



## **COLLEGE OF COMPUTER AND INFORMATION SCIENCE**

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**Academic Year 2022 – 2023**

### **I.T. Practicum**

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Submitted To:  
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Submitted to the Faculty of Mapúa Malayan Colleges Laguna  
In Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science in Information Technology

## Overview of the Practicum Engagement

### Company Background



Figure 1. iRipple Logo

The student took his internship at iRipple, Inc. iRipple is a solutions company that offers retail management software (see Figure 1). It is located at Philippine Stock Exchange Centre, 2305 B Tektite East Tow, Exchange Rd, Pasig, Metro Manila. iRipple was established by Victor Javier and Hubert Dy in 2000 as a software development company that specializes in providing systems for the retail industry and gave birth to their main product, the Barter Point-of-Sales system. The mission of iRipple is to “Lead retailers to greatness through technology”, while their vision is for “Retailers are able to scale up and speed up using iRipple technology.”



Figure 2. iRipple Clients

Early clients of iRipple include businesses in different industries such as Super 8, GABC, and Primer. The clientele of iRipple later on expanded and now includes 7-11, Bonchon, Penshoppe, Chatime, and Gaisano to name a few. In the last few years, iRipple's local clientele has continually expanded with retailers such as Celine, Asian Home Appliances, and Shakeys' group of companies. iRipple also expanded internationally by offering services to international clients and establishing iRipple Malaysia and Thailand (see Figure 2).

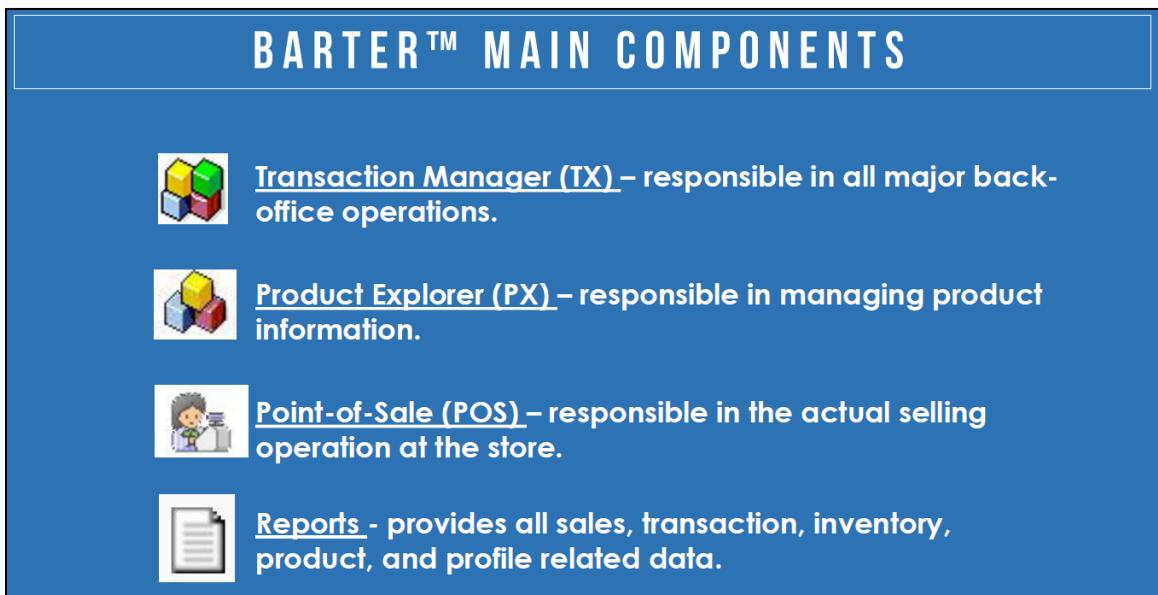


Figure 3. Barter System Main Components

The main product of iRipple is the Barter System which is a sales and inventory software solution for retail management. Its functionality includes transaction management for back-office operations like ordering stocks, moving stocks from one site to another, etc. Managing product information through the product explorer. Point-of-Sales for actual selling of goods in store. And lastly, reports for sales, transactions, inventory, etc. (see Figure 3).

## **Nature of Assignments or Tasks Given**

During the internship, the student was under the B&HI segment which is the Boutique & Home Improvement Segment. At first, he was assigned to update the user manual documentation of the Barter 8 system but he then expressed his interest and passion for software development to his adviser. With his adviser being the research and development team leader, the student was later moved to software development and documenting the modules he has created.

The two main types of tasks he did were software development and documentation which can vary from technical documentation to user manuals. The student was tasked to create and integrate new modules for the Barter 8 system to help solve its current problems which is one of the earlier systems created by iRipple dating to its initial development in 2008. Users of the Barter 8 system include Super8.

The technologies that were used during the internship were C# Desktop Forms for the desktop applications, Microsoft SQL Server for the branch server database, MS Access for the local database of the POS terminal, and Windows LAN network file sharing for the terminals to be able to communicate with the server and vice versa. ASP.NET Entity Framework was used as an Object Relational Mapper for the MSSQL database for easier manipulation of database data.

The student was able to develop and document five (5) modules namely: Two (2) report modules that were migrated and documented from Visual Basic 6 to C#, Point-of-Sales Terminal Monitoring, Point-of-Sales Software Auto Updater, and Point-of-Sales Records Synchronizer. The said modules will be further discussed in the presentation of the output section.

## Total Hours Rendered

In total, the student was able to complete and render a total of 486 hours. Four (4) hours were spent on the company orientation, and 24 hours on studying the documentation of the Barter 8 system. After that, he developed and documented the migration of VB6 reports with a total of 200 hours spent with development being 152 hours and documentation for 48 hours. Next, he created the Point-of-Sales Monitoring module with a development time of 96 hours and a documentation time of 16 hours. After that, the student developed the Point-of-Sales Auto Updater which took him 72 hours to develop and 8 hours to create the user manual. Lastly, the student was able to create the Point-of-Sales Records Synchronizer with a total of 66 hours with 54 hours spent on development and 8 hours spent on its documentation. The student finished his practicum on June 7, 2023, and turned over his outputs to his supervisor for 4 hours (see Table 1).

Table 1.0  
*Summary of Hours Rendered*

Task	Hour Count		
	Development	Documentation	Total
Company Orientation	-	4	4
Study Documentation	-	24	24
Migration of VB6 Reports	152	48	200
POS Monitoring	96	16	112
POS Auto Updater	72	8	80
POS Records Sync	54	8	62
Turnover of Outputs	-	4	4
Total	374	112	486

## Presentation of Output

### Migration of VB6 Report Modules to C#

The output of this task is to recreate two (2) Barter 8 report modules currently written in VB6 into C# and document the process of creation. This is because the supervisor of the student wants to create all future Bater8 modules to be written in C#. The document output will then be used by developers in the future as a guide or sample when writing new functionality in C#. Shown below are the two report modules recreated (see Figures 4 & 5). The POS Sales Journal Summary is the simpler form done as practice while the POS Collections Report is the more complex form with more filters and functionality.

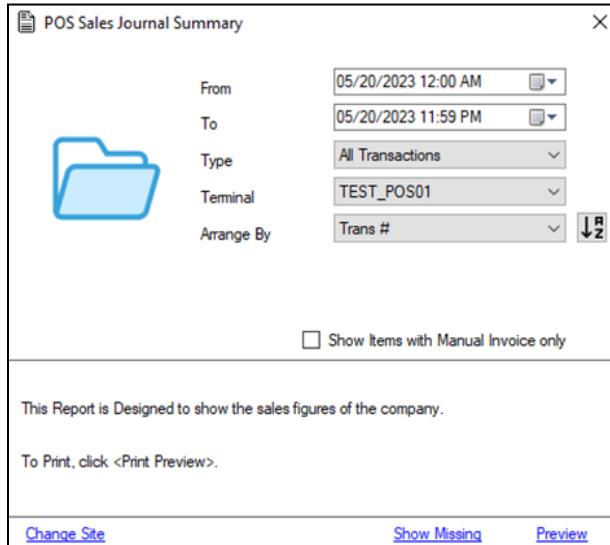


Figure 4. POS Sales Journal Summary

The POS Sales Journal Summary (see Figure 4) has filters such as picking the site from which to select terminals by clicking on “Change Site” (see Figure 5), the from and to dates for the range of dates of the records, the type of transaction being: sales, returns,

void, or all types, a filter for a specific terminal or all of the terminals, and arrange by transaction, OR, or invoice number. These filters will then be used for the query to get the desired transaction records.

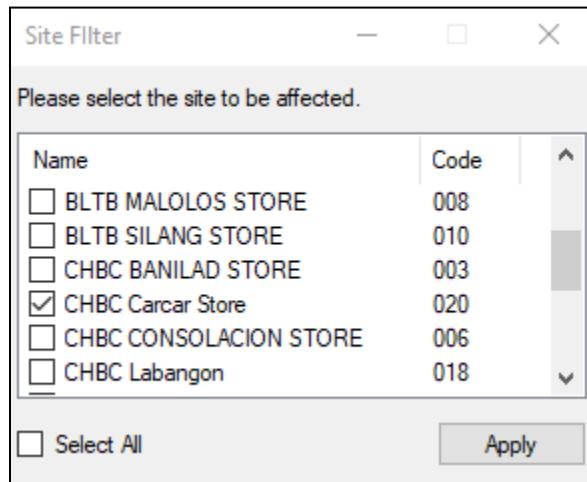


Figure 5. Change Site Filter

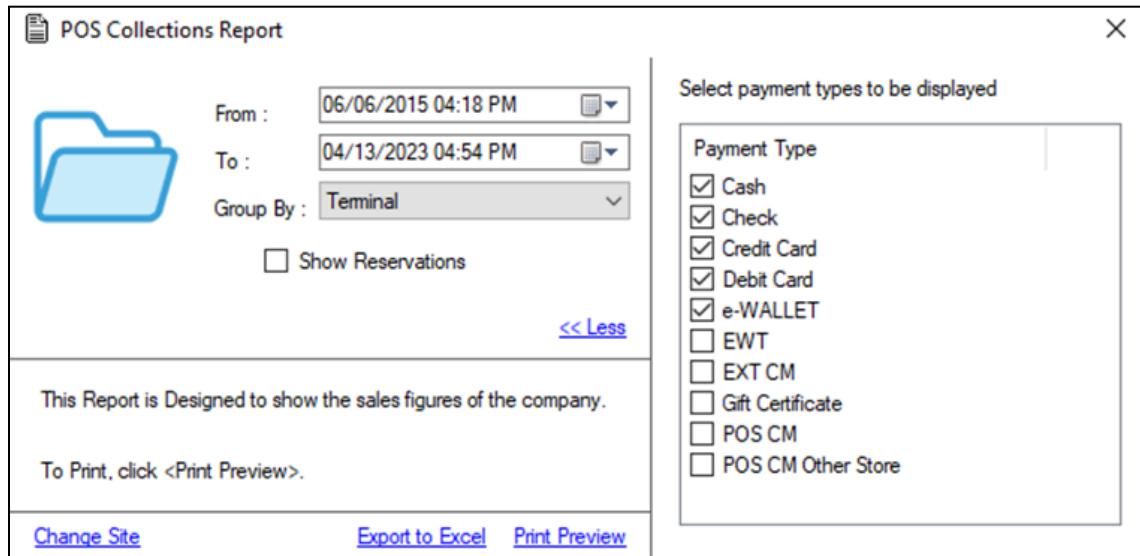


Figure 6. POS collections report

Next, the POS collections report (see Figure 6) is similar in that it also has a filter to select a specific site in which terminals to include, to and from dates of the sales

transaction. Its difference from the first report form is that this only includes sales transactions, has a filter for the payment types to show, and has a group by filter with group by terminal, cashier, payment type, and site. The group by filter all has different queries which added to the complexity of this report for implementing it into printable reports and export to Excel (see Figure 6).

The data entered into these filters are then used in complex SQL queries which the student adopted from the original VB6 forms using SQL Server Profiler in order to capture the queries. These queries involve getting data from multiple tables and their respective relationships.

**POS Collections Report**  
From June 26 2013 04:18 PM to April 13 2023 04:54 PM  
All Sites

POS Collections Report						All Sites		
						Revenue	Net Sales	Returns as Exchange Received
<b>Terminal : AEDAA300</b>								
Cashier : Administrator								
21,991.00	\$0.00	\$0.00	\$0.00	\$0.00		5,218.00	28,801.00	21,899.79
<b>Sub Total:</b>	<b>21,991.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>5,218.00</b>	<b>28,801.00</b>	<b>21,899.79</b>
<b>Terminal : BANKA102000</b>								
Cashier :								
16,745.00	\$0.00	7,806.21	28,406.40	\$0.00		\$0.00	131,187.91	\$0.00
<b>Sub Total:</b>	<b>16,745.00</b>	<b>\$0.00</b>	<b>7,806.21</b>	<b>28,406.40</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>131,187.91</b>	<b>\$0.00</b>
<b>Terminal : TEST_P01001</b>								
Cashier : Administrator								
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		7,806.00	7,806.00	-17,800.00
Cashier : John.Doe.Visa	107,500.00	204,500.00	75,100.00	74,100.00	\$0.00	476,200.00	1,217,400.10	2,910.00
Cashier : Virginia.Bartons	\$0.00	1,828.00	3,800.00	\$0.00		16,881.00	11,120.00	\$0.00
Cashier : Jones.Doe.Visa	24,711.00	19,110.00	12,900.00	15,911.00	\$0.00	95,401.00	116,380.00	22,890.00
Cashier : Administrator	141.79	\$0.00	\$0.00	\$0.00	\$0.00	141.79	1,380.00	-1,160.29
Cashier : John.Doe.Visa	203,045.02	\$0.00	180.00	\$0.00	\$0.00	203,146.02	\$0.00	203,146.02

Printed By : Administrator  
Print Date : 08/03/2023 10:12 AM  
POS Sales Journal Summary (014 Ver 8.1.20)  
Page 1 of 3

Figure 7. Printable Reports

Both of these reports have the functionality of generating printable reports by clicking on the “Preview” or “Print Preview” link labels. The student used SAP Crystal Reports in order to generate printable reports. Each of the reports has a corresponding

crystal report form as the data structure to be used in a crystal report form needs to be defined beforehand. A sample of the printable report can be seen in Figure 7.

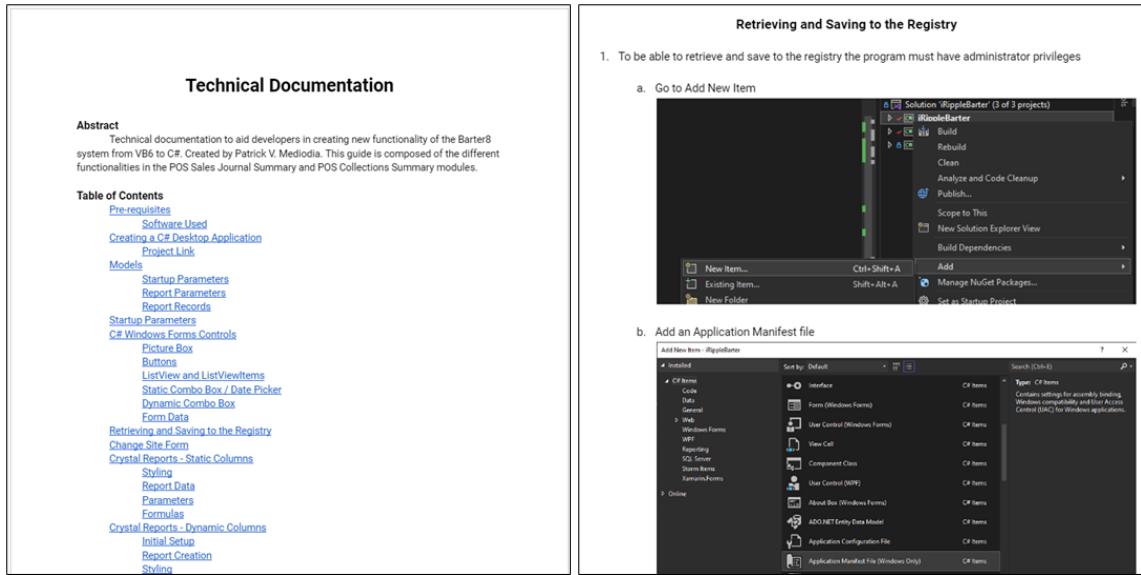
The difference between the two reports modules is that the POS collections report module has an export to Excel functionality. The student used the Interop microsoft office library to be able to interface with Microsoft Excel. Transaction records are iteratively written into an Excel file. The student used the cell's address or reference to specify where to write a specific value or field. A sample of the export to Excel functionality can be seen in Figure 8.

