Proposal

For

Second Year Project

Bachelor of Science in Information Technology

Canteen Automation System.

Submitted by

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Gyalpozhing College of Information Technology

Read carefully before filling the form.

1 Please do not alter the layout of the application form. Information must be filled in the spaces provided, under set format.

2 Guidance notes in various fields should not be deleted.

3 Required information should be duly filled in the specified fields.

4 Required heads/fields which are not relevant to the project should be marked **N/A** (Not Applicable) or left blank and should not be deleted.

Guidelines and Forms

Submission Procedure

Duly filled proposal forms completed in all respects should be submitted in form of soft copy and a hard copy to project guide and project coordinator. On receipt of the applications the proposals will be evaluated by reviewer panel and proposal would then be defended by student groups. The project group may need to revise the proposal in light of the evaluator's recommendations.

For further information, please contact:

Project Coordinator

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Application for Final Year Project

1. Project Identification

A Reference Number:

(for office use only)

B Project Title: Canteen Automation System.

C Project Internal Guide:

Name:	Sonam Wangmo		
Designation:	Associate Lecturer		
Organization:	Gyalpozhing College of Information Technology		
Mobile # :	17391134	Tel. # :	
Email:	sonamwangmo.gcit@rub.edu.bt		

C1. Project External Guide:

Name:	**NA**		
Designation:			
Organization:			
Mobile # :		Tel. # :	
Email:			

C2. Student Group Lead:

Name:	Jamyang Lhashing		
Roll No:	12190054		
Department:	Bsc-IT (Information Technology)		
Mobile # :	17242393	Tel. # :	
Email:	12190054.gcit@rub.edu.bt		

D **Organizations Involved in the Project:**

(Please identify all affiliated organizations collaborating in the project, and describe their role/contribution to the project.)

D1. Industrial Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

D2. Academic Organizations:

#	*Organization Name*	*Role / Contribution*

D3. Funding Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

E **Key Words:**

(Please provide a maximum of 5 key words that describe the project. The key words will be incorporated in our database.)

1. Mobile Application
2. Canteen Automation
3. Place Order
4. Items
5. Balance

F Research and Development Theme:

This system greatly simplifies the ordering process for both the customer and the canteen.

This system also prominently relieves the burden on the canteen's end, as the entire method of taking orders is computerized. Once an order is placed on the android phone, it is entered into the database and then retrieved, in pretty much real-time, by a desktop application on the canteen's end. Within this application, all items in the order are displayed, along with their equivalent options and supply details, in a summarizing and easy to read manner. This allows canteen staffs to speedily go through the orders placed by scanning the QR code from student's android phone and produce the needed items with minimal delay and confusion.

G Project Status: (Please mark ☑) q New ☑ Modification to previous Project ☑ Extension of existing project

H Project Duration:

Expected Starting Date:	09/03/2021
Planned Duration in months:	**Six Months**

2. Scope, Introduction and Background of the Project

A Scope of the Project:

The project's aim is for users to register using their Gmail accounts and then login using their User Email. It will also use the user's User Email as one of the primary security measures when placing orders in the canteen. After signing in, the user would be able to access the menu and place their order.

1. Admin:

- **Login:** Admin need to login using valid login credentials to access the system.
- **Add Items:** Admin can add new food items by specifying details like Food name, Items description, cost, quantity, time to get ready, etc.
- **Order Placed:** Admin can view items ordered by customer.
- **Total Earnings:** Total earnings at the end of the day.

2. Student:

- **Login:** Students need to login using valid login credentials to access the system.
- **View Menu:** Students can order any food item from the menu.
- **Place Order:** Students can place order.
- **Total Amount:** Students can view total amount.
- **View History:** A Student can view all their previous order.

B Introduction (Project Background and Literature Review, Current State of the Art):

(Detailed summary of what all has been done internationally in the proposed area quoting references and bibliography. Please note that this section demonstrates the depth of knowledge of the project team and builds the confidence of the evaluators about capability of the team in achieving the stated objectives.)
(Please describe the current state of the art specific to this research topic.)

Abstract:
Nowadays people don't have much time to spend in canteen by just there and waiting for the waiter to take their order. Many customer visits the canteen in their lunch break and recess so they have limited time to eat and return to their respective office and colleges. So this software helps them to save time and order food whenever they want without calling the waiter again and again.

Manual system involves paper work in the form of maintaining various files and manuals. Maintaining critical information in the files and manuals is full of risk and a tedious process. Including a framework showing how to apply Internet technology progressively as skills and confidence grow, the project demonstrates the route from adapting materials to developing an online environment.

