a new program as it does not exist yet in MMU. Our group wants to emphasize that, this program is an entirely new program for MMU. When students head to MMU security department to look for their lost items, they will realise that they still use a manual method of writing everything down in a book to record all the lost items. This is a very inefficient system especially when the students can't access their lost items once the building is closed or when the staff are having their break. It also takes time to find the lost item even if the student provides all the details and information because they need to look through each and every one of the items written.

Our group is inspired by the application Trace Tiger, which is a lost and found application. Our group thinks that the program is an amazing program that can resolve the problems that are mentioned above. Based on Virtual Lost and Found (2014), people spend 10 minutes a day looking for our lost item. So the group believe that this program has high real world value and it can increase the efficiency of MMU's lost and found system. This program can be implemented in the education industry, especially in MMU. This program will be a prototype and will be tested by alpha users and beta testers. The group will collect the feedbacks and comments from the beta users to help our group improve the user interface, functions and to fix the bugs.

Out target users for this program will be the students and staff of MMU. To increase the user-friendliness and intuitivity of the program, the group will reduce the complexity of the program and the group will apply a minimalist style for the user interface. To achieve this goal, the program will apply the user interface similar to the interface as shown in Diagram 1.1.

**Lost Items**

2 lost items found

| Title | Author | Lost Code | Barcode | Date last seen | Price | Rep.Price | Library | Itemtype | Holdingbranch | Location | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| The skeptical business searcher : | Berkman, Robert I. | Lost | 88377264409309 | 08/23/2009 | | | FPL | BK | FPL | GEN | |
| Elva S. Smith's The history of children's literature : | Smith, Elva Sophronia, | Lost | | 12/19/2009 | | | CPL | BK | CPL | CART | |

**Diagram 1.1: Example of user interface**
**Source: Koha Community (2012)**

Our group highly believes that most of the users will accept our program as it can increase the efficiency of the existing lost and found system. the group will be using English as our main language in this program as English is the international language that is used worldwide.

## 1.2 Problem Statement

The security department of MMU is the department that is in charge of the lost and found service where people can deposit and retrieve the items that they lost or found in the MMU campus. However, security department is still using a traditional method of listing all the found items in a book. Unfortunately, this method is very inefficient as it takes time to look through the information and it requires manpower. By developing this program, users such as the students or staffs can easily access it to deposit or retrieve lost items. This will help the users to save time instead of spending time to look through every information.

## 1.3 Objectives of the Study

1. To increase the efficiency of lost and found service.
2. Save time for lost and found service.
3. Reduce the workload of MMU staff.

# Chapter 2: Literature Review

## 2.1 Introduction

This literature review aims to provide a deeper understanding about the reasons why this program should be created. Our group have done research through studying online materials and reports to show that ReturnNFound is a useful program for MMU students and staffs. In this literature review, the group will explain the history of the lost and found concept and how it ever came to be. On top of that, our group will also be touching on the causes of forgetfulness that increase the tendency of people losing their belongings. These causes are particularly common among students because these causes relate to their daily academic studies and responsibilities. During our research, our group have discovered the items that students often lose throughout their studying life. Our group will also dive into how management office manages their lost and found system and whether people have the tendency to return lost items. Other than that, our group will state how technology can help to increase the efficiency of the lost and found system and how it can help to decrease the time required for the owners to find back their belongings. Hence, our group will discuss in details regarding the matters above in this literature review.

## 2.2 History of lost & found

According to the article of Tagliabue J. (2005), Napoleon assigned one of his prefect of police to open an office (No Louvre or Musée d'Orsay) on the street of Paris (Ile de la Cité) to collect all the lost items that people found. "It was in the spirit of centralization to collect all objects found in the streets of Paris," said Jean-Michel Ingrandt. This is the place and the method of lost and found originates from. After people found lost items on the streets, they would lend it to the office and store in the warehouse. This culture even spreads to the whole world and remains until today.

## 2.3 Causes of forgetfulness

One of the main reasons people always forget their stuff is because of forgetfulness. Forgetfulness is defined as a memory lapse or inability of a person to gain certain stored information in their brain. The research of Kohn A. (2014) claims that people tend to forget an average of 50 percent of the information they presented within one hour, an average of 70 percent of new information that they just got within 24 hours, and an average of 90 percent of it within one week. This research proves that forgetfulness is common among the public and it has a high possibility for people to forget that the place they put their belongings or take their

belongings before leaving a place. Thus, under this topic, the group wants to further elaborate on the causes of forgetfulness which are depression, stress and lack of sleep.

## 2.3.1 Depression

The article of Westcott P. (2015) suggests that depression is one of reasons that cause people to become forgetful. Poor concentration and apathy are two dementia-like symptoms included in depression. This article also states that Dr James Warner, who is a national professional adviser for old age psychiatry at independent health regulator the Care Quality Commission said: "Many people wrongly think the overriding symptom is sadness, but memory problems, trouble concentrating, struggling to get things done and loss of interest in activities can be just as prominent."

In the article of Corr K. (2018), there is an evidence that proves that depression can cause forgetfulness among human. Problems of memory that relating to depression always happen because of the processing speed of our brains. Usually, our brains are able to process information efficiently and quickly. But if we are depressed, its ability of process and retrieve memories will be affected. Corr K. suggests that researchers from Brigham Young University believe that they found out why depression can affect memory. There is a process called "Pattern Separation", which is the ability of our brains to distinguish things that are similar to one another. The more depressed one feels, the harder he can differentiate between those similar experiences. In other words, he is less likely to remember them. In addition, most of the individuals who are discouraged are additionally diverted and experience issues with concentrating, which can impede them from effectively remembering things. Depression tends to trap you in "negative thought-loops" that they meddle with your capacity to recall different certainties or data.

Based on the statistics that collected by World Health Organization (2018), there are more than 300 million people of all ages suffer from depression. This means that there is a high possibility that losing rate of items will be high, because depression can cause people to become forgetful. As established by Liz I. (2017), she feels that there is something that seems to obstruct her interaction with other people when she is depressed. Liz encountered depression that causes her memory impaired. In the past, she could remember the dates and times of appointments and major due dates for a month or more without a planner. But now, she could no longer remember assignments and documentation deadlines that are required by her lecturer in her mind. She also penicked when she realised she could not study and remember information the way she used to. Liz felt loss because she cannot even hold a simple to-do-list in her head for even one day. She made a mistake that she came 30 minutes late in a meeting with her supervisor. She was so helpless and felt worthless.