POS Collections Report By Terminal										
From 04/06/2013 to 04/13/2013										
All terminals										
		Cash	Check	Credit Card	Debit Card	e-WALLET	Others	Sales Collection	Returns	Net Sales
Terminal :	AIRASIMO									
Cashier :	Administrator	21391	0	0	0	0	5210	26801	21689.75	5111.25
Total :		21391	0	0	0	0	5210	26801	21689.75	5111.25
Terminal :	BANGLAD_POS08									
Cashier :		90748.8	0	7990.31	20440.4	0	0	133187.51	0	131087.51
Total :		90748.8	0	7990.31	20440.4	0	0	133187.51	0	131087.51
Terminal :	BIST_POS04									
Cashier :	Administrator	0	0	0	0	0	7900	7900	-10900	17900
	José phone									
Cashier :	Ventes	327505.8	264500	73100	74100	0	478293.5	3217405.1	2510.8	1234924.3
	Vigilist									
Cashier :	Biomunes	5644.15	0	1525	3500	0	50.85	11120	0	11120
	Administrador									
Cashier :	Administrador	24711	15110	12550	10511	0	33481	110888	22998	93370
	Administrador	141.75	0	0	0	0	0	141.75	1392	-1180.25
	José phone									
Cashier :	Ventes	239468.82	0	100	0	0	0	23046.82	0	23046.82
	Vigilist									
Cashier :	Biomunes	34.92	0	0	199	0	0	233.92	50	183.82
	Administrador									
Cashier :	Administrador	0	0	0	0	0	30670	10670	22998	-12328
	José phone									
Cashier :	Ventes	0	0	0	0	0	378.75	0	378.75	0
	Vigilist									
Cashier :	Biomunes	740048.9	0	0	31700	0	300	730066.9	39295	738771.9
	Administrador									
Cashier :	Administrador	4557	0	14000	14000	0	75	72642	75	72567
	José phone									
Cashier :	Ventes	87500	15250	35250	13100	0	30975	139183	85300	79881
	Vigilist									
Cashier :	José phone	1380.2	500	500	500	0	2905.4	2807.8	4392.8	3019.8
	Ventas									

Figure 8. Export to Excel

After the development of the two report modules, the student created its technical documentation. Figure 9 below shows a sample of the technical documentation created by the student which is intended to be used by future developers as a guide. It includes information such as the tools used, setting up the project, the project structure, as well as

a specific discussion on how each part of the functionality was created namely the data models, the startup parameters, retrieving and saving data to the registry, crystal reports, and exporting to excel.



*Figure 9. Migration of VB6 Reports Technical Documentation*

## Point-of-Sales Monitoring Module

Next, the student was tasked to create new modules that will help with the current problems of the system. First, he created a module to monitor the point-of-Sales terminals. This was created in order for a supervisor to be able to monitor terminals in a single view and check if there are problems so that it can quickly be resolved.

Figure 10 shows the monitoring dashboard. Its default behavior upon opening is showing only the online POS terminals, it also has options of showing the offline terminals under the options tab. Terminals are asynchronously pinged through the LAN connection using their terminal names, and if they reply, it means they are online. Terminal statuses are refreshed every 60 seconds (1 minute) with a timer shown at the top

right. A user is also able to manually refresh the status of the terminals in the options tab without waiting for the automatic refresh timer.

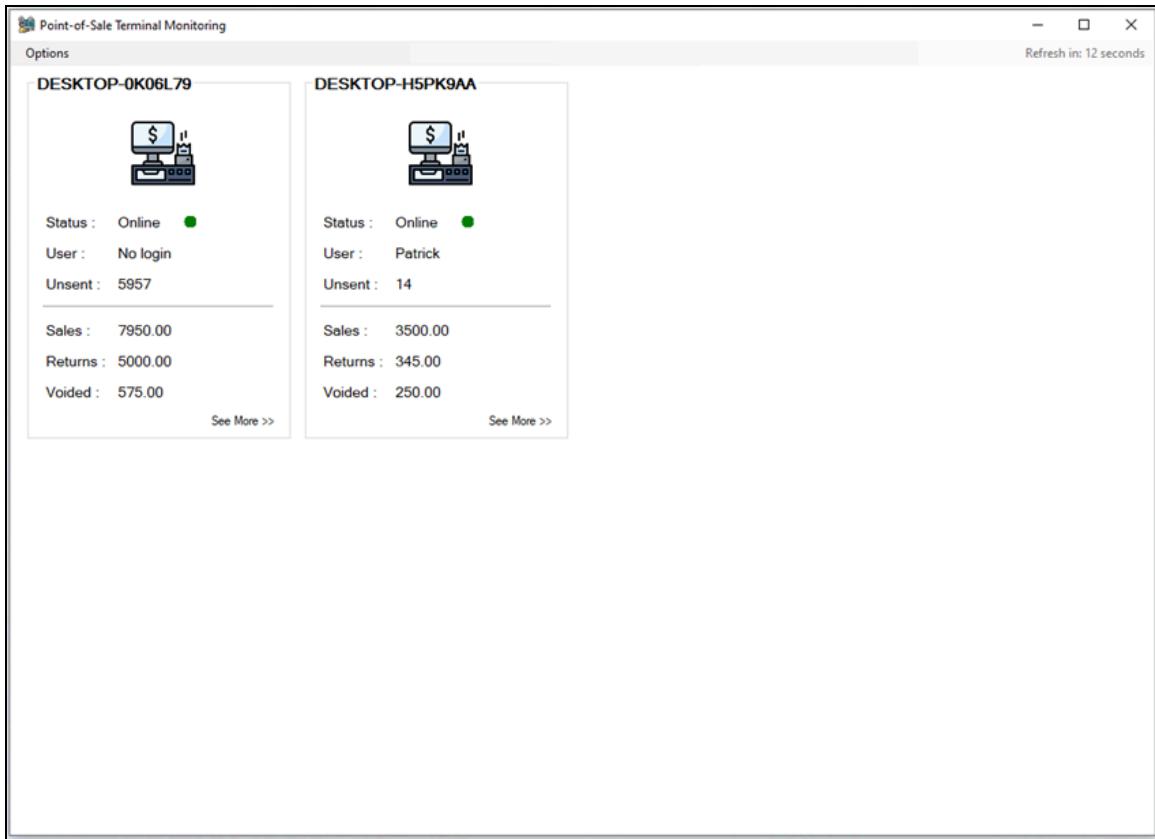


Figure 10. Point-of-Sales Monitoring Dashboard

The monitoring dashboard also includes data such as the cashier logged in, the number of unsent transactions which means the difference between the count of the records found in the branch server versus in the local database of the terminal, and a summary of the sales, returns, and voided transactions of a specific terminal.

Figure 11 shows the viewing of all transactions for that day per terminal. This was created as the student was tasked by the supervisor as a challenge and an exercise to add a functionality that the student thinks is beneficial and helpful for the user of this module.

The student thought that since there is a summary of transactions, there should be a way of viewing all the transactions of a specific terminal for that day. This functionality also includes searching records by transaction number, transaction type, status, cashier name, or amount.

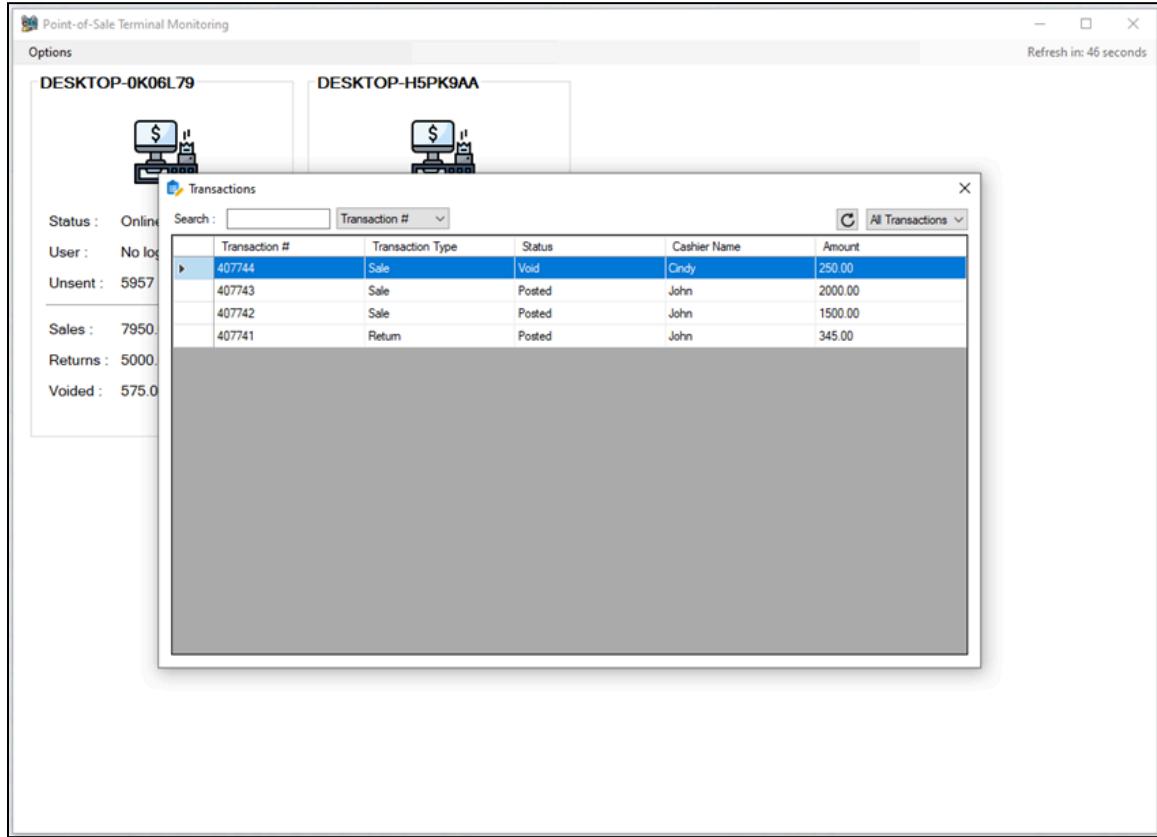


Figure 11. Point-of-Sales Monitoring View Transactions

The functionality of the POS monitoring module also includes authorizing requests that need supervisor credentials. This allows supervisors to give authorization without having to go to the actual terminal. This works by the terminal sending a request to the branch server, the branch server which the monitoring module is running on in the backend is then notified of this request.

The supervisor is notified by highlighting the terminal color yellow and playing a sound. To authorize the request, the user must click on the terminal and enter their supervisor's user code and password. These credentials are then sent to the terminal to be processed and used to authorize the request (see Figure 12).

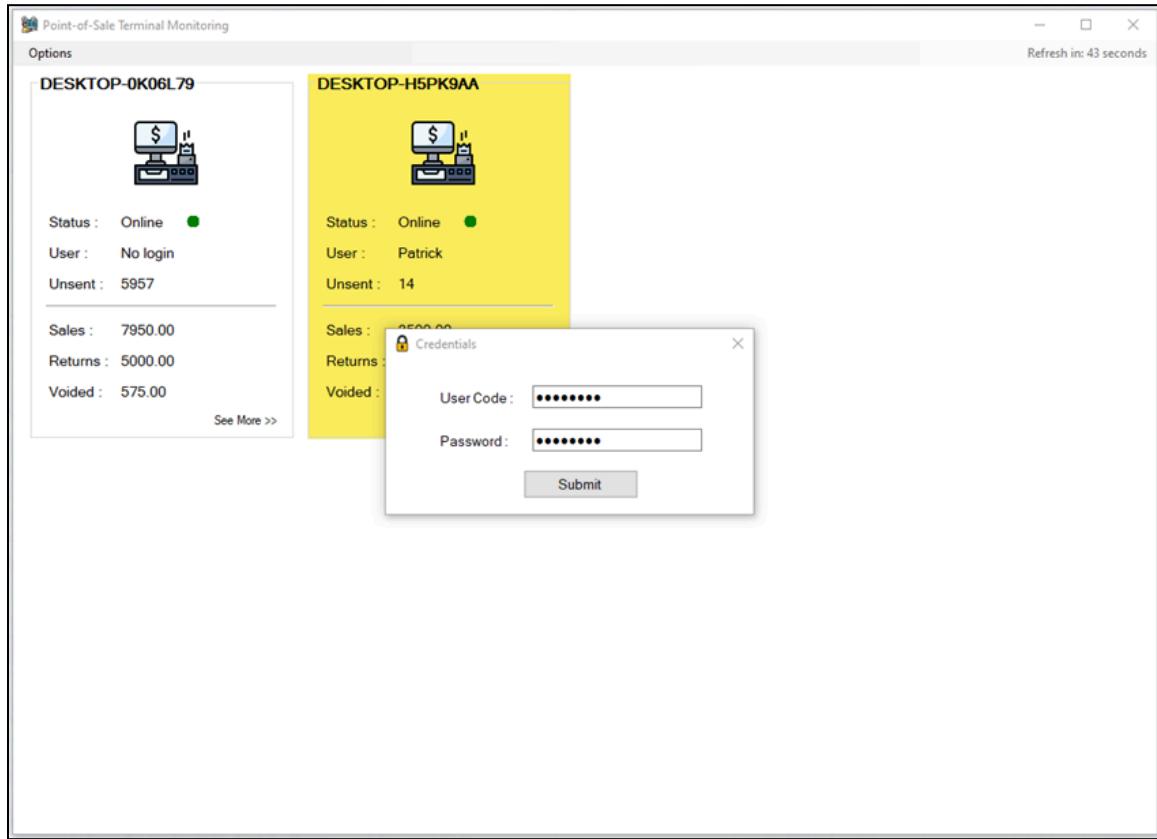
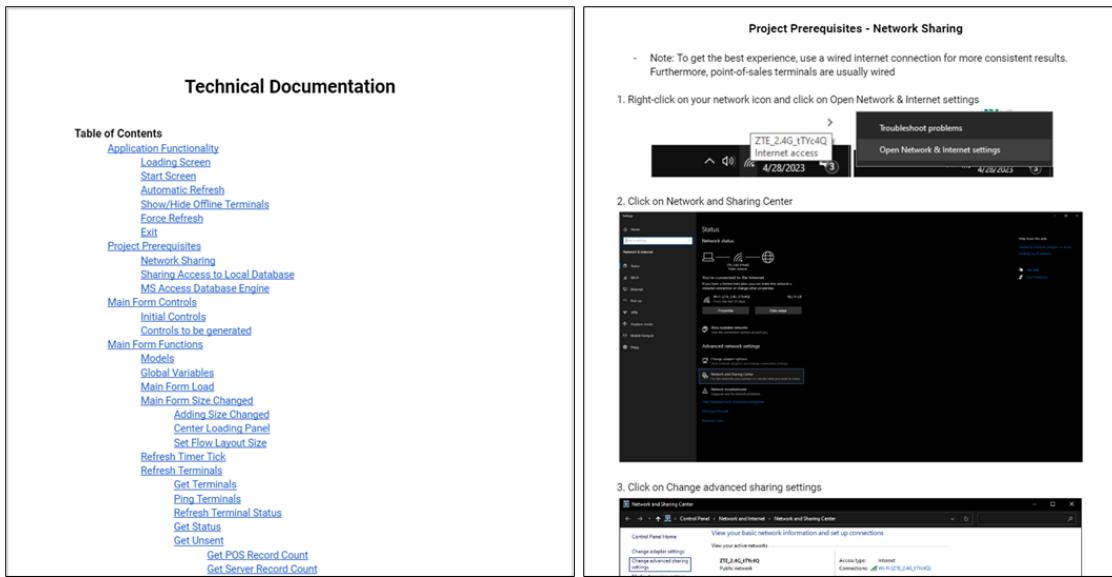


Figure 12. Point-of-Sales Monitoring Authorize Request

After the development of the monitoring module, the student created its technical documentation. Figure 13 shows a sample of the technical documentation created by the student. It includes information such as an overview of the module functionality, the tools used, setting up the project, the project structure, as well as a specific discussion on how each part of the functionality was created namely the data models, getting and pinging the

terminals, refreshing the terminal status, getting transaction data, and the authorization of the supervisor and their credentials.