This Canteen Automation System enables the end users to register online, read and select the food from e-menu card and order food online by just selecting the food that the user want to have using android application. The results after selecting the food from the E-menu card will directly appear in the screen near the Chef who is going to cook the food for you. The system is the combination of Android as well as Web Application.

Background:
Computers have become part of the life for accessing almost any kind of information. Life in the 21st century is full of technological advancement and in this technological age it is very difficult for any organization to survive without utilizing technology. The World Wide Web contributes greatly to the creation of an ever-increasing global information database. It could also be used as a mechanism to share information within an enterprise.

In today's age of fast food and take-out, many canteen have chosen to focus on quick preparation and speedy delivery of orders rather than offering a rich dining experience. Until very recently, all of these delivery orders were placed to the waiters or over the phone, but there are many disadvantages to this system, including the inconvenience of the customer needing to have a physical copy of the menu, lack of a visual confirmation that the order was placed correctly, and the necessity for the canteen to have an employee answering the phone and taking orders. What, we propose is a Canteen Automation System, which is a technique of ordering foods online applicable in any food delivery industry. The main advantage of this system is that it greatly simplifies the ordering process for both the customer and the canteen. When the customer visits the ordering webpage, they are presented with an interactive and up-to-date menu, complete with all available options and dynamically adjusting prices based on the selected options. After making a selection, the item is then added to their

order, which the customer can review the details of at any time before checking out.

This provides instant visual confirmation of what was selected and ensures that items in the order are, in fact, what was intended.

This system also greatly lightens the load on the canteen's end, as the entire process of taking orders is automated. Once an order is placed on the webpage, it is entered into the database and then retrieved, in pretty much real-time, by a desktop application on the canteen's end. Within this application, all items in the order are displayed, along with their corresponding options and delivery details, in a concise and easy to read manner. This allows canteen employees to quickly go through the orders as they are placed and produce the necessary items with minimal delay and confusion.

Literature Review:

eCanteen - Canteen Management

EfroTech was formed in 1997 with a single aim in mind: to innovate! It has been this singular objective that has helped EfroTech stand out and perform despite several of the competitors and an array of clients who are more educated now than ever before.

eCanteen is a canteen management module that automates the ordering, cash collection, and billing processes, removing the administrative burden. It is intuitively designed for mid-large organizations to replace manual canteen handling and is important for minimizing long lines by allowing for fast and simple transactions.

eCanteen's user-friendly interface allows you to access and monitor various menu items, as well as make purchases and avoid accounting errors. eCanteen, which is integrated with biometric/RFID devices, provides a hassle-free and clear canteen management solution that boosts efficiency, increases service quality, and reduces food waste.

Features:

1. Meal types (Items), categories, allowances, groups, prices & meal deduction percentage can be added and edited.
2. Meal transactions can be made for a specific employee with subsidized prices & no. of guest(s) if any.
3. Meal transactions can be uploaded through the Excel template.
4. Visitors' meal transactions can be made with the particulars of visitor, extra remarks, and file upload feature.
5. Upload visitors' meal transactions through the Excel template.
6. Meal subsidy setup can be defined & uploaded through the Excel template.
7. Purchase transactions can be made & uploaded through the Excel template.
8. Integrated biometric kiosk for token generation.
9. Comprehensive Canteen Management reports are all time available:

Meal transaction summaries & details with/without discount, remarks, visitors meal transactions, meal counts, etc.

10. Purchase and return details, summaries, purchase and return amount summaries, purchase count details etc.

C Challenges:

(Please describe the challenges, specific to this research topic, currently being faced internationally.)

The challenges are:

1. Require android phone if user is ordering.
   Inorder to use this Canteen Automation System Mobile Application, an android phone must be used. Without an android phone this app cannot run.

2. Cannot access on offline mode.
   Inorder to use this Mobile Application, internet connection is a must. To login, view and logout from this application, internet connection is required.

3. Verification of the customer.
   Once a user has logged into this application from their device, anyone can order as all the verifications are done in the login part. So, if someone else is ordering for a person who has already logged into the application there is no way of stopping it.

Security: One of the biggest challenges is dealing with security problems. Although the Laravel system may handle some of these issues, others, such as cyber-attacks, which occur throughout the project.

Network Issues: Since my project is focused on a mobile application, the network must first be able to load the app; additionally, we would have difficulties placing orders if the network is not stable.

System failure: The system may fail during the order placement phase due to technical issues that prevent the mechanism from handling the processes in a timely manner.

D Motivation and Need:

(Please describe the motivation and need for this work.)