## 2.3.2 Stress

One of the main causes of forgetfulness is stress. In the article of Moss G. (2015), a study in the journal "Science" found that stress activates an enzyme called "protein kinase C (PKC)" in the brain, which can be detrimental to short term memory. The enzyme will decrease our ability to stay focused, especially when one is coping with multiple stressful situation. A solitary stressful circumstance will limit our focus, which is the reason you may forget your house keys on a day when you can only think of the big meeting at work in your mind . And, it becomes almost impossible to navigate your way through several stressful situations.

Now, the group will further discuss about the science that proves that stress can make people to become forgetful. In the article of Associated Press (2004), researchers say that PKC is possible to become one of the factors that cause distractibility, impulsiveness and impaired judgment by affecting the executive-decision part of the brain. They used some man-make chemical substances to increase the stress levels in rats and monkeys because they are easier to control. This situation is used to simulate the situation of humans when being exposed to loud noise or panicking before an exam. In this article, it states that Dr. Amy F. T. Arnsten of Yale Medical School said that: "It doesn't have to be traumatic, as long as you feel out of control. Control is the essential factor.... If you are confident, you don't have these problems." PKC normally influences a part of the brain that allows abstract reasoning, using working memory that keeps updated. "This kind of memory, the ability to concentrate, seems to be impaired when exposed to mild stresses," she said. The research was funded by the Public Health Service, the Stanley Foundation, National Institute of Mental Health, Stanley Medical Research Institute and the National Alliance for Research on Schizophrenia and Depression.

One survey in the article of Szteliga N. (2018) shows that in year 2017, there are 8 out of 10 students claimed to suffer from stress and anxiety. Another survey from All-Party Parliamentary Group (APPG, 2015) also claims that 87 percent of the student are stress, which consists of 862 participants. This statistic is shown in Diagram 2.1.

According to Ross, S. E., Niebling, B. C., & Heckert, T. M. (1999), in College Student Journal, there are 8 sources of academic that causes 67.2 percent of students stress daily. Among the students, 30 percent of them feel that class workload has increased, 28 percent of them are stress because they have lower grade than anticipated, 10 percent of them change major, 9 percent of them are searching for graduate school or job and missed too many classes, 8 percent of them are having anticipation of graduation, 5 percent of them have serious argument with instructor, 1 percent of them have transferred school. These statistics are shown in Diagram 2.2.

5

**Have you experienced any of the following feelings in the last year?**

**Please pick all that apply**
(Have you experienced any of the following feelings in the last year? )

| | | |
|---|---|---|
| Stress | (862) | 87% |
| Feeling unhappy/down | (793) | 80% |
| Lack of energy or motivation | (770) | 77% |
| Anxiety | (764) | 77% |
| Depressed feeling | (684) | 69% |
| Feeling of hopelessness/worthlessness | (622) | 62% |
| Insomnia/trouble sleeping | (577) | 58% |
| Irritability or anger | (545) | 55% |
| Sudden mood changes | (526) | 53% |
| Panic | (473) | 48% |
| Numbness/lack of emotion | (449) | 45% |
| Thoughts of self-harm | (354) | 36% |
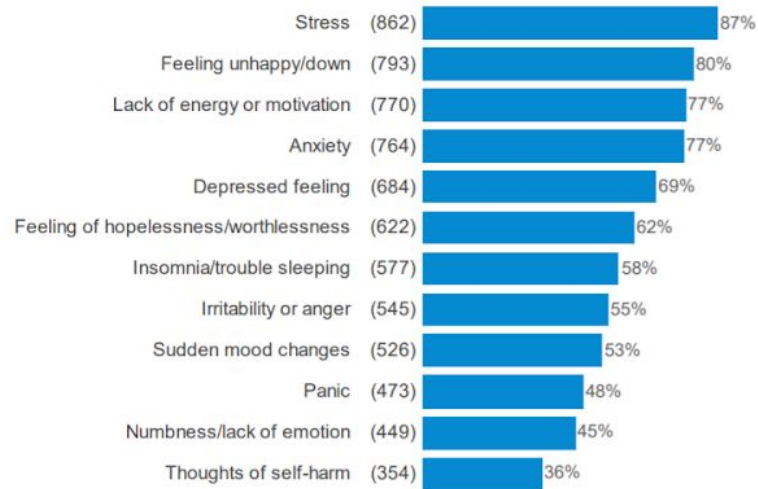
**Diagram 2.1: Survey of APPG**
**Source: Mental Health Poll APPG (2015)**

## Academic sources

5% 1%
8%
9%
30%
9%
10%
28%

- ■ Increased class workload
- ■ Lower grade than anticipated
- ■ Change of Major
- ■ Search for graduate school/job
- ■ Missed too many classes
- ■ Anticipation of graduation
- ■ Serious argument with instructor
- ■ Transferred schools
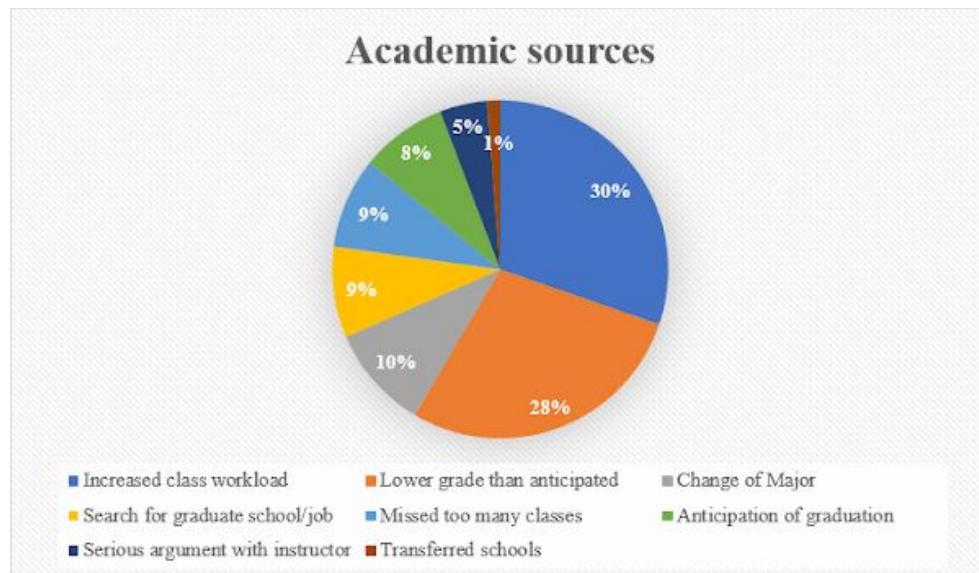
**Diagram 2.2: Sources of academic that stress students out**
**Source: College Student Journal (1999)**

### 2.3.3 Lack of sleep

Another cause of making students forgetful is lack of sleep. Based on the article of Pendick D. (2013), too minimal restful sleep can cause changes of mood and nervousness, which contribute to issues with memory.