*Figure 13. Point-of-Sales Monitoring Technical Documentation*

## Point-of-Sales Auto Updater Module

Currently, updates on Barter 8 point-of-sales terminals are manually installed by accessing the terminals one by one remotely and changing the program files and folders. According to my supervisor, this can take around 5 to 10 minutes per terminal depending on the size of the update. In a hypothetical situation of 10 sites with 10 terminals, the software support team would need to remotely access 100 terminals per software update. Although this is a legacy system and updates are not that often, this manual operation is tedious and is prone to human errors.

The point-of-sales auto-updater module developed by the student's main functionality is to check if there are software updates from the branch server. If updates are present, it then automatically updates its files and folders, while also creating backups

of the overwritten files. These backups can then be used as restore or rollback points as needed. The point-of-sales auto-updater module developed by the student removes the need for manually updating the terminals one by one.

Going back to the hypothetical situation of 10 sites with 10 terminals each, the software support team would only need to remotely access the 10 branch servers and upload the updated files there. This will then be automatically installed by the auto-updater module on the startup of the terminals. The point-of-sales terminal updates are put in the POS\_Updates folder on the Branch Server. The POS Auto Updater on the terminals checks the POS\_Updates folder on the branch server. The name of the folder is used as the backup name or title as a way to descriptively identify updates (see Figure 14).

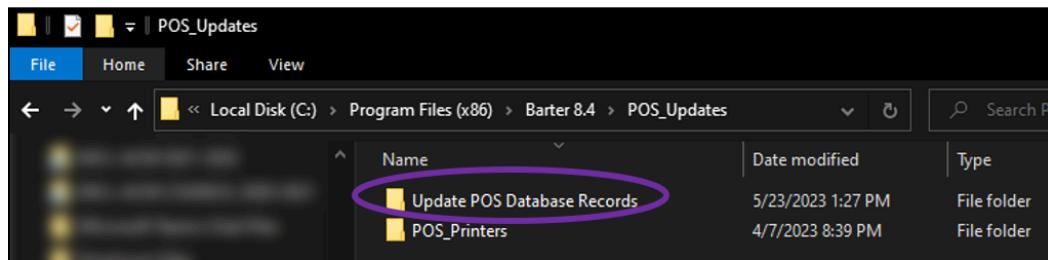
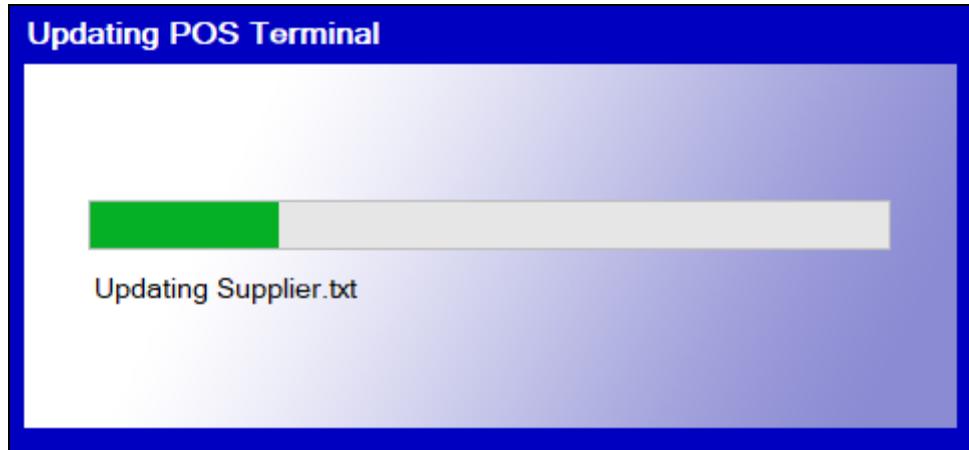


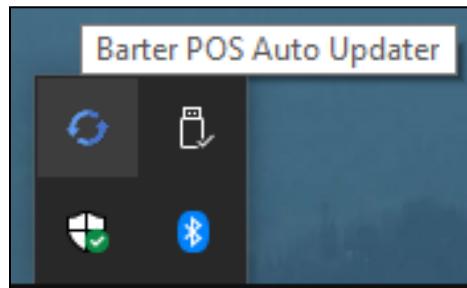
Figure 14. Update Path on Branch Server

Shown below is the point-of-sales auto-updater module updating the files of the local terminal from the branch server (see Figure 15). This is added as a task on the Windows task scheduler on user login. The user interface was created to match the design of the legacy point-of-sales system the module was to be integrated into.



*Figure 15.* Installation of New Updates

After updates have been checked and installed, the Barter point-of-sales terminal program is run. The Barter POS auto-updater module is then hidden in the system tray (see Figure 16). This allows the program to be run in the background. In order to show the program, the user needs to double-click on the icon found in the system tray.



*Figure 16.* Hidden in System Tray

The Barter POS auto-updater module also has functionality for restoring or rolling back backups. Backups can be found in the POS\_Update\_Backups folder on the terminal and are stored in a zip file. Backups older than the AutoCleanupDaysLimit field stored on the terminal which in this case was set to 90 days were deleted to save on space. Figure 17 shows the restoration of the backup user interface. It shows a table of the name of the

backup which was taken from the name of the update folder as well as the date and time the update was installed.

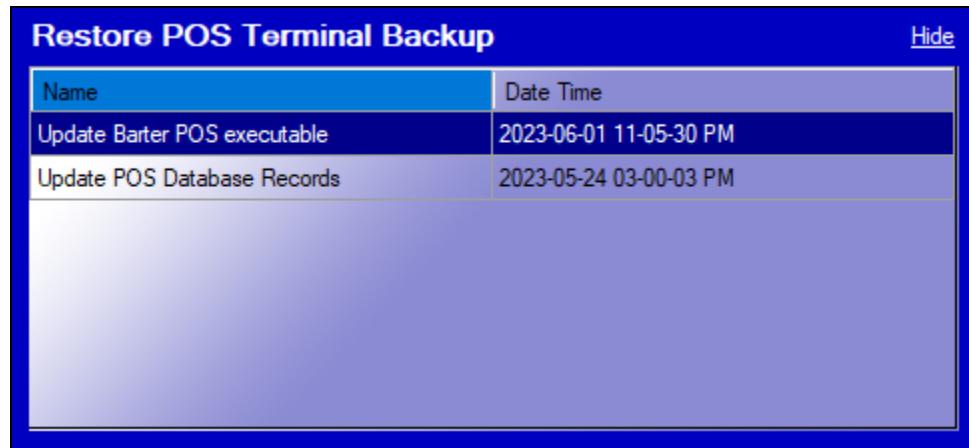


Figure 17. Restore Backups

To restore a backup, double-click on your desired backup to roll back. A prompt will then show confirming the decision of the user to restore the backup (see Figure 18).

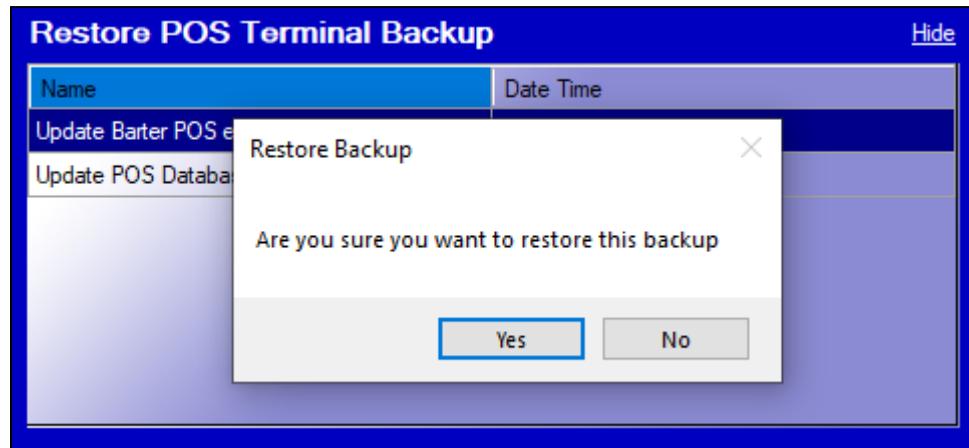


Figure 18. Restore Backups Confirmation

If the user selects yes, a prompt for supervisor credentials will be shown, this is because only supervisors are able to roll back updates on the terminals as needed (see Figure 19).

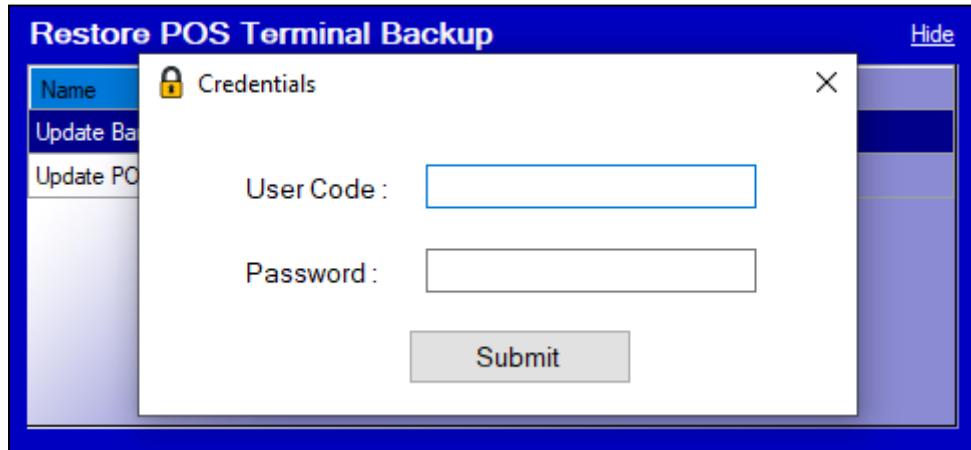


Figure 19. Restore Backups Authorization Credentials

If correct supervisor credentials have been entered to authorize the rollback of an update, it will start the operation. The figure down below shows the prompt that will display once the restoration of a backup is complete (see Figure 20).

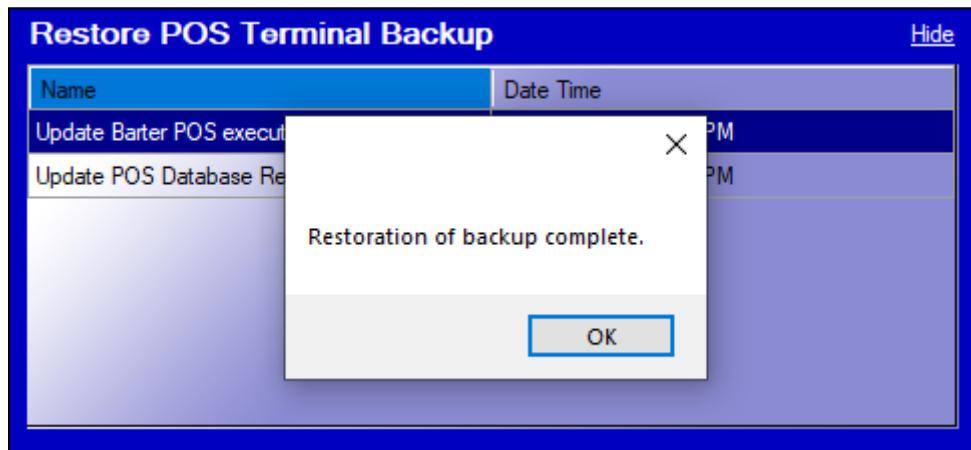


Figure 20. Restore Backups Authorization Credentials

After the development of the module, the student was asked to create a user manual. As of the moment of writing this report June 2, 2023, the supervisor of the student plans to code review and pass the program to be checked by QA in the hopes of being used in production. The user manual highlights the functionality, installation process on the terminal, and how to load the updates on the branch server to be checked by the auto-updater module installed on the terminals (see Figure 21).

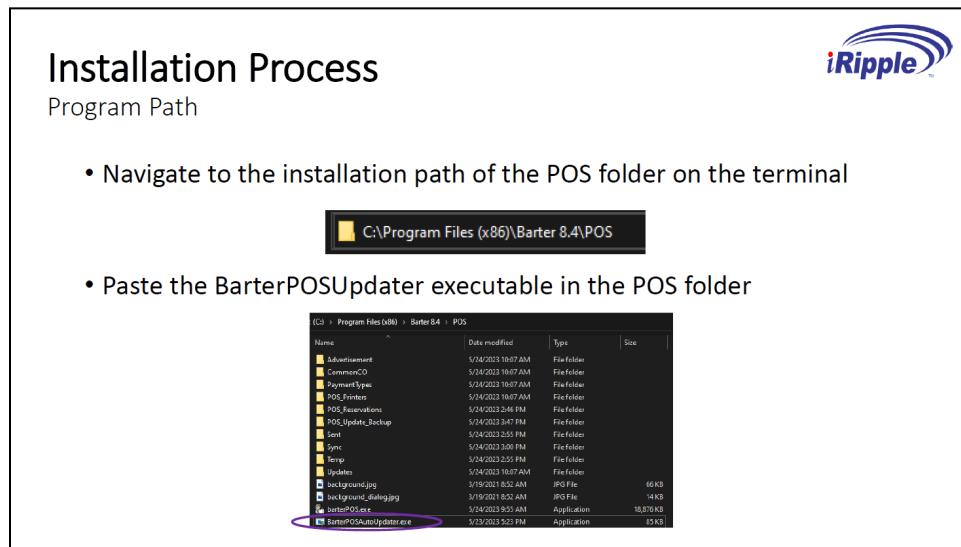


Figure 21. Barter POS Auto Updater Manual

### Point-of-Sales Records Sync Module

As a quick overview, local terminal transaction records are sent to the branch server after every transaction. However, the local MS Access MDB file database of a terminal sometimes gets corrupted and its records are lost. This is a problem as the transactions on the terminals will not match the transactions on the server. This is especially problematic when the transaction ids on the local are reset and cause an error as these transaction ids might already be used in the server. Furthermore, an accurate

balancing of records must be kept so that reports of sales, returns, and voided transactions are accurate.

To remedy this, the current process of the system support team is to manually update and synchronize the lost records on the terminal. Either they (1) manually repeat and recreate the transactions through the POS terminal software or they (2) transfer the server transaction records through SQL commands (see Figure 22). Both of these approaches typically result in a downtime of 15 minutes at best and could take hours in the worst-case scenario. Moreover, this manual approach is tedious, time-consuming, and prone to human error as each transaction table, namely header, items, and payment has a total of over 100 fields.