Motivation :

Canteen automation system is a device that enables customers to order food and receive

meals inside the canteen without having to wait for a turn or a ready period. This method aims to reduce the time it takes for consumers to position orders and for employees to accept orders. The aim of this system is to build and incorporate a simple canteen automation system.

Need :

The need of this project are :

1. Completely computerized online ordering of food in a canteen.
2. Order can be located using personal android phones.
3. Customers does not have to wait in long queue.
4. Reduces paperwork.

3. Aim and Objectives of the Project

(Please write the actual aim of your project. Also, describe the measurable objectives of the project and define the expected results. Use results-oriented wording with verbs such as 'to develop..', 'to implement..', 'to research..', 'to determine..', 'to identify..' The objectives should not be statements and should not include explanations and benefits. The objective should actually specify in simple words what the project team intends to achieve (something concrete and measurable/ deliverable). Fill only those objectives that are applicable to the proposed project.)

AIMS:
To Develop A Canteen Automation System.

OBJECTIVES:
The Objectives of this project is:

I. To order food rapidly.
II. To make it convenient for people who have limited time.
III. Cost reduction.
IV. Reduced paper work.
V. Computerized Oder and billing system.

4. Methodology

A Development / Research / Test Methodology:

(Please describe the technical details and justification of your development and research plan and test plan and testing strategies. Identify specialized equipment, facilities and infrastructure which are required for the project and their utilization plan. The block diagrams, system flow charts, high level algorithm details etc. have to be provided in this section. Also, describe the overall methodology to be used for the particular research topic)

Problem Statement:

The manual system in canteens faces challenges in terms of productivity and customer satisfaction. Customers do not like their ordering experience in most fast food canteens. Customers must queue for long periods of time before placing an order, and once the order is made, they must wait near the counter before it is ready. Another issue is the consistency that food canteens must maintain in their standard operations in order to maintain the quality of their goods and services, regardless of how busy the canteen is. They must maintain efficiency as well as product quality. However, we believe that there are several issues with the conventional way of ordering food in canteen.

One of major issues is:

- **Verbal communication between cashier and customer or we can say telephonic communication:** The verbal communication between two parties for placing an order and receiving bill information can often result in error, which means that errors occur in understanding what the other party is trying to say, particularly during busy hours in canteens. Miscommunications are common in a crowded and noisy environment. If the cashier and/or the customers do not speak the native language, the problem becomes even worse.

General Methodology:

The Prototype Model will be used to build the Canteen Automation System Application, which includes the following main actions:

- **Initial Communication**

  We communicate with users/customers during this process and address the goals and objectives of the application to be created. This process also includes the gathering of requirements.

- **Quick Design**

  A quick design of the application is created in this process based on the requirements gathered. Only the most critical things are discussed, such as input and output formats. The elements that will be apparent to the users are given more consideration. This stage assists in the creation of a prototype.

- **Modeling Quick Design**

  The prototype is produced during this step, and it will assist us in having a better understanding of the software development process and the exact requirements.

- **Construction of prototype**

  Customers will be given the built prototype for thorough evaluation during this process.

- **Testing**

  The built prototype will be tested for its functionality in this process. There will be unit testing, integrated testing, system testing, and acceptance testing.

- **Deployment, delivery, feedback**

  If the users are not happy with the current prototype during this process, it will be optimized until all of the users' requirements are met. The final product is then created based on the final prototype.

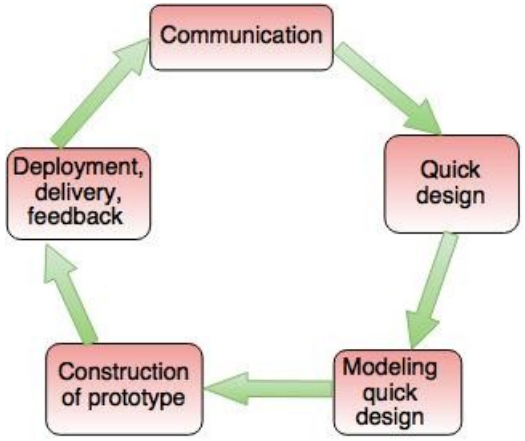

Fig. - The Prototyping Model

Followings are the reasons for selecting the prototype model for the development of this application:

- It is not necessary to have a thorough understanding of detailed input, output, processes, operating system adaptability, or complete machine interaction.
- Users are actively involved. Since the users would only be GCIT people, communications with them will be much simpler.
- Errors are identified and detected earlier.
- Fast feedback from the users which will help in solving the problems and bringing improvement in the software
- Missing functionalities, confusing and difficult functions are easily detected.