Hannah, G. L., Brian, D. R., Annie, B. W., & J. R. (2010) promotes that, overall, college students reported chronically restricted sleep. Mean total sleep time (time spent actually sleeping, as opposed to being awake in bed) was 7.02 hours. 25 percent of students reported getting less than 6.5 hours of sleep a night, and only 29.4 percent of students reported getting 8 or more hours of total sleep time per night, the average amount required for young adults. Sleep was particularly restricted on weeknights; mean weekday bedtime was 12:17 a.m. and weekday rise time was 8:02 a.m. Sleep schedules were erratic. Mean bedtimes (1:44 a.m.) were delayed and mean rise times (10:08 a.m.) were extended on weekends. Additionally, 20 percent of students reported staying up all night at least once in the last month, and 35 percent reported staying up until 3 a.m. at least once a week.

According to the article of Nordqvist, J. (2013), a recent study by researchers at the University of California (UC), Berkeley found out that insufficient and poor quality of sleep among the elderly can cause significant memory and brain deterioration. The study is the first study to confirm the connection between poor sleep and memory loss. This article claims that researchers discovered that during sleep, significant brain waves are produced which play an important role in storing memories. The brain waves act as a medium to transfer memories from a part of the brain called hippocampus to the prefrontal cortex, another part of the brain where long term memories are stored. Poor quality sleep in adults can cause memories to stuck in the hippocampus and not reach the prefrontal cortex, which results in forgetfulness and difficulty to remember names. In this article, a UC Berkeley sleep researcher Matthew Walker, an associate professor of psychology and neuroscience said that: "When we are young, we have deep sleep that helps the brain store and retain new facts and information. But as we get older, the quality of our sleep deteriorates and prevents those memories from being saved by the brain at night." In non rapid-eye movement sleep, the brain produces waves from the middle frontal lobe, as this part of the brain deteriorates. It undermines the ability to enter deep sleep, which is crucial for storing memories.

## 2.4 Things often lost during study years

The group has done research on things that people often lost during study years. According to the article of Maughan R. (2016), children lose seven items per month such as school jumpers, books, stationery, socks and toys. In this article, there is a research by My Nametags, a British manufacturer of name tags, found out that children will lose more than a 1,000 items throughout their study years.

**Most commonly lost items - Children**

1. School jumper
2. School books
3. Stationery
4. Socks
5. Gloves
6. Toys
7. Shoes/Trainers
8. Gym kit
9. Hat
10. Phone
11. Jumper / cardigan
12. Other school uniform items
13. Cuddly toy
14. Beaker or water bottle
15. Tie
16. Lunch box
17. Glasses
18. T-shirt/Top
19. School bag
20. Pocket money

**Diagram 2.3: Most common lost items of children**
**Source: Mirror News (2018)**

Faller K. (2016) argues that the most common items lost on all school campuses are keys, sweatshirts, lunchboxes and reusable water bottles. The most surprising part is that, some high schoolers even lost their cell phones and car keys. Faller K. also states that The Desert Mountain High School receptionist, Bethanne Outcalt, says that there were many iphones turn up every week, a set of Mercedes Benz keys that has not been claimed by anyone yet, and a video camera valued at more than $1,000.

In MMU, students and staff can use MMU Confession 2.0 as a platform to locate the owners of the lost items and also to find their lost items. The group has done a research and found out that, in the first week of December 2018, there are 7 cases of lost items posts in MMU Confession 2.0. The common things MMU students and staff lost are phones, keys, student cards and even SIM card.



**Diagram 2.4: Lost car keys post**
**Source: MMU Confession 2.0**



**Diagram 2.5: Lost phone post**
**Source: MMU Confession 2.0**

**Diagram 2.6: Lost student card post**
**Source: MMU Confession 2.0**

## 2.5 How management office manages lost & found

According to the article by Staake J. (2018), to build up a lost and found in a school, first the school has to select a specific location and this lost and found system has to be available at times that are convenient for people to claim their belongings. Secondly, the school has to sort and try a better organisational system to keep the lost and found location organised. Then, the school needs to set a time limit because they cannot keep the lost items around forever.

The group's interview with the security department of MMU found out that the lost items will first be kept at the security department in the Institute of Post Graduate (IPS). They use a book to record when and where the items are found. Students can head there to find their lost items if they lost it within a short period of time. The items are then transferred to the security department in the STC Building. They will then post the missing item in the bulletin board of MMU Portal online. All the lost items will be kept for a maximum of 3 months while waiting for the owners to retrieve the items. If nobody claims the lost item, the staff in security department in the STC Building will dispose the item.

Besides, in MMU, another way to give and locate your lost items is through MMU Confession 2.0. To post something on MMU Confession 2.0, firstly they need to open an Internet browser, go to facebook and login to their facebook account. Then use the search feature to find a page called "MMU Confession 2.0". They have to click the "About" section of the page and click the link as shown in Diagram 2.7. Then, type the description of the item that they have found and also attach an image of the item. They need to wait for the admin of the confession page to approve their confession then the admin will post the confession on the facebook page. If the owner of the lost item sees the post on the facebook page, he/she can comment at the post and the person who found his/her lost item can personal message him/her. They then can arrange

a time and place to return the item to its rightful owner. However, there is a chance that the owner did not see the posts on confession because not everyone will keep checking on MMU Confession page. Also, the finders might not aware if someone actually comments on their posts unless the finders turn on the notification for the particular post that they request from admin.