The screenshot shows four tables from an Access database:

- TransactionPayment**: Contains rows for various transactions with columns like TerminalId, TransId, LineNumber, PaymentTypeCode, Amount, and RefCode.
- TransactionItems**: Contains rows for transaction items with columns like TerminalId, TransId, LineNumber, ProductCode, Quantity, Price, SubTotal, Promoid, and DiscountPer.
- TransactionHeader**: Contains rows for transaction headers with columns like TransId, Date, Status, TransTyp, SalesType, TotalQuantity, VATRate, and AmountGross.
- TransactionDetails**: Contains rows for transaction details with columns like InventoryDetailId, TerminalId, TransId, LineNumber, PaymentTypeCode, PaymentId, Amount, Remark, RefCode, Bank, and RefId.

Arrows point from the bottom of each table to a vertical "Navigation Pane" on the right side of the interface.

Figure 22. Sample of Records to Transfer from Server to Terminal

The module developed by the student remedies this by checking for transactions that are present on the server that is not on the local database of the terminals. It then inserts these transaction records to rectify the lost data. Figure 23 below shows the initial screen of the module. It accepts from and to date ranges to filter and narrow down the records to be checked and synchronized by the module.

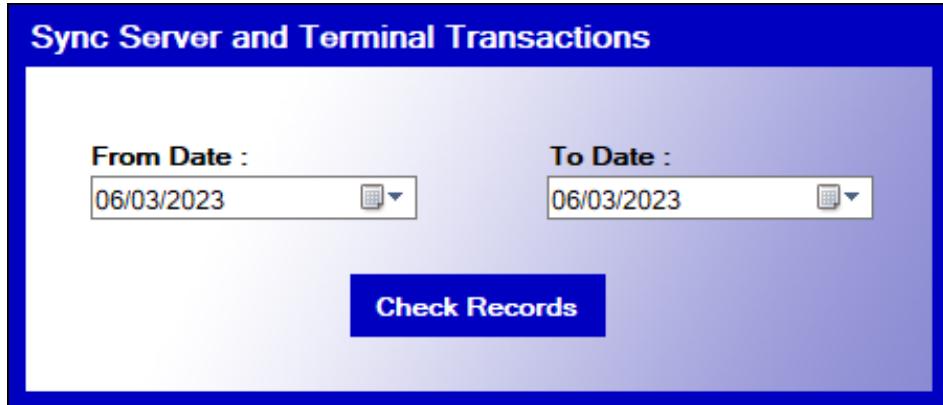


Figure 23. Server to Terminal Transactions Sync Module

Figure 24 shows what happens when the check records button is pressed. It will first show a summary of the number of records in the database of the local point-of-sales terminal and the branch server.

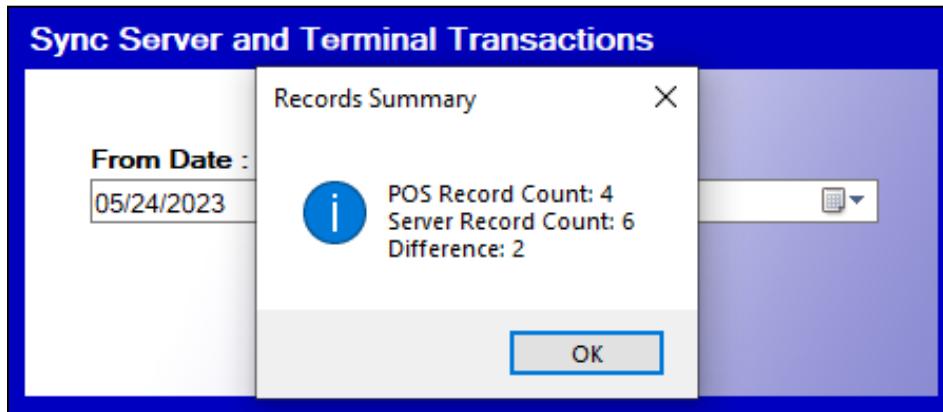


Figure 24. Number of Records

If there are more server records than local point-of-sales terminal records, the program will prompt the user if they want to transfer the records not found on the local terminal that are on the server. The message also reminds the user that this action is permanent and cannot be undone (see Figure 25).

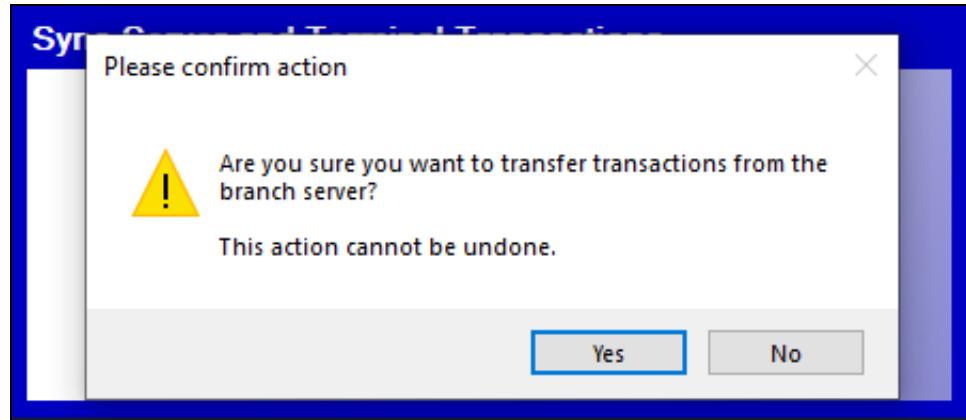


Figure 25. Confirmation of User of Transferring Records

If the user agrees, the program will start fetching the records from the branch server and insert these into the local database of the terminal (see Figure 26).

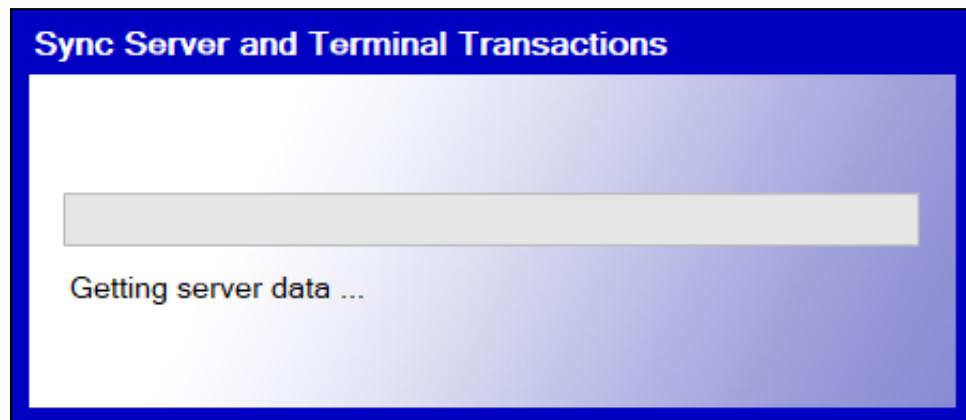


Figure 26. Progress of Records Transfer

Once the operation is complete, a message box will show that the program has finished transferring the records found on the server into the terminal (see Figure 27).

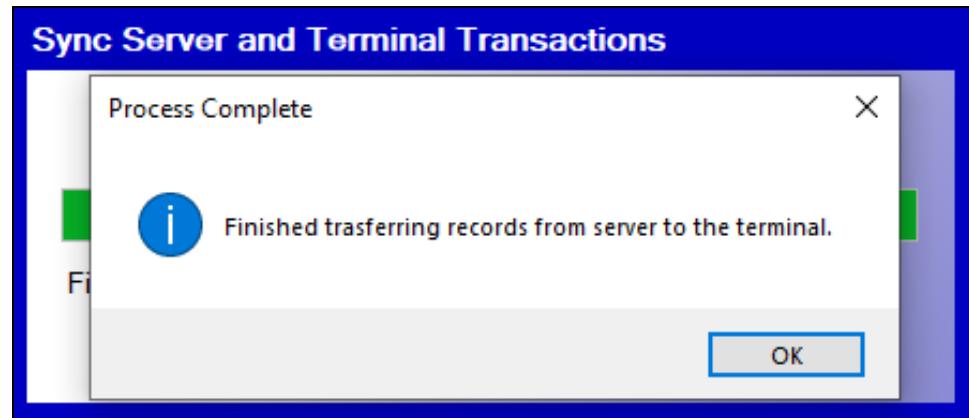


Figure 27. Finished Records Transfer

## Synthesis of the Practicum Engagement

### Learnings

First, the student was able to learn a lot about systems that are actually being used in production environments. He was able to interact with production software that is being used by multiple big and well-known businesses such as Super8. He learned about the process of software systems such as inventory management systems and point-of-sales terminals like how orders for stocks are placed and processed, product items management, what is X-reading and Z-reading in point-of-sales systems, and so on. From there the student was also able to learn about production infrastructure and systems design. The system he interacted with which is the Barter 8 system follows a distributed approach where the local transactions are first saved on the terminals and are then sent to the branch server to be saved. This means that the records per site are stored in their corresponding branch server and not a centralized server for all of the sites. This also allows the system to operate with only a Local Area Network without the need of the internet.

As for technical skills, the student was able to learn how to be able to develop modules that integrate into existing large-scale system systems. At school, he was used to creating systems from the ground up, which means that he was always the one creating the database structure and the structure of the program to be developed. He was able to gain experience working on the constraints set by other people on how data should be stored and how programs should be structured. Furthermore, he learned and practiced how to make code more readable and reusable through code reviews from his supervisor.

This is important since other developers are also going to look at the code he wrote and is to be maintained by other programmers.

Due to the nature of his tasks, he was also able to refresh his knowledge of C# programming desktop applications as well as his learnings in databases using SQL that he learned from the courses he took. He was also able to build upon this existing knowledge by exploring different libraries and frameworks to make a more robust and well-functioning system.

Aside from software development, the student also learned how to create technical documentation as a guide for developers or users of the system he has created. He was able to document his development process and his thoughts on why he took a certain approach in order for other developers to understand. As for user manuals, he was able to create manuals for new users to follow so that they know how to use the system. Although he has experience in creating documentation for systems he has developed in his school projects, none of them were this large of a scope, detailed, and in-depth in order to make the reader understand the system easier.

Aside from technical skills, the student also learned about the different soft skills needed in the workplace. One such important soft skill is how to communicate with your co-workers. This includes only using words that should be used in a professional setting in all forms of communication such as written messages, voice calls, and emails. Furthermore, the student also learned to write concise and straight-to-the-point messages in order to convey the message clearly to the receiver. Furthermore, he also learned to wait patiently for the response of the person he sent a message to as they also have their own work and tasks that they need to do.

Aside from communication, the student also learned about time management. This was how he was able to deliver modules and requirements set by his adviser on time. Since the student also was taking his Capstone during his practicum internship, he had to juggle his time and attention to two very important matters. He was able to do this by making sure that he is not distracted during his shift and that he also had the discipline to do his other work and important matters outside of office hours.

The student also learned how to fight the feeling of being overwhelmed. He felt overwhelmed whenever a new module or task was given to him. He remediated this by breaking down these large daunting tasks into smaller more manageable, workable, and quantifiable tasks. From there he also always thought that his first iteration of work does not have to be perfect from the start. First, he can make it work, and then iteratively improve upon it. When stuck on a task, the student also asked for help from his supervisor. This is of course after he has tried and exhausted all the possible solutions he has come up with.

## **Realizations**

Through this internship experience, the student realized that even though the projects and assignments being done in school are challenging, there is still a large gap in difficulty between actual real-world applications. That being said, he believes that the learnings he has acquired and projects he has done in school have prepared him for the challenges in the actual workplace. He just has to take the next step and improve upon the foundation of knowledge he has gained from school.

This internship experience also led him to realize that he wants to pursue a career in the field of software development. The reason he accepted this internship in the first place rather than going through the learning path is to get a feel of a day in the life of a software developer and the pros and cons that comes with it. Even though there may be tough times, the student realized his passion for creating software that is tangible and that users can use that will help their day-to-day operations.

He also realized that he still has a long way to go and has a lot more to learn. The students feel that although his outputs have hit the objectives set by the supervisor, the way the code was written in terms of its readability, efficiency, and reusability still has room for improvement. This realization motivated the student to learn more about best practices in software development after the internship practicum was over.

Furthermore, the student also realized the importance of a good mentor. The student's supervisor was able to guide him to learn every single step of the way. He gave the student enough space to learn and experience things on their own while also stepping in to help when needed.

## **Conclusion**

In conclusion, the student was glad he took the internship opportunity as it gave him a glimpse into the work of a software developer. It has made him realize his strengths and weaknesses which is vital to help him prepare for his future jobs. Furthermore, a competent employee not only has technical skills but also soft skills. This opportunity gave him experience and practiced his soft skills in interacting with people in the company.

In the end, the student would like to thank iRipple, Inc. for this wonderful opportunity and the learnings and experience it came with. Being able to work on production systems has opened the eyes of the student to the possibilities and hardships of working with actual clients to meet their needs. The student's adviser also expressed their appreciation to the student by offering a job position on his team if the student decides to apply to this company. The student is grateful for this opportunity and is considering it once he graduates.

## Appendices

### Appendix A Competency-Based CV



**Patrick V. Mediola**  
San Lorenzo South, Malitlit, Sta. Rosa Laguna, 4026  
0995-8959849  
mediola.patrick@gmail.com

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**Objective Summary**

A college student and aspiring software developer looking for internship experience and learning opportunities. Willing to study and interested in new and emerging technologies. Has a good foundation of IT knowledge to build upon and can perform under pressure. Can work in a team environment and collaborate with other people.

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**Skills**

- Capable of building front end web applications using HTML, CSS, and JavaScript. Able to use frameworks such as Bootstrap and has beginner experience on React and Tailwind.
- Proficient in creating backend web applications using C# ASP.NET framework (MVC, Web API, Web Forms) and Python Flask for web APIs.
- Competent in creating cross-platform applications that will work on Android and iOS using Flutter and Xamarin to reach more users and for easier development through a single codebase.
- Knowledgeable in using SQL databases and Firebase to store data in an efficient and scalable manner.
- Able to use version control systems such as Git and GitHub for easier project management and collaboration.
- Can interface different hardware devices such as Arduino, WeMos, and Raspberry Pi through serial and web APIs to create functional Internet of Things systems.
- Capable of setting up, creating, and securing basic networks through Cisco CCNA training and certification.
- Has general IT knowledge and troubleshooting skills through CompTIA ITF+ and A+ training and certification.

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**Projects / Experience**

<i>iCHECK Startup</i>	<i>March 2022 – July 2022</i>
• Conceptualized iCHECK, a digital platform for official id's, documents, and credentials to enable easy sharing, ensure authenticity, and reduce the usage of paper. Won 1 <sup>st</sup> Place on the Philippine Startup Challenge regionals and won 5 <sup>th</sup> place in nationals.	
• Developed using flutter for the frontend of the mobile application and website, riverpod for state management, and firebase for the database and backend.	
<i>Pet Feeder (Internet of Things)</i>	<i>May – June 2022</i>
• Made an IoT based pet feeder through a WeMos microcontroller using HTTP protocol. Feed your pet remotely and be able to set recurring times of feeding using a Xamarin based mobile application.	
<i>Library Management System</i>	<i>March - May 2021</i>
• Created a system where librarians are able to manage books and library users are able to borrow and return books. Used C# ASP.NET Webforms & Web API for the backend. MSSQL for the database. HTML, CSS, Bootstrap, and JavaScript for the website frontend, and Java for the Android application.	
<i>Football Registration Website</i>	<i>March 2020</i>
• Developed a website for a football tournament where teams can see the tournament details, how to register, and the teams that have already registered. Used HTML, CSS, JavaScript, and bootstrap for the front-end, and used flask for the backend.	