B Project Team:	
Title / Position	***Number***
Project Internal Guide	1
Project External Guide	
Student Team Members	1
Others (please specify)	
Add more rows if required	

C Project Activities:

(Please list and describe the main project activities, including those associated with the transfer of the research results to customers/beneficiaries. The timing and duration of research activities are to be shown in the Gantt chart in Section 8.)

The following are the major tasks that will be completed during the production of this mobile application:

1. Installation of software and tools: Installing Android Studio version (2 and above) and Java Development Kit (v8 or more).
2. Literature Review: Referring books, video tutorials, online reference related to android app development and research papers for the literature review.
3. Interacting with the users through surveys and interviews for the requirements gathering.
4. Design.
5. Second prototype: Login and Register.
6. Third prototype: User profile and Admin profile.
7. Fourth prototype: Order Items on Menu.
8. Final prototype: Complete Application.
9. Final Testing.
10. Documentation.
11. Report Writing.

D Key Milestones and Deliverables:

(Please list and describe the principal milestones and associated deliverables of the project. A key milestone is reached when a significant phase in the project is concluded, e.g. selection and simulation of algorithms, completion of architectural design and design documents, commissioning of equipment, completion of test, etc.) The timing of milestones is also to be shown in the Gantt chart in Section 8.

No.	*Elapsed time from start (in months) of the project*	*Milestone*	*Deliverables*
	-	*Commencement of the project*	
	25/02/2021	Topic Selection.	Selection of topic is done.
	14/02/2021-14/03/2021	Project proposal submission	Project proposal report submission
	28/02/2021-04/03/2021	Requirement gathering	SRS document
	05/03/2021-14/03/2021	Requirement analysis	Survey & Interview report, Usecase and ER diagram, Class diagram
	15/03/2021-20/03/2021	Designing of UI.	First Prototype (UI Design)
	21/03/2021-01/04/2021	Login From and Registration From	Second Prototype
	02/04/2021-15/04/2021	User Profile and Admin Profile	Third Prototype
	16/04/2021-05/05/2021	Order Items on Menu	Fourth Prototype
	06/05/2021-14/05/2021	Final Testing.	Final Prototype.
	15/05/2021-17/05/2021	Documentation	Final Application.
	18/05/2021-22/05/2021	Project Report Writing.	Test Cases.

(Please add more rows if required.)			

5. Benefits of the Project (Expected output/outcomes):

- User Friendly
- Easy Accessibility
- Efficient and Reliable
- Load Balancing
- No Cost on Supply

6. Risk Analysis/Feasibility

A Risks of the Project:

(Please describe the factors that may cause delays in, or prevent implementation of, the project as proposed above; estimate the degree of risk.)

(Please mark ☑ where applicable)	Low	Medium	High
Technical risk			☑
Timing risk			☑
Budget risk	☑		

A1. Comments(Describe the risk):

Technical risk: The technological risk in developing this Canteen Automation System is high due to the high memory requirements and the probability of equipment damage due to repeated refinements of the prototype for this application.

Timing risk: It will be difficult for us amateur developers to create a fully functional Android application in six months. It would be incredibly difficult to create an application that satisfies all of the specifications in this short period of time. As a result, the project's timing risk is high.

Budget risk: Since this project would make use of free online applications, the budget risk for implementing this Canteen Automation System is relatively low.

7. Project Approval Certificate

(Approval of Project Proposal by the Competent Authority (Department Chairman) and Project Review Team is mandatory before the start of project execution.)

Project Review Team:

Sl #	Name	Signature

(Please add more rows if required.)

Project Coordinator

Name:

Designation:

Email:

Date: Signature:

Competent Authority – Head of Department

Name:

Designation:

Email:

Date: Signature

& stamp:

8. Reviewers Panel Comments

10. Project Schedule / Milestone Chart /Work plan

(Project schedule using MS-Project (or similar tools) with all tasks, deliverables, milestones, clearly indicated are preferred. Task should be measured in terms of hours)

13. Report Writing Guidelines

(Project report will be written under the specified guidelines.)

Bibliography

Automated canteen ordering system using Android. (2019, September 23). Retrieved March 11, 2021, from https://nevonprojects.com/automated-canteen-system-using-android/

Jain, R. (2017, February 27). Canteen automation system (updated) revised. Retrieved March 14, 2021, from https://www.slideshare.net/100008381806318/canteen-automation-system-updated-revised

Ecanteen. (n.d.). Retrieved March 14, 2021, from https://www.efrotech.com/eCanteen