However, Elizabeth, A. H. (2015) states that lost and founds overflow at the end of the year in Columbia Secondary School. The place to store lost and found items which is a classroom is surrounded by an explosion of fabric, footwear and the occasional piece of sports equipment, spilling from a clutch of plastic bins. This article also shows that an unscientific survey of schools around New York City in recent days found a diverse little universe of misplaced treasures: an art portfolio, a lunchbox with food in it, a large bottle of cherry blossom moisturizer, a shower cap, a palm-size doll in a red dress, dirty socks, glasses and many pairs of pants and shoes, sometimes half a pair. This shows that the current lost and found system is not efficient enough since there are so many lost items not being retrieved and left in the school.
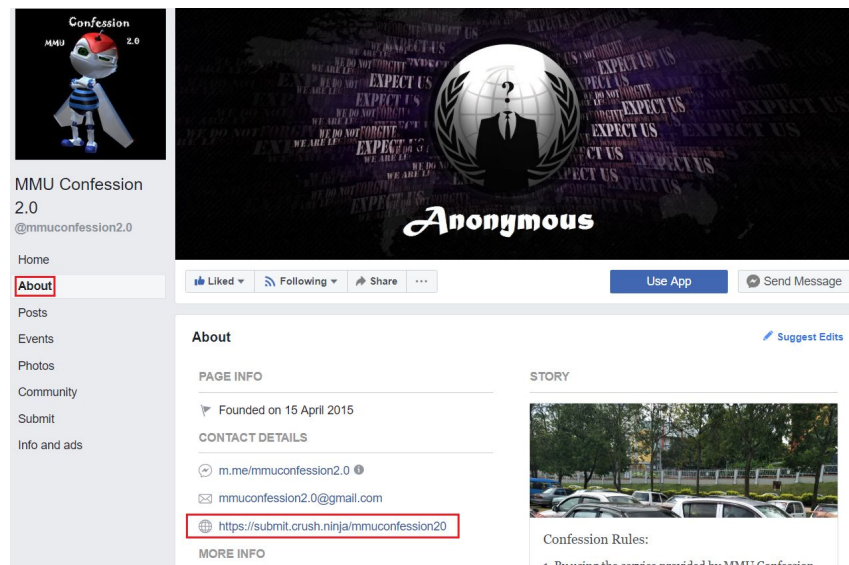


**Diagram 2.7: Link on "About" of MMU Confession 2.0**
**Source: MMU Confession page on Facebook**

## 2.6 Will people return lost items?

Based on the article of Onishi, N. (2004), Ms. Sasaki, who had come to claim the money after waiting half a year said that: "I always hand in something I find, like purses. I imagine that a person might be in trouble, losing money or a purse." The article states that there are 8 million people in the city and 33 million in the metropolitan area, thousands of lost items would be given

to the Tokyo Metropolitan Police Lost and Found Center. In a four-story warehouse, thousands of lost objects are catalogued based on to the date and location of where people found it, and the information about lost items in a database. There are many small lost and found centers created in Japan, based on a 1,300-year-old system that long preceded Japan's unification as a nation. In year 2002, people found and brought $23million cash to the Tokyo center , 72 percent of it was returned to the owners.

Based on our group's personal experience and interview with staff in the security department, the group noticed that the majority of people who found a lost item are more than willing to get out of their way to return the items that they have found. There is a book to record each and every of the lost items being deposited in security department in IPS. The list is very long and it proves that the students and staff will return lost items to the security department. However, the current system in MMU is inefficient. Whenever the staff in the security department is on their lunch time or when the security department is closed after business hour, people who wants to return lost items have to wait until the staff are back or until security department is opened on the next day. Therefore, this is where our program will come into place.

## 2.7 It takes time for owner to find their belongings

The study of Reynolds, E. (2017) claims that more than one third of Australians lost an item from November 2016 to November 2017 with an average value of $130. In this article, there is a research commissioned by Tile, a "smart location" company that produces Bluetooth trackers, that adds up to an incredible $1.2 billion worth of valuables being lost each year in Australia.

According to Daily Mail Reporter. (2012), a survey has found that people spend 10 minutes every day finding for lost items, from books and phones to car keys, sometimes even cars themselves. One research in this article also found that men are far more forgetful than women, one third of wives claiming that their husbands regularly misplace household items. A study of 3000 adults is carried out and found out that four out of ten often argue with their partner about misplaced items.

In another article, which is a news from Pixie Technology Inc. (2017), Americans spend almost 2.5 days in a year to search for misplaced objects. More than half of them sometimes even will be late for work or school due to frustrating searches.

## 2.8 How technology can help in lost & found

Matthews, D. (2016) contends that the reason why using automation is more efficient is because humans are imperfect, they get regularly, they need sleep and breaks and also need time off each year to maintain a healthy work-life balance. Meanwhile, machines do not need these and machines are also less prone to error and can work day and night. Diagram 2.8 shows the reasons why companies prefer robotic process automation.
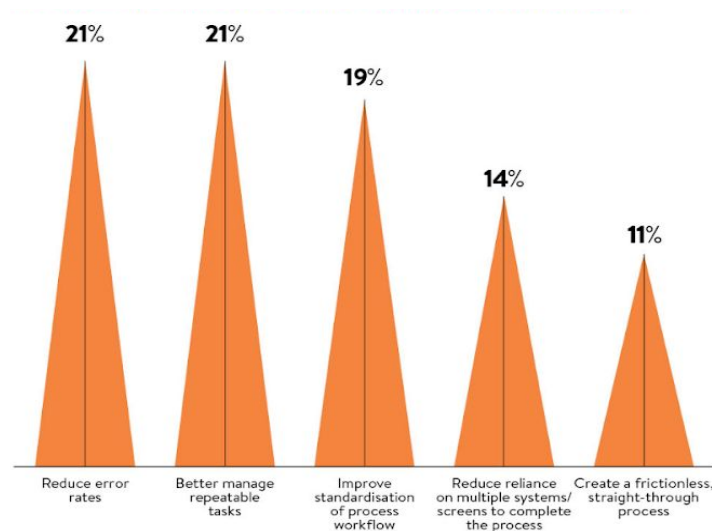


**Diagram 2.8: Reasons that companies use robotic process automation**
**Source: Raconteur (2016)**

Forrest, C. (2015) have found that a factory in China has replaced 90 percent of their human employees with automated robots. Since then, they have seen an increase of 165.5 percent in the factory's rate of production. Besides, the quality of their products have also increased. Before the automated robots were introduced, the defect rate of the products were at a soaring 25 percent, now it is a mere 5 percent.

When the group was doing research, the group found that Hern, A. (2015) reports that a supercomputer called Minwa that's built by Baidu is now better than humans in recognising images. A human's typical error rate when identifying images is at 5 percent while Minwa's error rate is lower at just 4.58 percent. Minwa even defeats softwares from other big companies such as Microsoft and Google with error rates of 4.94 percent and 4.8percent respectively.

## 2.9 Conclusion

In conclusion, the lost and found system in the security department of Multimedia University (Cyberjaya) is in need of a digitalized upgrade. Therefore, our group came out with the idea of ReturnNFound which seeks to fulfill those requirements. Through this literature review, our group have discovered a lot of factors and reasons that our program can come in handy for as a strong effort to overcome the problems that the students and staffs of MMU have to face when using security department's inefficient lost and found system.