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**Education**

<i>College – Mapua Malayan Colleges Laguna</i> B.S. Information Technology	<i>August 2019 – Present</i>
	Consistent Dean's Lister and President's Lister
<i>Senior High School – Mapua Malayan Colleges Laguna</i> Information Communications Technology Strand	<i>June 2017 – May 2019</i>
	Graduated with Honors

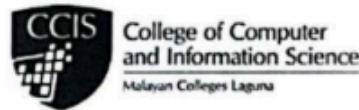
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**Affiliations**

<i>Association for Computing Machinery MCL Chapter (MCL-ACM)</i> Executive Committee – Treasurer S.Y. 2021 - 2022	<i>August 2020 – Present</i>
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## Appendix B

### Endorsement Letter



10 March 2023

**MS. KRISTELLE ANN VILLALOBOS**  
Recruitment Officer,  
iRipple, Inc.  
Philippine Stocks Exchange Center, Pasig City

Dear Ms. Villalobos,

The B.S. in Information Technology program of Mapúa Malayan Colleges Laguna requires their students to undergo Practicum program for a minimum of 486 hours in an academic calendar that will prepare our students to be job-ready after completing their curriculum. This program intends to enable our students to acquire and practice the knowledge and skills expected of a graduate of a B.S. IT program which, in turn, would guarantee continuous supply of IT professionals needed by your company.

We believe that your company can provide the relevant exposure necessary for our students to achieve the intended learning outcomes for the B.S. in Information Technology program. In this regard, I would like to endorse Mr. Patrick V. Mediodia to have his practicum activities in your company as requested.

We thank you for your confidence and trust with us and we look forward to a more meaningful linkage that is mutually beneficial to our students and your company.

With warm regards,

**KHRISTIAN G. KIKUCHI**  
COLLEGE DEAN  
College of Computer and Information Science  
Mapúa Malayan Colleges Laguna

[kgkikuchi@mcl.edu.ph](mailto:kgkikuchi@mcl.edu.ph)  
(049) 832-4076

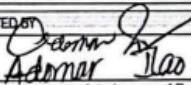
Mapúa Institute of Technology at Laguna · College of Computer and Information Science · E.T. Yu Chengco College of Business · Mapúa-PTC College of Maritime Education and Training  
College of Arts and Science · Institute for Excellence in Continuing Education and Lifelong Learning · MCL Senior High School

Address : Calauan, Laguna 4025  
Trunkline : +63 449 832-4000  
Fax : +63 449 832-0012, +63 (2) 520-8975  
Email : [mcl.edu@mcl.edu.ph](mailto:mcl.edu@mcl.edu.ph)

[www.mcl.edu.ph](http://www.mcl.edu.ph) Malayan Colleges

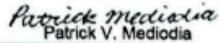
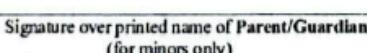
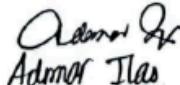
## Appendix C

### Practicum Acceptance

 <b>MCL</b> Malayan Colleges Laguna <small>A MAPUA SCHOOL</small>	<small>REVISION NO.: 00</small> <small>REVISION DATE: May 10, 2016</small>
<b>PRACTICUM CONFIRMATION AND ACCEPTANCE FORM</b>	
<b>IMPORTANT INFORMATION</b>	
<ul style="list-style-type: none"> <li>• STUDENTS ACCEPTED FOR PRACTICUM IN A HOST COMPANY WILL HAVE TO ACCOMPLISH THIS FORM.</li> <li>• ASK THE PRACTICUM SUPERVISOR/ COMPANY REPRESENTATIVE TO FILL IN THE DETAILS OF THE TRAINING.</li> <li>• SUBMIT TO THE PRACTICUM ADVISER/COORDINATOR PRIOR TO THE START OF TRAINING.</li> </ul>	
NAME OF STUDENT <input type="text" value="Patrick V. Mediodia"/>	STUDENT NUMBER <input type="text" value="2019165202"/>
COURSE CODE <input type="text" value="IT199F"/>	SY/TERM ENROLLED <input type="text" value="2022-2023 / 3rd Term"/>
<p>This is to certify that <u>Patrick V. Mediodia</u> (name of student-trainee) has been accepted for practicum at <u>Irapple Inc. located in Philippine Stock Exchange Centre, 2305 B Tektite East Tower, Exchange Rd, Pasig, Metro Manila</u> (name and address of establishment) and will be attached to the <u>B&amp;HI</u> department/s for a minimum of, but not limited to <u>486</u> hours. Training will commence on <u>March 16, 2023</u> and is expected to end on <u>June 15, 2023</u>. Attached is the list of requirements.</p>	
<b>COMPANY REPRESENTATIVE</b> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;">   <u>KRISTELLE ANN VILLANJOS</u>  <small>Signature over Printed Name</small> </div> <div style="flex: 1;"> <u>HR &amp; ADMIN DIRECTOR / RECRUITMENT OFFICER</u>  <small>Official Designation</small>  <u>kvillanjos@irapple.com   0918 667 5748</u>  <small>Email and Contact Number/s</small> </div> </div>	
<b>NOTED BY</b> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;">   <u>Adamar</u>  <small>Signature over printed name of Practicum Coordinator</small> </div> <div style="flex: 1;"> <u>04/11/2023</u>  <small>Date</small> </div> </div>	
<small>COPY: (1) STUDENT, (2) HOST COMPANY, (3) PRACTICUM COORDINATOR</small> <hr style="border-top: 1px dashed #000; margin-top: 5px;"/>	
<small>FORM OVPAA 030B</small> <small>THIS FORM IS AVAILABLE AT THE OVPAA.</small>	

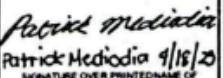
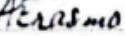
## Appendix D

### Liability Waiver

 <b>MCL</b> Malayan Colleges Laguna A SEAPU ACADEMY		REVISION NO.: 00 REVISION DATE: May 10, 2016
<b>STUDENT TRAINING AGREEMENT AND LIABILITY WAIVER</b>		
<b>IMPORTANT INFORMATION</b>		
• THIS FORM IS TO BE ACCOMPLISHED AND SUBMITTED BY STUDENT TRAINEE TO THE PRACTICUM ADVISER BEFORE STARTING THE PRACTICUM. • READ AND UNDERSTAND THE PROVISIONS OF THIS AGREEMENT AND WAIVER. • ENSURE THAT ALL SIGNATORIES SIGN THE FORM.		
<p>I, <u>Patrick V. Mediola</u>, and a student of MALAYAN COLLEGES LAGUNA (hereinafter referred to as "MCL"), do hereby voluntarily undergo on-the-job training at <u>iRipple Inc.</u>, hereinafter referred to as the "Host Company", located at <u>Philippine Stock Exchange Center, 2305 B Teknolohiya East Tower, Exchange Rd., Pasig, Metro Manila</u>, under the following terms and conditions:</p> <p>a. That the practicum training will commence on <u>March 16, 2023</u> and ends on <u>June 15, 2023</u> and will have to complete a minimum of <u>486</u> hours required for the on-the-job training;</p> <p>b. That I shall observe proper decorum and act professionally at all times and abide by the Company's rules and regulations and comply with those imposed for the training program, otherwise, I shall be excluded from further participation;</p> <p>c. That in the course of my training program, I may have access to information which may be of confidential in nature and proprietary to the Company, for which I may be required to execute a confidentiality and non-disclosure agreement as a prerequisite to my participation in the training program;</p> <p>d. That the time I will spend on the training program in the completion of my on-the-job training requirements will not and should not be interpreted or construed as working hours and should be regarded as non-compensable. Provided that, the Company may, as a unilateral act of liberality or generosity on their part, provide me with meal, travel, transportation allowances, accommodations, etc.;</p> <p>e. That I fully understand that notwithstanding the allowances enumerated in the preceding section which I may receive, there exists no labor-management and/or employer/employee relationship between me and the Company where I will undergo my training;</p> <p>f. That I shall exercise due care and diligence in the tasks assigned to me and personally be made answerable for any and all liabilities for damage to property or injury to third person, which may be occasioned by my intentional or negligent acts during the course of my on-the-job training;</p> <p>g. That I shall likewise hold the Host Company and MCL free and harmless from any and all liability and responsibility for any sickness or injury to myself and third parties and damage to property which I may sustain and/or may occur at any time during the training program, including time spent in traveling to and from any and all premises and locations where I may be required to go to as part of my training program;</p> <p>h. That the Company reserves the right to discontinue my training on reasonable grounds upon written notice to MCL and myself. Additionally, in the event my training program is discontinued for reasons attributable only to myself, I may be made to reimburse the Host Company for any/all the allowances, stipends, etc., which I may have received from them during and prior to the termination of my training program;</p> <p>i. That in addition to my liability under section g and for the pre-termination of my training program provided for under section h hereof, I may be subjected further to disciplinary action in accordance with the school's student manual and/or be a ground for disqualification from graduation;</p>		
<p>Signed on this <u>27th</u> day of <u>March 2023</u>.</p> <p> _____ Signature over printed name of Student Trainee</p>		
<p><b>WITH OUR CONSENT:</b></p> <p> _____ Signature over printed name of Parent/Guardian (for minors only)</p>		
<p><b>NOTED BY:</b>  <u>Admor Jlas</u> _____ Printed Name and Signature of Practicum Adviser/ Coordinator</p>		
<p> <u>JENNIFER V. OLMARET, KRISTELLE ANN VILLADOBOS</u> _____ Printed Name and Signature of Host Company Representative</p>		
COPY: (1) STUDENT, (2) HOST COMPANY, (3) PRACTICUM ADVISER, (4) PRACTICUM COORDINATOR		
FORM OVPA 030C TRAINING PROGRAM AND LIABILITY WAIVER		

## Appendix E

### Training Plan

 <p><b>MCL</b> Malayan Colleges Laguna A MAPUA SCHOOL</p>		REVISION NO.: <b>00</b> REVISION DATE: <b>May 10, 2016</b>							
<b>TRAINING PLAN</b>									
NAME <b>Patrick V. Mediodia</b> PROGRAM & STUDENT NO. <b>BSIT / 2019165202</b>		COURSE CODE <b>IT199F</b> COURSE TITLE <b>I.T. PRACTICUM</b>							
<b>STUDENT OUTCOMES</b>									
<p>CO1. Identify, analyze, and design business process solution to the problem faced by the organization.</p> <p>CO2. Apply the different concepts of systems analysis and design, software engineering, database management, and programming courses in the problem-solving process in the organization, and</p> <p>CO3. Acquire new knowledge and experience while in the organization.</p>									
<b>AREAS / PHASES OF TRAINING AND TIME ALLOTMENT</b>									
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">A. Software Development</td> <td style="width: 50%;">- 406 hours</td> </tr> <tr> <td>B. Technical Documentation</td> <td>- 80 hours</td> </tr> </table>				A. Software Development	- 406 hours	B. Technical Documentation	- 80 hours		
A. Software Development	- 406 hours								
B. Technical Documentation	- 80 hours								
<b>EVALUATION GUIDELINES &amp; COURSE OUTCOMES</b>									
<b>DEMONSTRATION OF SOFT SKILLS (40%)</b>		<b>DEMONSTRATION OF TECHNICAL SKILLS (60%)</b>							
<b>KEY AREAS</b> <p><b>COMMUNICATION SKILLS (20%)</b></p> <p>Relate to co-trainees/supervisors terminologies and rules</p> <p>Recite procedures and instructions needed for the tasks</p> <p>Identify and describe safety signs and symbols</p> <p>Ask critical questions related to the tasks</p> <p>Produce well-written regular and incident reports</p> <p>Prepares and presents reports using Information and Communication Technology (ICT)</p> <p><b>PROFESSIONAL DEPARTMENT (20%)</b></p> <p>Observes proper grooming and attire</p> <p>Reports to work regularly on time and as necessary, even beyond prescribed working hour</p> <p>Acts according to the job description given by the company</p> <p>Willing to accept new tasks apart from the usual routine and responsibilities</p> <p>Delivers quality output on time</p> <p>Demonstrates respect for different individuals</p> <p><b>INITIATIVE (+6%)</b></p> <p>Volunteers to perform tasks beyond routine tasks</p>		<b>KEY AREAS</b> <p><b>Software Development Skills (40%)</b></p> <p>Able to integrate and implement new modules (20%)</p> <p>Able to deliver modules on time (10%)</p> <p>Able to write code that is easy to understand and reusable (10%)</p> <p><b>Technical Documentation Skills (20%)</b></p> <p>Able to write development documentation (10%)</p> <p>Able to write setup and user manuals (5%)</p> <p>Able to write clear and concise documentation (5%)</p>							
<b>CONFORME</b>  <b>Patrick Mediodia 9/18/23</b> <small>SIGNATURE OVER PRINTED NAME OF STUDENT / DATE</small>		<b>CONSENT (FOR MINORS ONLY)</b> <small>SIGNATURE OVER PRINTED NAME OF PARENT OR GUARDIAN / DATE</small>		<b>NOTED BY</b>  <b>Allan Erasmo 4/18/2023</b> <small>SIGNATURE OVER PRINTED NAME OF PRACTICUM SUPERVISOR / DATE</small>		<b>ENDORSED BY</b>  <b>Admir Ida 4/18/23</b> <small>SIGNATURE OVER PRINTED NAME OF PRACTICUM ADVISER / DATE</small>		<b>APPROVED BY</b>  <b>Admir Ida 4/18/23</b> <small>SIGNATURE OVER PRINTED NAME OF PROGRAM CHAIR / DATE</small>	
<small>COPY (1) STUDENT (2) HOST COMPANY (3) PRACTICUM COORDINATOR</small>									
<small>FORM OVPAA-030D</small> <small>THIS FORM IS AVAILABLE AT THE OVPAA.</small>									

## Appendix F

### Student Evaluation on Practicum Host Company and Training

 <b>MCL</b> Malayan Colleges Laguna <small>A MAPUA SCHOOL</small>	<small>REVISION NO.: 00</small> <small>REVISION DATE: May 13, 2016</small>																														
<b>STUDENT EVALUATION ON PRACTICUM HOST COMPANY AND TRAINING</b>																															
<b>IMPORTANT INFORMATION</b> <ul style="list-style-type: none"> <li>• THIS FORM IS USED TO EVALUATE THE PERFORMANCE OF PRACTICUM HOST COMPANY BY THE STUDENT</li> <li>• PRACTICUM ADVISER NOTES THE EVALUATION AND DISCUSSES RESULTS WITH THE STUDENT</li> <li>• NOTED OJT PERFORMANCE EVALUATION REPORT FORMS PART OF THE PRACTICUM REPORT/ PORTFOLIO OF THE STUDENT</li> </ul>																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">NAME OF HOST COMPANY</th> <th style="width: 60%;">DEPARTMENT/SECTION/AREA ASSIGNED</th> </tr> <tr> <td>iRipple, Inc.</td> <td>B&amp;HI Segment RnD Department</td> </tr> <tr> <td>ADDRESS OF COMPANY</td> <td>Philippine Stock Exchange Centre, 2305 B Tektite East Tow, Exchange Rd, Pasig, Metro Manila</td> </tr> </table>		NAME OF HOST COMPANY	DEPARTMENT/SECTION/AREA ASSIGNED	iRipple, Inc.	B&HI Segment RnD Department	ADDRESS OF COMPANY	Philippine Stock Exchange Centre, 2305 B Tektite East Tow, Exchange Rd, Pasig, Metro Manila																								
NAME OF HOST COMPANY	DEPARTMENT/SECTION/AREA ASSIGNED																														
iRipple, Inc.	B&HI Segment RnD Department																														
ADDRESS OF COMPANY	Philippine Stock Exchange Centre, 2305 B Tektite East Tow, Exchange Rd, Pasig, Metro Manila																														
<b>INSTRUCTIONS:</b> Please indicate how much you agree with each statement with 1 being that you strongly disagree and 5 being that you strongly agree.																															
<b>LEGEND:</b> 5 – Strongly Agree    4 – Agree    3 – Neutral    2 – Disagree    1 – Strongly Disagree    NA – Not applicable																															
<b>PART I: EVALUATION ON PRACTICUM HOST COMPANY</b>																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;">STATEMENTS</th> <th style="width: 20%;">RATING (please encircle one)</th> </tr> </thead> <tbody> <tr> <td>1. I was given an orientation about the company rules, regulations, and enough explanation of my practicum assignment at the beginning of the training.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>2. The employees I worked with served as resource persons, sharing ideas and materials.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>3. The people I worked with were perceptive of my needs.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>4. The practicum supervisor spent time observing my performance.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>5. The practicum supervisor provided me with enough constructive criticism.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>6. The practicum supervisor sufficiently answered my questions and clarifications.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>7. The practicum supervisor was objective when critiquing my skills.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>8. The demands placed upon me were realistic in this practicum experience.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>9. I felt comfortable in my overall relationship with the people in the host company</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>10. The practicum supervisor was fair in her/his judgment of my skills.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>11. I benefited from the supervision provided by the practicum supervisor.</td> <td style="text-align: center;"><input type="radio"/> 5    <input type="radio"/> 4    <input type="radio"/> 3    <input type="radio"/> 2    <input type="radio"/> 1    <input type="radio"/> NA</td> </tr> <tr> <td>12. 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<b>ADDITIONAL COMMENTS (STRENGTHS AND AREAS TO IMPROVE)</b>																															
<p>My supervisor was very receptive of my needs and interests as an intern as he even changed my tasks from documentation only to development and documenting the modules I have created. My supervisor was always there to answer my questions and clarifications and gave time in order to critique and give feedback to my outputs. Furthermore, I am glad that the modules I created were going to be tested and hopefully used in production and serve as documentation for other developers. A suggestion that I could give is that for interns to have interacted with other developers and not just their supervisor.</p>																															
<small>COPY: (1) STUDENT; (2) PRACTICUM COORDINATOR/PROGRAM CHAIR</small>																															
<small>PAGE 1 OF 2 OVPA FORM 030K</small>																															
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**PART II: EVALUATION ON PRACTICUM TRAINING**