# Chapter 3: Methodology

## 3.1 Data Gathering

The group have conducted a survey to gather the opinions of 30 students and staffs of MMU to understand the overall satisfaction and efficiency of the current lost and found system.

Rate MMU's current lost and found system.

30 responses
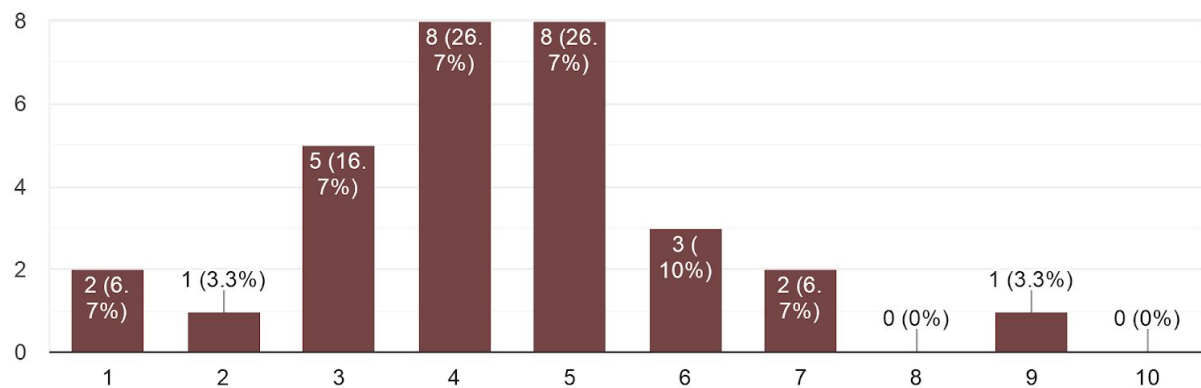


**Diagram 3.1: Rate MMU's current lost and found system.**

The average rating is 4.4, which proves that the students and staffs in MMU are overall neutral or dissatisfied with the current lost and found system based on Diagram 3.1. This shows the need for the program to make the system efficient to increase the satisfaction of the students and staffs.

In Diagram 3.2, the majority (66.67%) sometimes misplace their belongings and only a small minority (13.33%) have ever misplaced their stuff. This shows a large portion of students and staffs, up to 86.67% have ever lost their items in MMU. This proves the need of the current lost and found system to be improved to satisfy the high rates of lost items.

## How often do you misplace your belongings?
30 responses



● Often
● Sometimes
● Never

13.3%

66.7%

20%
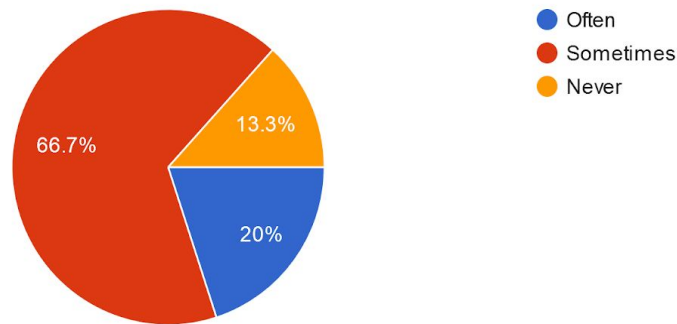
**Diagram 3.2: How often do you misplace your belongings?**

The majority of students and staffs (60%) sometimes discover someone else's belongings in MMU. Only 20% of students and staffs never found any lost belongings and 20% of them often find these belongings. The statistics is as shown in Diagram 3.3. This also shows the need for a better system to account for the amount of lost items that is being found. A digitalized lost and found system will make the procedure more efficient and encourages students and staffs to return the lost items that they found.

## How often do you find someone else's lost belongings?
30 responses



● Often
● Sometimes
● Never

20%

60%

20%
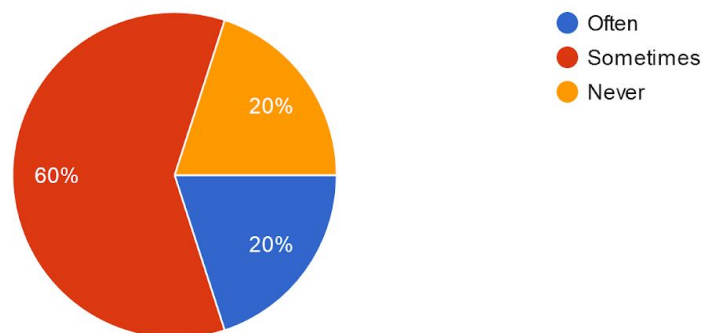
**Diagram 3.3: How often do you find someone else's lost belongings?**

## How often do you manage to retrieve your lost item back?
30 responses
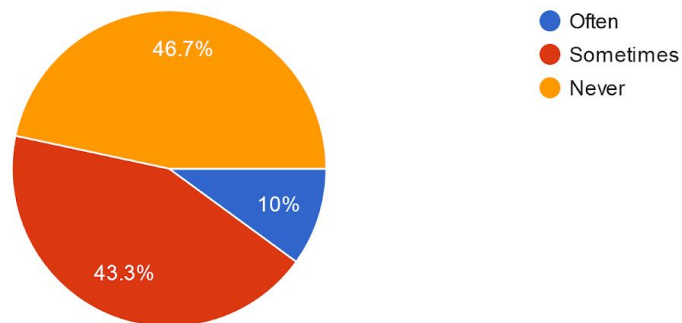


**Diagram 3.4: How often do you manage to retrieve your lost item back?**

In Diagram 3.4, the majority (46.67%) never managed to retrieve their items back while a small minority of 10% always get back their lost items, the rest only managed to retrieved their lost items once in a while. Close to half of the students and staffs who did the survey never retrieved back their lost items which is proof that the current lost and found system is not efficient enough in its effectiveness of letting people find back their lost belongings.