STATEMENTS	RATING (please encircle one)					
1. The training permitted me to generate the minimum number of direct contact hours required within a specified timeframe.	<input checked="" type="radio"/> 5	4	3	2	1	NA
2. The training provided me with experiences that encouraged and developed my interpersonal skills.	5	<input checked="" type="radio"/> 4	3	2	1	NA
3. The training provided me with experiences that encouraged and developed my technical skills.	<input checked="" type="radio"/> 5	4	3	2	1	NA
4. The training provided me with experiences that encouraged and developed my analytical skills.	<input checked="" type="radio"/> 5	4	3	2	1	NA
5. The training provided me with experiences that encouraged and developed my management skills.	5	4	<input checked="" type="radio"/> 3	2	1	NA
6. The training provided me with experiences that encouraged and developed my customer relations skills.	5	4	<input checked="" type="radio"/> 3	2	1	NA
7. Facilities and equipment are adequate and made available for the training	<input checked="" type="radio"/> 5	4	3	2	1	NA
8. Overall, the establishment provided me with a good on-the-job training	<input checked="" type="radio"/> 5	4	3	2	1	NA

**ADDITIONAL COMMENTS (STRENGTHS AND AREAS TO IMPROVE)**

iRipple gave me a good opportunity to be able to showcase my technical and analytical skills by being able to work on modules that will be interfacing with the system and to be used by clients. Furthermore, Since it is expected to be looked at by other developers, it has also taught me the need to create readable and reusable code and with its accompanying documentation. Although a suggestion I could give is I would have hoped to have interacted with other developers to be able to see their thought process and how they go about with their tasks. I would have loved to have been included in meetings, code reviews, and other tasks that a developer in iRipple is expected to be a part of.



SIGNATURE OVER PRINTED NAME OF STUDENT

PAGE 2 OF 2  
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## Appendix G

### Complete Weekly Journals

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<b>DAILY JOURNAL</b>			
<b>IMPORTANT INFORMATION</b> <ul style="list-style-type: none"><li>• INCLUDE TASK ASSIGNMENTS OR MOVEMENTS, REFLECTION ON THE DAY'S NEW LEARNING, ACCOMPLISHMENT, CHALLENGES FACED AND HOW YOU RESPONDED, OBSERVATIONS AND RECOMMENDATIONS ON THE IMPROVEMENT OF SYSTEMS / OPERATION / MANAGEMENT, ETC.</li><li>• SCANNED COPIES OF THIS FORM SHALL BE SUBMITTED ON A WEEKLY BASIS THROUGH APPROVED LMS.</li><li>• HARD COPIES OF THIS FORM SHOULD BE COMPILED AS PART OF THE STUDENT'S PORTFOLIO.</li></ul>			
DATE	3/16/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Company Orientation, Studying System Documentation	SHIFT/TIME	8:30 AM to 5:30 PM
<b>Technical Documentation</b> <p>- Interns were briefed by HR about the company, its different products, services, departments, and the executive committee.</p> <p>- Briefed on what my tasks were. I was told that I would be updating the old documentation of the Barter 8 system.</p> <p>- Started studying the old documentation of the Barter System which encompasses a brief overview of the system.</p> <p>- Took down notes on some things that I wanted to clarify to my supervisor.</p> <hr/> <hr/>			
		TRAINEE'S SIGNATURE	
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DATE	3/17/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Study and Update Documentation, Install Software	SHIFT/TIME	8:30 AM to 5:30 PM

### Technical Documentation

- Finished reading the existing documentation of the Barter System that I needed to update. Learned a lot about inventory management and POS.
- Was able to clarify some of the terms and processes that I was unsure of to my supervisor.
- Installed MSSQL in preparation for the installation of the Barter system.
- Updated the documentation on how to create, backup, and restore databases in SQL management studio.
- My supervisor was supposed to install the Barter system today but couldn't, so my other tasks were moved to Monday.

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DATE	3/20/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Software Installation, C# Desktop Development	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Barter 8 system was installed on my computer along with its dependencies such as its database MSSQL and its other modules.
- Barter 8 was created on VB 6 and that he told his developers they were migrating to creating future Barter modules using C#.
- My tasks were shifted from updating the documentation of the existing system to developing modules using C#.
- Familiarized myself with the different .NET desktop controls (components) such as combo boxes, ListViews, labels, checkboxes, and more. As a practice, I was tasked to recreate two existing modules by imitating their UI and functionality through connection with the database.
- I am glad that I was moved to a developer role as this is what I want to pursue in the future. I am also comfortable developing in C# specifically desktop applications, but I still have a lot to learn about generating reports through Crystal reports and exporting to Excel.



Patrick

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DATE	3/21/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	C# Desktop Dev Refresh, Database Connection	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Continued the creation of the first sample form that was tasked to be created by my supervisor.
  - Was able to bind the terminal dropdown to the corresponding site selected and order with a connection to the MSSQL database.
  - Started on the layout of the UI components of the second more complicated form that I needed to replicate.
  - Learned and used SQL Server Profiler to capture queries done on the database. This is useful when knowing what queries are being done so that I can replicate it with the new module.
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DATE	3/22/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	C# Desktop Development, Report Generation Research	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Added functionality to the form controls of the second more complicated form such as selecting the site, group by, and payment type.
- Studied the tables, their columns, and their different relationships. This led me to refresh my SQL knowledge as I have to make queries, join tables, filter, and order data.
- Researched how to generate reports using Crystal Report in C#.
- Installed and created the initial queries such as what columns I needed to generate the report. From there I created the initial models for the initial implementation that I will start tomorrow.

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DATE	3/23/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Report Generation, Database Query, Record Filtering	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Started the initial implementation of the report generation for the first simpler form. I was able to load the data from the database into the report.
  - Fixed the data table format to get the fields that I needed and cleaned the data and turned them into the format that they were needed in such as a specific date format.
  - Created the design of the report.
  - Fixed the formula for generating the total in regard to sales (add), returns (subtract), and void (ignore) in the respective totals such as terminal, site, and report.
  - Reports generation is still a static query, so I am able to create the report itself before adding the filtering.
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DATE	3/24/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Dynamic Report Generation, Updated Record Filtering	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Overlooked some of the filtering fields of the report specifically additional fields for the different return types and their corresponding reasons so I updated the form to include these filters.
  - Added basic filtering to the reports such as from and to date, by site, and by terminal.
  - Still have some other filters that I need to work on, and the different combinations of these filters may need different fields to be displayed and evaluated.
  - Learned the importance of exploration and figuring things out before actually doing them.
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DATE	3/27/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Dynamic Report Generation, Form styling and design	SHIFT/TIME	8:30 AM to 5:30 PM

### Software Development

- Finished the filtering options for dynamic report generation for the first form. By type (all transactions, sales, returns, void), arrange by (trans #, OR#, invoice # in ascending or descending order), and only manual invoices.
- Fixed the implementation of the initial form title and description generation and site selection from the database based on the module code.
- Created the different layouts for the reports for all, sales, returns, and void transactions as even though they have similar fields, there are still minor differences between them.
- Done with the overall functionality of the first form but still needs polishing and improvement.

### Miscellaneous

- Sent the pre-employ form forms such as the liability waiver and practicum acceptance form to our HR contact.

  
PATRICK

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DATE	3/28/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Training Plan, Second Module, Data Query, Report Layout	SHIFT/TIME	8:28 AM to 5:32 PM

### Software Development

- Scheduled a meeting with my team leader to get my code checked as I have finished the first module/form.
- Finalized the form control and their respective functionalities for filtering (site, payment type, group by).
- Studied the existing SQL commands of the old VB form through SQL Server Profiler to learn the different tables and their relationships to get the correct data. I had a hard time getting a grasp of the data as there are multiple SQL queries from different tables.
- Fetched the data with a static query from the sample given as a start and I was able to create a draft for the layout of one of the reports (by terminal) that I will continue working on tomorrow.

### Miscellaneous

- Opened up about the training plan to my team leader. He told me that my current tasks are more on development and that I should document my code after I am done with the modules.

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DATE	3/29/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Orientation, Filter Query Generation, Static Fields Report	SHIFT/TIME	8:27 AM to 5:32 PM

### Software Development

- Started preparing questions that I wanted to ask about my code and the database to my supervisor as I had scheduled a meeting with him at 1 pm.
- Continued studying the query of the first group by filter on the report of the second form.
- Created the layout, mapped the database fields, created the formulas for the different fields such as total and net sales.
- Created an initial draft of the second report with a static query.

### Miscellaneous

- Had an orientation for the CODEX Internship program for Fasttrack at 11 am.
- I am looking for options if ever I do not find the training plan of iRipple to be sufficient. I think that I will be staying at iRipple as even though Fasttrack has a great internship program like its training and OJT, I do not see myself pursuing SAP-related software.

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DATE	3/30/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presentation, Data Filtering Query, Dynamic Reports	SHIFT/TIME	8:25 AM to 5:33 PM

### Software Development

- Had a meeting with my team leader at 9:30 am. I presented my progress on the two modules and asked about my code, the functionalities, the queries, and what improvements I could make. I am not yet done with the second form so he told me to do that first and then we will meet again on Monday, April 3, at 9:30 am.
- Created reports with dynamic columns based on the data inputted and what the user needed to see on the report.
- Implemented the dynamic queries like from and to date, and which site.
- Still has problems with the report format or styling as the columns have varying widths.
- Initial implementation could be better, but I am glad that I got it to work. I will try to refactor the said code in the future.



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DATE	3/31/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Practicum Documents, Base Report Generation	SHIFT/TIME	8:26 AM to 5:32 PM

### Software Development

- Worked on two more reports for the second module namely group by cashier and group by site.
- Created the base report with dynamic columns but without the extra information like show reservations, balance, or status which need to be toggled. The said reports still need improvements on their layout and design but already work as intended.

### Miscellaneous

- I contacted our HR contact regarding the pre-employment documents that needed to be signed by the company and she told us that we could go on-site on Tuesday next week, April 4.
- I did not accept the Fasttrack offer for an internship. I have already rendered two full weeks in iRipple and even though I think the program of Fasttrack is good, I would not want to throw away the hours that I have rendered and disrespect iRipple by quitting mid-internship if I were to go elsewhere.

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DATE	4/03/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	System Installation, Research and Implement Export to Excel	SHIFT/TIME	8:29 AM to 5:35 PM

### Software Development

- Installed the Barter system on my laptop so that I can work tomorrow on-site as we are going to go on-site to have our pre-employment documents signed.
- Had blockers as the installation of Barter on my PC malfunctioned and although I was able to install the system on my laptop, it does not have all the functionalities.
- Meeting with my team leader at 9:30 AM was cancelled so he was not able to answer my questions and fix the installation of the systems.
- Searched on how to do the export to Excel functionality.
- Created an initial implementation for the first report although my code is not that optimized yet.

### Miscellaneous

- On-site meeting was moved to Wednesday as per our HR contact.
- Today I learned that as professionals we should be flexible. I had a blocker for my current task so I went ahead and started other tasks so that I would not waste time.
- Furthermore, I believe in the notion that when developing, your implementation does not have to be super-efficient at the start. I learned that making it work and then improving upon your implementation is key so that you do not get hung up on optimizing too much which could result in not delivering your output on time.

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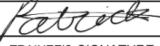
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DATE	4/04/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Export to Excel Code Refactoring, New Filtering Functionality	SHIFT/TIME	8:27 AM to 5:37 PM

### Software Development

- Refactored my initial implementation of the export to Excel, I made it more efficient and reusable so that I do not have to repeat the code for the report headers, columns headers, and the footer, all I need to manipulate is the body.
- Created the initial implementation for the group by cashier and sites for export to Excel.
- Created the initial implementation for the report for cashier show balance and status through crystal reports.
- Fixed the installation of Barter on my laptop for on-site use tomorrow. The problem was that I was using an older version of the database backup, so I restored the backup found on my pc to my laptop.



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DATE	4/05/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Export to Excel Functionality, New Reports Query and Filter	SHIFT/TIME	8:30 AM to 5:32 PM

### Software Development

- Created the initial implementation for the export to Excel functionality for the group by cashier with balance and status.
- Created the initial implementation for the crystal report of the group by payment type. This was different from the other reports as I had to query a whole different data set, so which means I had to create a new model, query, and report formulas and formats.

### Miscellaneous

- Went to iRipple and got our pre-employment documents signed and to work on-site.
- Felt more productive working on-site as there were no distractions unlike working from home where you need to do your other responsibilities.
- Also realized the benefits of working from home. I don't have to waste time commuting due to iRipple being far away and due to the traffic. Moreover, it is also expensive due to commute and food expenses. So, in the future, I hope to have a job with a hybrid setup to get the best of both worlds.

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DATE	4/11/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finished Reports and Excel, Improvements, Documentation	SHIFT/TIME	8:27 AM to 5:47 PM

### Software Development

- Finished all the initial implementation for the crystal reports and export to Excel for all the filtering options.
- Presented progress to my supervisor on my 2 modules. He had some suggestions which I took note of and some functionality that he wants me to add.
- Implemented the additional functionality of saving and retrieving the settings of the user in the registry so that their last selected values will be saved and loaded on runtime.
- Implement the styling suggestions of Sir Allan on my export to Excel implementation to reduce code redundancy.

### Technical Documentation

- Started the development documentation and my supervisor will check my progress by Friday afternoon.

### Miscellaneous

- Discussed the training plan with my supervisor which would be composed of software development and technical documentation.
- Went to school to get my pre-employment documents signed.
- Supervisor told me if my performance and attitude are good in this practicum, he might recommend me if I decide to apply to iRipple after graduation as they are in need of developers.

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DATE	4/12/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Bug Fixes, Testing with different data, Styling of Reports	SHIFT/TIME	8:22 AM to 5:45 PM

### Software Development

- Fixed most of my crystal reports and export to excel functionalities.
- Fixed my queries and verified their values and found that my query was wrong. I was checking my reports with a small data set as I forgot that this was an older system. Tried a larger data and found that my queries returned different results from the sample forms.
- Finalized the styling of my crystal reports so that it is able to accommodate larger numbers.