## Do you know which department to go when you misplace your belongings?
30 responses
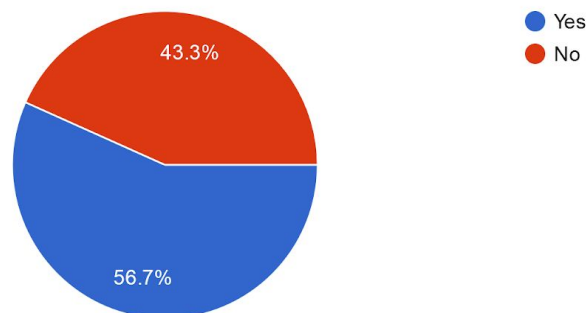


**Diagram 3.5: Do you know which department to go when you misplace your belongings?**

As shown in Diagram 3.5, a majority of students and staffs (56.67%) know where to go to retrieve their lost belongings while the minority (43.44%) doesn't know. With a proper kiosk system, the students and staffs will have a clear understanding of the department or venue to deposit or retrieve lost belongings. This will increase the amount of lost items that is returned to their original owners.

**Have you ever tried to visit after office hours and during lunch time only to find that there are no staffs there to help you find their lost belongings?**
30 responses
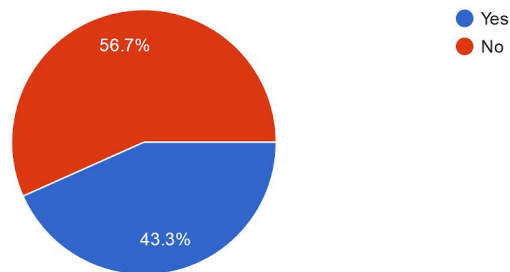


**Diagram 3.6: Have you ever tried to visit after office hours and during lunch time only to find that there are no staffs there to help you find their lost belongings?**

In Diagram 3.6, the majority (56.67%) of students and staffs never tried visiting after office hours and during lunch time only to find that there are no staffs there to help you find their lost belongings, while the minority (43.44%) had faced this issue before. Even though the majority of survey-takers never had this happened to them, nearly half of the students and staffs have met such a problem before. This proves the need for a kiosk system which doesn't need staffs to operate and is functional at all times.

**Will you prefer to find you lost belongings manually or through a kiosk system?**
30 responses
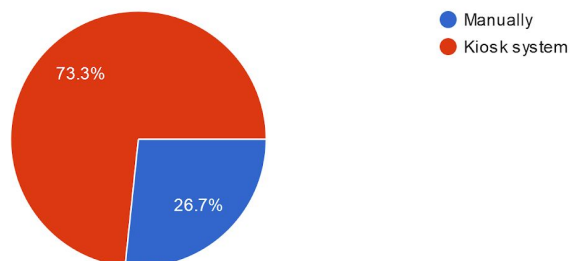


**Diagram 3.7: Will you prefer to find you lost belongings manually or through a kiosk system?**

18

The majority of students and staffs (73.3%) prefers a kiosk system over a manual system that is currently present in MMU, while the minority (26.7%) still wants to maintain the manual system based on Diagram 3.7. This data shows that the acceptance rate of a kiosk system is high and the need for the program can be seen.

# Chapter 4: Conclusion

## 4.1. Conclusion

In conclusion, the group has created the program, ReturnNFound, to solve the issue of the low efficiency and low satisfaction of the current lost and found system that MMU has. With ReturnNFound, students and staffs of MMU can choose to deposit or retrieve lost items through the kiosk system which comes with it. It serves as a digital upgrade which will simultaneously encourage both the students and the staffs of MMU to return the lost items that they found. As a final word, this project has allowed the group to learn Python and its syntax in a more in-depth manner. The group has learnt a lot throughout its development process and this experience will definitely help the group in the future.

## 4.2 Limitations and Future Studies

Despite the program accomplishing the objectives that the group have set out to achieve, our group has come across a couple of constraints. The two main constraints are time constraint and knowledge constraint. Due to the limited time that was given, the group could not implement an administrator module which allows items to be approved before appearing in the kiosk retrieval system. This would prevent problems such as people endlessly depositing and retrieving items to increase their own merit points. There is also a possibility that people will play the program by simply entering fake data or improper information.

At the same time, the group also faces knowledge constraint. There is a login page which is also the main interface of the program. The program's main purpose is to provide a digital platform for all the students and staff in MMU to return the lost items that they found, but due to the group's limitation, the group could not get a way to access to MMU database to collect all the ID and password of students and staff. MMU cannot give the group access to the database because of the privacy and security problem of students and staff accounts.

In conclusion, Mini IT Project provides a platform for the group to learn Python in a more detailed way. The group hopes that this program idea can be used by MMU or other education institutions to encourage people to return lost items. In the future, the group wishes to improve on login interface to further enable all the students and staff o use the program. At the same time, the team wishes to spend more time on creating the administrator module that monitor all the items deposited, so that the program can work more efficiently comparing to the state of the program at this moment.

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# Appendix A

# Task Distribution Table

## Task Distribution Table

| Name | Role | Documentation | Flowchart/ Algorithm/ Coding |
|---|---|---|---|
| Lim Yixen | - Group Leader<br>- Checking progress<br>- Debug | - Introduction<br>- Literature Review | - Login module<br>- GUI |
| Lee Guang Shen | - Responsible for the references list | - Conclusion and Future Study<br>- Checking references | - Deposit module |
| Wong Jit Chow | - Responsible for checking all pseudocode<br>- Responsible for report compilation | - Literature Review<br>- Methodology: Data gathering | - Retrieve module |
| Nicholas Chee Jian Shen | - Responsible for checking data dictionary<br>- Debug | - Methodology: Data gathering<br>- Conclusion and Future Study | - Retrieve History module |

# Appendix B

# Algorithm

## Main module (Lim Yixen)
Start
Process login
End

## Login Module (Lim Yixen)
Function login()
      Start

      Get id_entry #user enter id#
      Get password_entry #user enter password#
      Get login_button

      If login_button=="yes" #when user clicks login button#
            Process check(id_entry,password_entry)
      End If
Exit

Function check(id_entry,password_entry)
      Start

      i=0
      username = id_entry
      password = password_entry

      From id_password.txt, extract ID and password
      Store in content[]

      #Even-number in content[] from 0-11 are ID#
      #Odd-number in content[] from 0-11 are password#
      #There are 6 ID and password#

      Repeat
            If username == content[i] and password == content[i+1]
                  token="yes"
                  Process choose(i,username)
            Else
                If i<=8
                    i=i+2
                    token="no"
                Else
                  If i==10

```
                                print "Incorrect ID or password."
                                Process login
                                token="yes"
                        End If
                End If
        End If
    Until token=="yes"
Exit


Function choose(i,username)
        Start

        Get deposit_button
        Get retrieve_button

        If deposit_button=="yes" #if user clicks deposit#
                Process deposit_item_type(i,username)
        Else
                If retrieve_button=="yes" #if user clicks retrieve#
                        Process retrieve_item_type(username)
                End If
        End If
Exit
```