### Miscellaneous

- Learned that you should always check your code with different data sets. I was fixated on trying my functionalities on a single smaller data set that I was not able to fully verify its correctness.
- Realized that when debugging you should always use tools to make your life easier. For example, having breakpoints in order to see the flow of data and logic in your code.

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DATE	4/13/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Bug Fixes, Main Program to developed Module Parameters	SHIFT/TIME	8:24 AM to 5:57 PM

### Software Development

- Fixed the need for administrative permissions when retrieving from and saving to the registry. Now it would always prompt the user to restart the program with admin access when the user account is not yet an admin.
- Fixed the payment type query and it now returns the correct values.
- Initial implementation of the passing off parameters to a .exe file. Main program is created in VB6, and then the needed parameters such as connection string, user data, and site data for the report module to function are given as parameters.
- Since I do not have access to the source code of the main program, I created my own report caller. The sequence is as follows: Main program -> get global parameters needed -> click on report -> get parameters needed for report -> pass to report -> use parameters on the report.

### Miscellaneous

- Realized the hardship of working on a codebase that you did not create from scratch. This is because you do not know all the ins and out of the program and you have to conform to their standard on how to do things. This restricts your implementation and makes you think about it a lot more.
- Realized the need for easy-to-read and reusable code that is maintainable. This is because you are not the only one looking at that code and it needs to be easily understood and simple enough when others take a look at it.

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DATE	4/14/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Bug Fixes, Refactored Code, Technical Documentation Draft	SHIFT/TIME	8:27 AM to 6:03 PM

### Software Development

- Fixed the argument delimiter issue by encapsulating the arguments in double quotes. C# uses spaces as delimiters and the connection string was being cut off.
- Refactored my first barter form (POS Sales Journal Summary) and moved the generating of SQL query from the report form to the database commands file to separate the logic of creating the query and getting the data from generating the report form.
- Refactored the POS Sales Journal Summary and added passing of arguments from the main program.
- Fixed the bug of the sales-only report filter as its crystal report had incorrect terminal, site, and grand totals. Double-checked and confirmed all other filters to be having correct values.

### Technical Documentation

- Created an initial draft of the technical documentation.
- Had a hard time as I have little experience in creating documentation for the code that I wrote.
- Was not sure which parts to include and furthermore I realized that I should be documenting my code as I am writing it so that I do not have a hard time remembering the approaches and dependencies of the code that I wrote.
- Will get it checked by my supervisor for its correctness next time we meet.

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DATE	4/15/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Technical Documentation of Developed Module	SHIFT/TIME	8:25 AM to 5:50 PM

### Technical Documentation

- Created project setup documentation. Wrote about the programs used, creating the project, the project structure, programs to install, references to add to the project, and the NuGet packages to install as a foundation of the overall project.
  - Documented how to transfer the arguments from the Main Program (Barter TX) to the module to be created.
  - Documented how to retrieve and save registry values. This is where some of the settings are stored.
  - Documented how to create crystal reports. This includes the creation of the report form, the use of the crystal report viewer, and the creation of report parameters and record models.
  - Starting to get hang of creating development documentation. I am learning what parts I need to include, and what parts I need to highlight such as adding text and other helpful pointers.
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DATE	4/17/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Continue Technical Documentation of developed Module	SHIFT/TIME	8:27 AM to 5:41 PM

### Technical Documentation

- Consulted my supervisor on how to fix the system as Barter's free trial expired. He gave me a version of the program that does not need licensing. After that, I again focused on creating documentation.
- Continued my documentation for crystal reports for static columns of report records in terms of styling, data source and retrieval of records, parameters, formulas, and I was able to make my technical documentation more user-friendly as I added a table of contents that have in document linking to the specific section.
- Was supposed to have a meeting with my supervisor wherein I will present my progress on the documentation and ask him some questions, I have but he was busy, and it was moved to tomorrow.

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DATE	4/18/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Technical Documentation, Presentation, Training Plan	SHIFT/TIME	8:25 AM to 5:41 PM

### Technical Documentation

- Had a meeting with my supervisor Sir Allan, and I consulted my current documentation progress. We talked about his expectations and what I should and should not include in the document.
- Documented static values for controls.
- Documented how to dynamically set the values of controls like combo boxes based on certain conditions and values from the database.
- Documented how to add resources such as photos to the project, how to use these photos in the controls, and change the photos during run time.
- Cleaned up the documentation by checking for spelling mistakes and adding appropriate headers and styles.
- Verified the contents of the documentation for correctness and continuity of steps.

### Software Development

- Brainstormed ways how to improve my dynamic columns in crystal reports implementation.
- Refactored and modified some parts of the code to make it more readable as I was using specific C# syntax which can cause confusion to other developers.

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DATE	4/19/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Refactored Code, Technical Documentation Continuation	SHIFT/TIME	8:28 AM to 5:40 PM

### Software Development

- Refactored the query for the crystal reports dynamic columns query. I improved the implementation by modifying the query in a way that its results headers do not need to be modified to fit the crystal reports model.

### Technical Documentation

- Created documentation for the initial setup, which is setting up and updating the report parameters before the generation of the crystal report.
- Documented how to create a crystal report using the Report Wizard and its different options.
- Documented how to query the data such as the creation of the query string from the report parameters. I discussed in detail the selected payment types, payment type paddings, and how the non-selected payment types are aggregated as others.
- Documented how to load the queried data into the report and supply report specific parameters.
- Discussed why the payment headers are sent as parameters and not part of the report records and how it relates to the formulas used. I added how to create report formulas and the discussion on each of the report formulas used.

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DATE	4/20/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Technical Documentation, Fixed Bug, Refactored Code	SHIFT/TIME	8:28 AM to 5:37 PM

### Technical Documentation

- Created the documentation for the styling of crystal reports dynamic headers like the font size, font style, and other styling options.
- Created documentation for the other C# form controls I missed such as ListView and PictureBox like how to set them up and manipulate them accordingly.
- Fixed the headings, sequence, and design by checking and verifying the overall documentation.

### Software Development

- Fixed the implementation of the query for the dynamic selected payment types that I refactored yesterday. The query was only working if all of the payment types were selected and was returning errors otherwise. I was able to fix it by using the SQL server profiler and checking the query being performed by the program. I found out that I missed an important part of the query with the new implementation which I then fixed.
- Checked and improved the implementation of the export to excel functionality.

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DATE	4/21/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finalized Refactored Code, Finalized Technical Documentation	SHIFT/TIME	8:23 AM to 5:33 PM

### Software Development

- Finalized my export to excel implementation. I rechecked the code for better ways of implementation such as refactoring how to get the selected payment headers with less redundancy and implementing the refactoring of styling as suggested by Sir Allan.

### Technical Documentation

- Documented the base class and explained the header, body, subtotal, and grand total Excel generation functions.
- Documented how to use these functions depending on the selected report filters of the user.
- Documented how I was able to apply the different style functions that will be used on the different parts and types of text in the Excel file.
- Checked and finalized everything, and I plan to present this to my supervisor by Tuesday.
- Added the appropriate headers and links for export to excel documentation. I then checked and verified the newly created export to excel documentation. And lastly, I checked and verified the flow of the overall technical documentation.

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DATE	4/24/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presented Documentation, Started New Development Task	SHIFT/TIME	8:30 AM to 5:54 PM

### Technical Documentation

- Final checking of the documentation. I skimmed through everything and fixed any grammatical, design, or format mistakes. Added some parts that I may have not documented yet.
- Presented the finished program and my documentation to my supervisor.
- He said that it met his expectations, and ideas and that I did well. I asked for feedback such as the time it took me to create the modules and he said that I was fine.

### Software Development

- After the presentation and feedback, I was given a new task. My task is to create a module that checks the status of the POS machines if they are online or offline and the difference of records locally in the POS and from the server.
- Sir Allan discussed that I could get the status of the terminal by pinging them and that to check the difference between the records, I need to access both from the server (MySQL) and from the POS (MS Access) and compare them.
- Conceptualized the user interface by creating mockups. I then identified the different form controls to be used namely: Flow layout, group box, picture box, and labels.
- I put my ideas into action and created an initial implementation for the generation of all the terminal UI components with static data.

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DATE	4/25/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	School Activities, Development Tasks	SHIFT/TIME	8:26 AM to 7:22 PM

### Software Development

- Continued working on the user interface of the POS terminals status module. I first changed the POS icon to a more modern one as per the feedback of my supervisor, finalized the sizes of the form and group box, and finalized the text placements and size.
- Generated the UI components based on actual terminal data as I was previously only using static data. I first created the terminal model and queried all the valid terminals. I then generated the UI components based on the terminals.
- Got the terminal status by pinging the terminal using the terminal name. I first used the Ping class in C# to ping the queried terminals. It works but since the ping.Send() function only uses the main thread it was sending, waiting, and receiving the pings one at a time. From my research, I discovered using the PingAsync() function so that the pings can be sent concurrently. It has since drastically improved its performance.
- Used a timer to refresh the status every 1 minute.

### Miscellaneous

- In the morning I attended the opening of the CCIS college week. I asked permission from my Practicum Supervisor yesterday about attending the event and he allowed me to attend as long as I finish my output.
- While at school I also processed papers for OJT regarding the student performance evaluation.

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DATE	4/26/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	UI, Network Sharing, Compare Server and Terminal Records	SHIFT/TIME	8:26 AM to 7:05 PM

### Software Development

- Improved the UI/UX by adding an icon to the form and adding a progress bar so that there is a visual indicator while the program is pinging the terminals and waiting for their replies.
- Implemented the number of unsent records from the POS to the server by connecting to the POS through the local network and accessing its local MS Access .mdb files and comparing its count to the records in the server's MSSQL database for a specific terminal.
- Notified my supervisor and he told me that I should show it to him if he had time today or tomorrow.
- Improved the implementation of the terminal status refresh every minute from disposing all the form controls and creating control with updated data to initializing the components on startup and then updating the text of the existing controls on status refresh.
- Improved my implementation for my progress bar and added a status indicator where it is colored green if the terminal is online, and colored red if it is offline.



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DATE	4/27/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Improve UI, Presentation, Add Functionality to Module	SHIFT/TIME	8:28 AM to 7:02 PM

### Software Development

- Improved the user interface by making the form and UI elements bigger as requested by my supervisor.
- Confirmed the functionality of status and unsent values per terminal through different scenarios. I found that using a wired connection is optimal as it means that the terminal can connect to the network faster. This is because when I was using wireless, the status of the terminal took a long time before it updated.
- After I finished testing, I informed my supervisor and we had a meeting. He gave me positive feedback but wanted to improve and add additional functionality. The first is to have the loading screen show the current terminal being connected to. Second, make the UI even bigger with at least 12 terminals being seen in one window. Third, have a filter to show or hide offline terminals. Lastly, have a timer to show the next refresh and a force refresh button.
- Implemented the loading screen by adding an additional label and changing the text of the label in the ping async function.
- As for the status of terminals, I improved their storage with global variables to be used in the initialization and refresh of controls.
- Added a menu strip on top of the form to house the show/hide offline, refresh status, exit the program, and the timer till the next refresh.
- Implemented a 4x3 grid to show at least 12 terminals on the initial screen. Furthermore, I made the window components responsive by making the controls fill the space as needed.

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DATE	4/28/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finalized Code and Testing, Initial Technical Documentation	SHIFT/TIME	8:25 AM to 7:11 PM

### Software Development

- Rechecked the code, improve any parts to make it more readable, and added additional comments.
- Tested the module on another device, with my laptop being the server and the pc as the POS and I was happy to see that it is also working.

### Technical Documentation

- Started the documentation of the application functionality and its different processes.
- Added the prerequisites needed to be done before attempting to use the module such as network sharing, sharing access to the local database, and the MS Access database engine installation.
- Started documenting the code starting with the project structure and the parameters to be received from the main program.
- Documented the desktop controls to be used and how to get the status of the terminals.



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DATE	5/02/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finalized Documentation, Present, Add Functionality to Module	SHIFT/TIME	8:23 AM to 7:32 PM

### Software Development

- Added error checking for the MS Access database in case it cannot be accessed due to network sharing issues.
- Had a meeting with my supervisor where in I showed him my progress with the additional features he asked for. I received positive feedback and he told me I was able to execute the revisions he gave me.
- Added more functionalities such as a sum of the sales, returns, and void transactions for the current business day per terminal, and showing the currently logged-in user.

### Technical Documentation

- Continued and finished the initial documentation of the current state of the POS Terminals Status module.
- Documented the main form load, the timer tick, and the refresh terminal functions such as getting the status, computing for the unsent, initializing components, refreshing components, and the generation of components.
- Fixed the overall documentation by adding the appropriate headers, linking, and any other content that I missed.



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DATE	5/03/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Testing, Refactored Code	SHIFT/TIME	8:22 AM to 6:27 PM

### Software Development

- Tested the new functionality I created the past few days. I first tested the sum of the types of transactions being sales, returns, and voids for the current day of a specific terminal.
- Tested the currently logged-in user checking afterward. In order to simulate different scenarios, I manipulated the test data and confirmed my current implementation to be working.
- I checked for areas in my code that I could improve. I was able to improve it by removing the need to create a list of terminal names for async ping, separating code to generate lines in controls, and improving the ping async function by removing the need to return a list of type boolean as I moved the status to the terminal model.
- Prepared what I need to show to my supervisor as we have a scheduled meeting tomorrow at 10:30 AM.



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DATE	5/04/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presentation, New Functionality, Development	SHIFT/TIME	8:26 AM to 6:32 PM

### Software Development

- Double-checked the functionality and readied my presentation and questions for my meeting with my supervisor.
- During the meeting, Sir Allan approved the implemented functionalities and commended my work. After that, he told me the next functionality he wants is to notify the user using the terminal monitoring module when a specific terminal is in need of supervisor authorization and be able to serve the request.
- To notify the user I chose to change the color of the terminal controls and play a sound after the refresh if at least one terminal needs authorization. I then created a dummy POS program that can trigger an authorization request which will create a file locally in a network-shared folder to be accessed and checked by the server.
- Programmed the terminal monitoring module running on the server to check each of the terminal's shared folders if an authorization file is present. If it is present, the program will change the color of the terminal controls to yellow and play a sound.
- To simulate approving the request, when a terminal that needs authorization is clicked, it will require supervisor credentials and will only authorize the request if the correct credentials are entered. After which the file will be deleted simulating the request to be served.

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DATE	5/05/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Refactored Code, Fix bugs	SHIFT/TIME	8:24 AM to 5:35 PM

### Software Development

- Moved the code for authentication and granting authorization to the credentials form and then moved terminal controls to separate files from the main form for better separation of concerns.
- Encountered a bug where after a request has been authorized and another request has been sent, it does not update the state. Was able to fix the bug by not creating a new instance of the terminal components list with every refresh of terminal data.
- Improving my code such as getting the MS Access connection string and address of auth file.
- Supervisor had a lot of meetings, and the checking of my progress was moved to Monday.

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DATE	5/08/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presentation, New task, Development of new functionality	SHIFT/TIME	8:24 AM to 5:40 PM

### Software Development

- Had a meeting with Sir Allan in which I presented my progress. I showed him the update to the module specifically the notification system of terminals for supervisor authorization. I showed him the notification part that changes the color of a terminal and plays a sound. He said that it met his expectations and then assigned me a new task.
- Developed the functionality to be able to send a response back to the POS Terminal from the Branch server of the credentials entered by the supervisor.
- Set my PC as the branch server and my laptop as the POS terminal. The credentials entered by the supervisor are then stored in a terminalName.auth file on the POS folder of the terminal. These credentials are then going to be used by the POS terminal to remotely authorize the task.