## Deposit Module (Lee Guang Shen)

```
Function deposit_item_type(i,username)
        Start
        arraywords = ["A","b","C","d","y","z","S","O","h","q","k","2","3","5","6","7","8","9","1",
                    "4","E","e","F","f","g","G","m","N","R","T","t","W","X","a"]
        casecodeA = " "
        Loop: i = 0 to 5 step 1
                num = random from 0 to 33
                casecodeA = casecodeA + arraywords[num]
        Loop-end: i

        Repeat
                Get selection #user enter item type#
                Get desc_entry #user enter description of the item#

                If selection == " " or desc_entry == " "
                        Print "Please select an item or provide some information! "
                        error = "yes"
```

```
                Else
                        error = "no"
                        Get done_button
                End If
        Until error == "no"

        If done_button == "yes" #when user clicks Done button#
                Process write(selection,desc_entry,casecode_no,i,username)
        End If
Exit

Function write(selection,desc_entry,casecode_no,i,username)
        Start
        From locker.txt, extract locker number
        Store in content[]
        locker_no = length of content
        new_locker = locker_no + 1
        Write new_locker to locker.txt

        Let description = desc_entry
        Let item = selection

        Open data.txt
        Write username, casecode_no, description, locker_no, item into data.txt

        Process capture(i,casecode_no,locker_no)

Exit

Function capture(i,casecode_no,locker_no)
        Start
        Get capture_button
        If capture_button == "yes" #when user clicks capture button#
                Process move(i,casecode_no,locker_no)
        End If
Exit

Function move(i,casecode_no,locker_no)
        Start
        Move picture with casecode_no as its name from Desktop to the local file (PSP0201)
        Process locker(i,locker_no)
Exit
```

```
Function locker(i,locker_no)
        Start
        Print "Please place the item in Locker", locker_no
        Get locker_button
        If locker_button == "yes" #when user clicks the Done button#
                Process tq(i)
        End If
Exit



Function tq(i)
        Start
        From merit_point.txt, extract all user's merit points
        Store in content[]

        index = i/2
        current_point = content[index]
        new_point = current_point + 1
        content[index] = new_point
        Write content[] as updated merit point in merit_point.txt

        Print "You now have ", new_point, "points in total!"

        Get merit_point_button
        If merit_point_button == "yes" #when user clicks the button#
                Process login
        End If
Exit
```

## Retrieve module (Wong Jit Chow)

```
Function retrieve_item_type(username)
        Start
        Repeat
                Get selection
                If selection == " "
                        Print "Please select an item"
                        error = "yes"
                Else
                        error = "no"
                        Process result(selection,username)
                End If
```

```
        Until error == "no"
Exit


Function result(selection,username)
        Start
        From data.txt, extract description and case code
        Store in content[]

        ###Order in content[] is depositor,case code,description,locker,item type###

        i = 0
        If content[] == " " or selection is not in content[] then
                Print "Empty"
                Get logout_button

                If logout_button == "yes" then ###if user press logout button###
                        Process login
                End If
        Else
                While i < (length of content[]-1)
                        If selection == content[i+4] then
                                Print "Description:" , content[i+2]
                                Print "Case Code:" , content[i+1]
                                i = i + 5
                        Else
                                i = i + 5
                        End If
                WhileEnd

                Repeat
                        Get choice ###which item user selected(integer)###
                        If choice == " "
                                Print "Please select one item!"
                                error = "yes"
                        Else
                                error = "no"
                                Get retrieve_button
                        End If
                Until error == "no"

                If retrieve_button == "yes" then ###if user clicks retrieve button###
                        Process retrieve_conf(choice,selection,username)
```

```
                End If
        End If

        Get history_button ###if user wants to check retrieve history###
        If history_button == "yes" then
                Process history
        End If
Exit

Function retrieve_conf(choice,selection,username)
        Start
        From data.txt, extract locker
        Store in content[]

        ###Order in content[] is depositor,case code,description,locker,item type###

        i = 0
        time = 1
        loop = 1

        While i < (length of content[]-1)
                If selection == content[i+4] then
                        If time == choice then
                                i = i + 5
                                time = time + 1
                                locker_no = (loop)*5-2

                                Print "Your item is at Locker" , content[locker_no]
                                Process rewrite(selection,choice,username)

                                Get done_button ###if user clicks done button###
                                If done_button == "yes" then
                                        Process careful_logout
                                End If
                        Else
                                time = time + 1
                                i = i + 5
                                loop = loop + 1
                        End If
                Else
                        i = i + 5
                        loop = loop + 1
```

```
                End If
        WhileEnd
Exit

Function rewrite(selection,choice,username)
        Start
        From data.txt,extract depositor,case code,description,locker,item type
        Store in content[]

        i = 0
        time = 1

        While i < (length of content[]-1)
                If selection == content[i+4] then
                        If time == choice then

                                index_content=0
                                index_array=0

                                array = []

                                While index_content < (length of content[]-1)
                                        If index_content != i and index_content != i+1 and
index_content != i+2 and index_content != i+3 and index_content != i+4 then
                                                array[index_array] = content[index_content]
                                                index_content = index_content + 1
                                                index_array = index_array + 1
                                        Else
                                                item = content[index_content]
                                                Open retrieve_history.txt
                                                Write item into retrieve_history.txt
                                                index_content = index_content + 1
                                        End If
                                WhileEnd

                                time = time + 1
                                i = i + 5
                        Else
                                time = time + 1
                                i = i + 5
                        End If
                Else
```

```
                    i = i + 5
            End If
        WhileEnd

        Open retrieve_history.txt
        Write username into retrieve_history.txt

        index_newarray = 0

        Open data.txt
        While index_newarray < length of array
            depositor = array[index_newarray]
            caseCode = array[index_newarray+1]
            description = array[index_newarray+2]
            locker = array[index_newarray+3]
            item_type = array[index_newarray+4]

            Write depositor,caseCode,description,locker,item_type into data.txt
            index_newarray = index_newarray + 5
        WhileEnd
Exit


Function careful_logout()
        Start
        Print "Be careful next time!"

        Get logout_button
        If logout_button == "yes" then ###if user clicks logout button###
            Process login
        End If
Exit
```

## Retrieve History (Nicholas Chee Jian Shen)

```
Function history()
        Start
        From retrieve_history.txt, extract depositor, case code, description, locker, item_type,
        retriever
        Store in contents[]

        if contents[] == " "
            print "Empty"
        else
```

```
            i=0
            while i < (length of contents[]-1)
                    Display picture with the name contents[i+1]
                    print "Item Type:", contents[i+4]
                    print "Case Code:", contents[i+1]
                    print "Description:", contents[i+2]
                    print "Depositor:", contents[i]
                    print "Retriever:", contents[i+5]
                    i=i+6
            whileEnd

            Repeat
                    Get choice #choice is in integer which is the item the user chooses#
                    if choice == " "
                            print "Please select one item!"
                            error = "yes"
                    else
                            error = "no"
                            Get box_report
                    Endif
            Until error == "no"

            if box_report == "yes" #when user clicks report#
                    Process reportBox(choice)
            Endif
        Endif

        Get logout_button
        if logout_button == "yes" #when user clicks logout button#
                Process login
        Endif
Exit

Function reportBox(choice)
        Start
        caseCode_index = choice*6-5
        From retrieve_history.txt, extract depositor, case code, description, locker, item_type,
retriever
        Store in contents[]
        caseCode = contents[caseCode_index]

        Get box_question
```

```
        if box_question == "yes" #when user clicks yes#
                Process reportYes(caseCode)
         Endif
    Exit


Function reportYes(caseCode)
        Start
        print "Reported to STAD Office." + "Visit STAD Office for further instructions."
        print "Case code:" , caseCode

        Get logout_button
        if logout_button == "yes" #when user clicks logout button#
                Process login
        Endif
Exit
```

# Appendix C

# Data Dictionary

## Login Module (Lim Yixen)

| Function Name | Parameters | Explanation |
| --- | --- | --- |
| login | | Main module. Require the user to enter their ID and password in order to log in. |
| check | id_entry,password_entry | Open "id_password.txt" file and check whether the ID and password that user entered is correct. |
| choose | i,username | Create a window with two button, which allow the user to select "Deposit" or "Retrieve". |
| deposit_item_type | i,username | Bring the user to the deposit interface. |
| retrieve_item_type | username | Bring the user to the retrieve interface. |
| **Variable Name** | **Data Type** | **Explanation** |
| id_entry | string | Input of user which they are required to enter their ID. |
| password_entry | string | Input of user which they are required to enter their password. |
| i | int | Identify which user is using the program. |
| username | string | User's ID. |
| password | string | User's password. |
| content | list | Store six users' ID and password extracted from id_password.txt. |
| token | string | A token to exit a loop that identify whether user enters a correct ID and password. |

## Deposit Module (Lee Guang Shen)

| Function Name | Parameters | Explanation |
| --- | --- | --- |
| deposit_item_type | i,username | Generates casecode_no and get selection, desc_entry from user. |

| write | selection,desc_entry, casecode_no,i,username | Open "locker.txt", and write new_locker to "locker.txt" |
| --- | --- | --- |
| capture | i,casecode_no,locker_no | Capture the photo of the lost item. |
| move | i,casecode_no,locker_no | Move picture with casecode as its name from Desktop to the local file (PSP0201) |
| locker | i,locker_no | Display the locker number to user about where the user to put the lost item. |
| tq | i | Open "merit_point.txt" and extract user's merit point, and write the updated merit point into "merit_point.txt" |
| **Variable name** | **Data type** | **Explanation** |
| i | integer | Identify the user. |
| username | string | User's ID. |
| arraywords | string | Letters and numbers that are used to generate "casecode_no" |
| casecode_no | string | A code that used as a reference for particular case. |
| num | integer | Use to random a number to select an element from arraywords array. |
| selection | string | User input of the item type. |
| desc_entry | string | User input of the description of the item. |
| error | string | Token to exit a repeat-until loop to ensure the user choose a selection and enter description. |
| content | list | Store the locker number on locker.txt and users' merit point in merit_point.txt |

| locker_no | integer | To determine which locker will be used to store the lost item. |
|---|---|---|
| new_locker | integer | The locker number for the next lost item. |
| description | string | Description entered by user. |
| item | string | Item type selected by user. |
| index | integer | Identify user. |
| current_point | integer | Current point of current user. |
| new_point | integer | New point of current user after adding one merit point. |

## Retrieve Module (Wong Jit Chow)

| Function Name | Parameters | Explanation |
|---|---|---|
| retrieve_item_type | username | Gets the item type from the user. |
| result | selection,username | Displays the result from data.txt based on the item type that the user input. |
| retrieve_conf | choice,selection,username | Search and display the locker number from data.txt where the item is located. |
| rewrite | selection,choice,username | Remove the retrieved item from data.txt. |
| careful_logout | | Displays "Be careful next time!" message. |
| **Variable name** | **Data type** | **Explanation** |
| selection | string | Input of the item_type the user selected. |
| error | string | A token to exit a loop to determine whether user select an item. |
| content | list | Stores depositor ID, case code, item description, locker number and item type. |

| | | |
|---|---|---|
| i | integer | Identify the user. |
| choice | integer | Input to know which item that the user wants to retrieve. |
| time | integer | Make sure item in data.txt is same as the item that user selected. |
| loop | integer | To determine the locker number of the item that the user wants to retrieve. |
| locker_no | string | The locker number where the item is located |
| index_content | integer | Index of elements in content[] array. |
| index_array | integer | Index of elements in array[] array. |
| array | list | Store information of items that have not been retrieved. |
| item | string | Information of item that has been retrieved. |
| index_newarray | integer | Index to write information of items into data.txt. |
| depositor | string | Depositor of item. |
| caseCode | string | Case code of item. |
| description | string | Description of item. |
| locker | string | Locker number of item. |
| item_type | string | Item type of item. |

## Retrieve History Module (Nicholas Chee Jian Shen)

| Function Name | Parameters | Explanation |
|---|---|---|
| history | | Open "retrieve_history.txt" file and retrieves the depositor, case code, description, locker number, item type and retriever. |

| Variable name | Data type | Explanation |
|---|---|---|
| reportBox | choice | Opens retrieve_history.txt and reads the case code of the case the user selected. Displays a confirmation message whether the user wants to report the case. |
| reportYes | caseCode | Displays the message that the case has been reported to STAD office. |
| **Variable name** | **Data type** | **Explanation** |
| contents | list | Stores the depositor, case code, description, locker number, item type and retriever from retrieve_history.txt. |
| i | integer | Act as a counter and an exit condition for the while loop. |
| choice | integer | The user input of the integer value of the item the user chose. |
| error | string | Act as an exit condition for the repeat-until loop. |
| caseCode_index | integer | The array value for the case code. |
| caseCode | string | The case code of the reported case. |