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DATE	5/09/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Conceptualized and implemented own idea to module	SHIFT/TIME	8:26 AM to 5:43 PM

### Software Development

- Supervisor told me to enhance the functionality of the module by adding what I think the user needs. I then thought of a view for the transactions of a terminal for the day. This is because my supervisor wanted to show a sum of the sales, returns, and voided transactions, why not show the said records altogether?
- Developed a view transactions functionality for transactions of a specific terminal for the day.
- Rearranged the elements so that there could be a link label at the bottom of the terminal group box control for "see more".
- Added a search bar to be able to filter the data and easily search a specific record. I also added a refresh button to make sure that the records are up to date.



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DATE	5/10/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finished conceptualized functionality development	SHIFT/TIME	8:24 AM to 5:37 PM

### Software Development

- Finished the view transactions functionality to be presented to Sir Allan tomorrow.
- Implemented the MD5 hashing algorithm for storing the password in the auth file to be processed by the terminal. My supervisor told me to use the MD5 even though it is old and not that secure in order to keep it compatible with the system since it is legacy.
- Fixed the data grid view column widths to occupy the whole space and fixed the header names. I then added the status attribute to show the status to confirm if the transaction is valid or voided.
- Finalized the filtering function for sales, returns, void, or all transactions.
- Implemented a search function. This would allow the users to search for a specific record with a filter by a specific field.

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DATE	5/11/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presentation, New Task Assigned, Planning for new task	SHIFT/TIME	8:25 AM to 5:36 PM

### Software Development

- Had a meeting scheduled with Sir Allan in regard to my progress. During the meeting, I showed him my progress and he talked about my new task, which is to create a tool that will fix and align the records of the local terminal based on the records from the server database in case it gets corrupted.
- The scenario is that sometimes data on the terminals gets corrupted. Losing some of its data means that the ids of the records do not match the server and when records are pushed from the terminals to the server, there will be an error.
- Normally how they fix this is they manually update the MDB file of the terminal and match the records to the server. This is tedious and takes time which means the terminal is non-operational and is done manually which is prone to errors. My task is to automate this process by creating a tool that will compare the records of the server and copy any records that are not present to the terminal.
- Started the mapping of table fields from the MSSQL server on the branch server to the MS access mdb file on the POS terminal.
- After figuring out the mapping, I then had to think of a way to efficiently compare the columns. I can do this by comparing the transaction lds of the server to the records on the terminal. If it is not found in the terminal, it will be appended along with its other values.

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DATE	5/12/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Prioritize new module, Initial Development of new module	SHIFT/TIME	8:26 AM to 5:45 PM

### Software Development

- Asked my supervisor Sir Allan for a backup of the SQL and MDB database that has matching records. While waiting I continued the mapping of the transaction header fields.
- He then told me to prioritize a new task he is giving me which is an auto-updater for the terminals. Currently, every POS terminal is being updated manually by the cashier which needs prior knowledge and time. This auto-updater software will be run on startup to check for updates from the server before the terminal is used.
- First, I got the update folder path of the branch server from the database. This is where the updated files for the terminal are placed. Next is that I checked the updates folder if there are files to be updated. If there are files that need to be updated, I created a backup of the old files. I compressed these backups to take up less storage. From there I then updated the current files transferring them from the Branch Sever folder to the terminal folder through a network sharing connection.
- Improved the IU for showing if there are updates, what files will be updated, when it is backing up, and when the update is done.
- Tested it on another device in the network to check for functionality and performance.

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DATE	5/15/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presented Module, Updated module based on feedback	SHIFT/TIME	8:23 AM to 5:41 PM

### Software Development

- Continued the mapping of database tables for the headers, details, and payment for the POS transactions.
- Presented the progress on my module and Sir Allan had a lot of feedback. First, it should not need any intervention (yes/no) and will just automatically perform the updates. Only backup the files that are updated.
- Backups older than 90 days should be deleted. Should call the executable of the terminal after searching for updates. There should be a facility for restoring backups. Update the user interface since this will be used in production.
- Updated module to automatically perform updates on startup without any intervention.
- Able to implement calling the POS executable after updates and hide the program in the system tray and delete old backups.
- I am happy to be able to develop something that will actually be beneficial as it automates something that is currently being done manually and will be used in the production environment of the system which is my first time.

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DATE	5/16/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presented Module, Updated module based on feedback	SHIFT/TIME	8:25 AM to 5:42 PM

### Software Development

- Fixed the implementation of for the backup. I changed it from backing up everything inside the folder to only backing up the files to be changed. I was able to do this by first checking if the file from the server is existing on the terminal, if it is, the version on the terminal is first backed up before it is overwritten.
- Implemented a recursive function where in it will recursively traverse all of the folders and its subfolders until all the files have been checked.
- Fixed the implementation of running the barter system after the updates and hiding the updater program in the system tray.
- Implemented the restore from backups being able to show current backups and be able to select which backup to use and restore its files.



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DATE	5/17/2023 – 5/19/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Develop Point-of-Sale Auto Updater Module	SHIFT/TIME	8:30 AM to 5:30 PM

5/17/2023

### Software Development

- Added a progress bar to the auto updater module to be able to better notify the user of the progress of the updates from the server to the terminal.
- Improved the code of the module by refactoring it and segregating the update and restoring backup code for separation of concerns. This makes the main form cleaner and only handle user interface logic.
- Updated the design to match the main program since this will be used in production.

5/18/2023

### Software Development

- Today I was preparing for our Capstone Defense for tomorrow May 19, 2023. My supervisor Sir Allan allowed me I could time in as long as I complete my tasks.
- What I plan to do is to accomplish the remaining tasks I have to do on the Barter point-of-sales terminal auto updater module which is its design since I have already finished the main functionality over the weekend.

5/19/2023

### Software Development

- Continued working on the auto updater module.
- Changed its design and color to match the main program.
- I plan to present my progress to Sir Allan in the afternoon on Monday after our capstone presentation.

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DATE	5/22/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Develop Point-of-Sale Auto Updater Module	SHIFT/TIME	8:25 AM to 5:57 PM

### Software Development

- In the morning we had our capstone presentation which I asked for the permission from my supervisor.
  - Fixed the headers on showing the backups from which the user can restore from.
  - Finalized the design to match the form with the colors, text, and overall design language.
  - Improved the code by interchanging the update and restore panels of the form rather than clearing all the controls.
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DATE	5/23/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Develop Point-of-Sale Auto Updater Module	SHIFT/TIME	8:25 AM to 5:43 PM

### Software Development

- In the morning I double checked the functionality of the form before my meeting with Sir Allan.
- I found and fixed a bug where the program was backing up the new updated file rather than the file to be updated.
- Presented my progress and Sir Allan approved it. He then wanted me to improve my adding more functionality.  
The functionality that I added is that before the user can rollback a backup, the program gets and checks the credentials of the user. Currently the credentials are hard coded as instruction by my supervisor as I do not have access to their in-house encryption implementation.
- Implemented an audit to track who restored a backup, when was the rollback done, and which backup did they restore.
- Changed the absolute paths used in testing to relative paths when it is put in the POS folder to get it ready for production.
- Used task scheduler and ran the program when the user logs in.
- Used a package called Costura.Fody to generate an .exe file with the configuration and dlls compiled into it.



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DATE	5/24/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Develop Sync Transaction Records, Improve Auto Updater	SHIFT/TIME	8:24 AM to 6:20 PM

### Software Development

- Continued working on the transaction records sync module and finalized the initial database table mappings for the headers, details, and payments of the local mdb terminal database to the MSSQL database on the server.
- Created an initial implementation by getting the id of the current terminal and using this id to fetch the records from the local database and the server for that specific terminal for a certain from and to date range. I then compared the records if there are discrepancies in the transaction ids.
- In the afternoon I had a meeting with my supervisor Sir Allan. We installed and configured the needed Point-of-Sales software so that I can generate the needed sample data to be able to create the module.
- Handed over the source code of my Barter POS Auto Updater as he plans on using it on production and said that he was going to review my code.
- While reviewing the functionality of my auto updater module, my supervisor noticed a bug where in the module would allow the user to spawn another instance of the program. I fixed this by checking if the program is already being run as a process, and if it was, the program will not create another instance but will notify the user that it is already running.

### Technical Documentation

- Created a user manual for this module which includes how to setup, the features, and how to use the module.



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DATE	05/25/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Student Evaluation, Finish User Manual, Fixed bugs	SHIFT/TIME	8:27 AM to 5:46 PM

### Software Development

- Continued and finished the user manual for the Barter Point-of-Sales auto-updater which includes a short introduction of the module including its functionality, how to install it, and how to use the program.
- Updated the auto-updater module based on the feedback of my supervisor yesterday.
- Sent the updated version of the module to my supervisor after fixing the following: fixed bug of multiple program instances, changed text of notify icon on system tray, added order by to show backups in descending order, and changed POS\_Update\_Backup path to POS\_Update\_Backups.

### Miscellaneous

- In the morning I had my student evaluation meeting with Ma'am Rhea and Sir Allan Erasmo. I was first asked to explain details about my internship like my department tasks, and then they proceeded to converse 1 on 1 talking about my performance.

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DATE	05/26/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Transaction Sync Module Initial Implementation	SHIFT/TIME	8:40 AM to 5:40 PM

### Software Development

- Continued with the sync of transactions on the server and the terminal module.
- Finished the mapping of the tables for the transaction header, items, and payments which have a total of over a hundred fields in total.
- Started the initial implementation of the module by creating the form which has two date pickers to get the from and to dates of the records that need to be fetched.
- From there I got the count of the records on the terminal and the server. I then compared the number of records to see if there is any difference. After that, I started the comparison of the transaction ids on the server if it was on the terminal. I did this by fetching both the transactions ids for the server and the terminal and checking each of the transaction ids on the server if it is on the terminal, if it is not, it is recorded as a transaction that needs to be transferred.



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DATE	05/29/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Exploration of Libraries and Frameworks	SHIFT/TIME	8:27 AM to 5:39 PM

### Software Development

- Created the implementation of transferring transactions that are on the server that is not on the local terminal.
- Had a hard time as I had to query a lot of fields from the MSSQL database on the server and insert it into the MS Access mdb file on the terminal.
- Explored using an ORM or object-relational mapper for the query on the MSSQL database using Entity framework. I have used this in the past for ASP.NET Web Form and MCV web applications but have not tried using it for desktop applications.
- Exploring entity framework led me to easily query data from the SQL database on the server by using LINQ C# commands which use built-in functions for easy querying rather than having to mess with strings, command parameters, and stored procedures.

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DATE	05/30/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Transaction Records Sync Initial Implementation	SHIFT/TIME	8:30 AM to 5:35 PM

### Software Development

- Through my research and exploring different libraries or frameworks for ORMs, today I was able to create the initial implementation for the syncing of the transaction headers from the server to the terminals.
- Since the TransactionHeader table had a lot of fields, I had a hard time mapping it to the local mdb file and had to recheck the values multiple times to make sure the correct fields are being mapped.
- Created the initial implementation for the TransactionItems and TransactionPayment data.
- Ran multiple tests and confirmed the mapping of the tables to be correct.



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DATE	05/31/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Refactored Transaction Records Sync Implementation	SHIFT/TIME	8:29 AM to 5:49 PM

### Software Development

- Refactored my initial implementation for the transferring of files from the server to the terminal for the transaction header, items, and payments.
  - My initial implementation was a bit sloppy, and my sole goal yesterday was to get it to work.
  - Improved upon my implementation by removing any redundancies and efficiencies I see on my code.
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DATE	06/01/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Develop Sync Transaction Records	SHIFT/TIME	8:16 AM to 5:46 PM

### Software Development

- Added sorting of records to be transferred by transaction id, this is so that the records being transferred from the server to the local terminals are by order.
  - Added a progress bar in order to inform the user of the progress of the transferring of files, this is especially needed when large amounts of data are processed.
  - Improved the user interface. Used the colors of the POS terminal software and fixed the size of the controls.
  - Refactored and improved my implementation for checking for differences between the records.
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DATE	06/02/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Improve Sync Transaction Records and Present Progress	SHIFT/TIME	8:22 AM to 5:42 PM

### Software Development

- Fixed the transaction tables mapping that I overlooked by getting the salesman and bagger data by getting using their ids in the record and fetching their respective tables.
- Converted all of the SQL database commands that were using strings and parameters to the Entity Framework and querying data using LINQ. This allows for a more robust and easier way of fetching data.
- Had a meeting with my supervisor to show my progress and he approved of my output but had a few feedback that I needed to change.
- Added a confirmation before starting the transfer of the records, this is so that the support person in charge could double check the records that will be transferred before the operation will begin.
- Updated the user interface to match the rest of the Barter point-of-sales terminal user interface design.



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DATE	06/05/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finalized and Documented POS Records Sync Module	SHIFT/TIME	8:21 AM to 5:40 PM

### Software Development

- Finalized and refactored the code of my POS records Sync Module
- Tested with more data such as transactions with discounts per item or the whole transaction

### Technical Documentation

- Started the initial technical documentation of my POS Records sync module
- Documented project prerequisites, folder structure, models, file and connections paths, and user interface



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DATE	06/06/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Finalized Documentation of POS Records Sync Module	SHIFT/TIME	8:25 AM to 5:31 PM

### Technical Documentation

- Continued and finished technical documentation of Records Sync Modules
  - Discuss the use of Entity Framework for SQL commands
  - Discussed the process of comparison of transaction records and transferring from SQL Server to MDB
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DATE	06/07/2023	AREA ASSIGNMENT	B&HI Segment RnD Department
TASK	Presentation and turnover of final outputs to Supervisor	SHIFT/TIME	8:27 AM to 1:05 PM

### Technical Documentation

- Met with supervisor to turnover of outputs of my developed projects and corresponding documentation
  - Presented and discussed developed programs
  - Processed turnover and removal of company software on my devices
  - Requested and received my certificate of completion for my practicum internship
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## Appendix H

### Letter of Appeal for Overtime and Saturday Hours Rendered

June 2, 2023,

**MR. KHRISTIAN G. KIKUCHI**  
**CCIS Department Dean**  
**Mapúa Malayan Colleges Laguna**  
Pulo-Diezmo Road, Cabuyao, 4025 Laguna

Greetings Sir Kikuchi,

It has come to my attention that in order for our intern Patrick Mediodia to render overtime and Saturdays I need to get permission from his practicum coordinator on his behalf. He requested the following dates down below to render extra hours in order to be able to meet the requirements I have set and the required hour count before the end of his term. He has rendered extra hours on the following dates:

Saturdays or Holidays

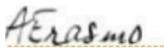
- April 15, 2023 (Saturday)
- April 21, 2023 (Holiday)

Overtime

- April 25, 2023 (2 Hours Overtime)
- April 26, 2023 (2 Hours Overtime)
- April 27, 2023 (2 Hours Overtime)
- April 28, 2023 (2 Hours Overtime)
- May 2, 2023 (2 Hours Overtime)
- May 3, 2023 (1 Hour Overtime)
- May 4, 2023 (1 Hour Overtime)

With that in mind, I am hoping you would consider and count the hours rendered by Mr. Mediodia as his contributions are very much appreciated by me and my team here at iRipple, Inc.

Sincerely,

  
Allan E. Erasmo  
B&HI Segment, R&D Department Team Leader  
iRipple, Inc.

**Appendix I**  
**Certificate of Completion**

**CERTIFICATE  
O F C O M P L E T I O N**

This is to certify that **Mr. Patrick V. Mediodia**, a **Bachelor of Science in Information Technology** student from the **Mapúa Malayan Colleges Laguna**, has successfully completed the required Four Hundred Eighty Six (486) internship hours with iRipple's B&HI Segment from March 16, 2023 to June 7, 2023.

This certification is being issued upon the request of the said intern for academic completion purposes.

Issued this 7th Day of June, 2023.

  
**PATRICIA D. SANTOS**  
B&HI SEGMENT

  
**JENIFER D. OLIVAREZ**  
HR AND ADMIN DIRECTOR

