

## **Internship Experience**

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### **Abstract**

*I am currently studying my BSc in Software Engineering at Addis Ababa University at the center of Information Technology and Scientific Computing. I am currently a fifth year student; I took a four-month internship in my fourth year which was from the beginning of March to the end of June 2016. I have practiced my internship period at a company called CNET Software Solutions Plc. The reason I chose CNET Software Solutions Plc. was because it was one of the top software developing companies in Ethiopia. This internship experience sharing document will give a description of my stay at the CNET Software Technologies plc. It contains an overview of company profile, completed work tasks, list of activities and projects, challenges I have faced, the measures I have taken to overcome this challenges and the overall work flow.*

**Key Words:** Internship, Experience

### **1. Introduction**

#### **1.1. What is an internship?**

An internship is a period of work experience offered by an employer to give students and graduates exposure to the working environment, often within a specific industry, which relates to their field of study <sup>[1]</sup> I had practiced my internship period at **CNET Software Technologies plc.** found in Addis Ababa Ethiopia. I worked there from the beginning of March to the end of June 2016.

#### **1.2. Company Profile**

**CNET software technologies plc.** was established in 1995EC. The owner of the company is Ato Bemnet Demissie, who has BSC degree in Electrical Engineering and the managing director of the company. The prime objective of the establishment of company was to provide total system solutions to any type of business enterprise. The company mainly specialized in Enterprise Resource Planning (ERP) solution to provide its clients all local system needs with respect to system analysis, design, software development, and implementation, training and support on the system.

The company currently has more than 2500 customers and 10,000 user strained on its system from different sector and industry (Service, Merchandise and Manufacturing) since its establishment. CNET also has the following sister companies working under the umbrella **CNET Technology Group**:

1. **CNET Software Technology PLC**: Specialized in development, implementation and support of computer systems
2. **I-POS International Trading PLC**. Specialized in importing and distributing ERP Input Hardware Devices
3. **IBEX College** Specialized in training of ERP users and administrators with computer system

## **2. Overall Internship Experience**

### **2.1. How I Got into the Company**

I got in to CNET software technologies by the placement process made by our department (ITSC). ITSC department placed 15 students at CNET software technologies in which I was one of them.

I have applied to another office before CNET but there was a little challenge to get in there, I had to take my application over and over to remind them. I have applied but they haven't given me a response until the last application submission deadline. As this was going on, I got called from my department that I had been selected as one of the students to join CNET. That was how I got into CNET.

### **2.2. Section of the Company We Have Been Working In**

I was working under the research and development team as a *programmer*. A research and development team was a programming and other researches team. I was working with the team members who were also internship students from Addis Ababa University, they are **Addisu Wolde** and **Yisak Abrham**. We have been doing every project cooperatively. Therefore, here after in this paper, I will use 'We' instead of 'I', since we have worked on the projects together.

### 2.3. Projects We Have Been Involved in the Internship

#### Task1

This task was the biggest tasks of all the projects we have done. We named it a kiosk machine project.

#### Aim of the Project

The aim of the project was, there is a kiosk machine shown below on Fig1 that accepts and read all Ethiopian Birr notes (1, 5, 10, 50, and 100 Notes) and make a payment directly for four facilities currently:

- Electric Utility
- Metro/Bus Ticket
- Mobile Air Time
- Air Ticket



Fig1: Kiosk Machine and its Software

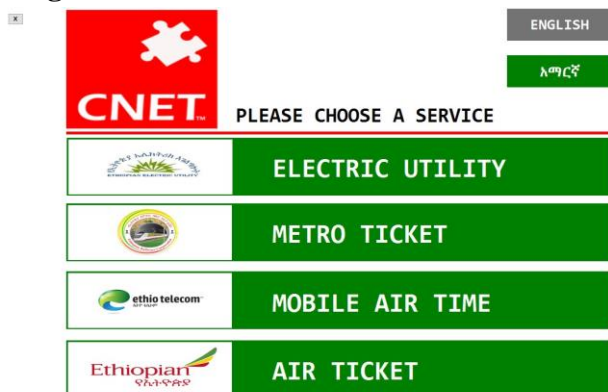


Fig 2: Home Window of the Kiosk Machine in English Language



**Fig 3: Home Window of the Kiosk Machine in Amharic Language**

The kiosk machine has 3 slots. The first is for inserting a card (Chip Card, Magnetic Strip Card, and UC Card). The second one is for inserting bill (amount of money), and the third one is for receipt printing. We were given the bill valid at or and printer DELL. So in the first couple of days, we were reading those things and the kiosk's machine manual and other papers in detail in order to start working. The first thing we did was designing of the work flow and separating the work. We separated the work as UI, Bill Validator, and printer. But, we help each other out most of the time . So the bill validator was done first. We made it read and count the amount of Birr inserted in the machine though the machine takes only one bill at a time. In the next couple of weeks, we were doing the UI using C#, Windows Forms and developed Express tools.

We had a presentation every other day on the progress we had made and discussed with our advisor daily. The managing director, the owner of the company, directly followed the our presentation we made to him and our advisor.

Next, we worked on the receipt printer so that it would print the correct receipt for each task. We finished the UI based on the comments they gave and tried to integrate the UI with the bill validator and printer. Also we made the application bilingual so that it can work both in English and Amharic. It also had a voice support for the Amharic language.

The last process was testing. CNET has a testing lab so our application went to the testing lab and the testers took a look at it and pointed us some more things to be fixed. So we tried to fix everything accordingly.

### **To Separate Things Electric Utility**

In this Electric utility case, there are electric counters (ቆጣሪዎች in Amharic) that work with electric utility own card. When these cards finish the amount of the kilowatts charged, the power provided will stop working. So when someone has used up his/her kilowatt limit, he/she has to go to ELPA, refill money, recharge the card, and he/she come back to his/her house, insert the card again in the counter (ቆጣሪ) and use until it finishes up. What if the card runs out money during weekends or holidays? There are cases when he/she will be running out of power on holidays or weekends.. But there are solutions to it. A kiosk machine will be in the nearby places. It is a touch screen machine. He/she will choose the electric utility facility and inserts the card, As he/she inserts his/her utility card, he/she will be asked to insert a certain amount of money and the bill validator will start counting money as soon as he inserts the first bill, then he will insert the amount of money he want to recharge his card. The machine prints out his card information, machine station, date and time, and the amount of money he inserted

So on electric utility side, this is how it can increase the efficiency of work. Plus, it makes the life of the user easy especially for people who live mostly in condominium are as since they mostly use electric utility card to get power.



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INSERT A CASH NOTE OF THE AMOUNT YOU WANT  
TO BE TRANSFERD TO YOUR CARD

INSERT MONEY

**Fig 4: Window of the Kiosk Machine for Electric Utility, Insert Money**

**Metro Ticket**

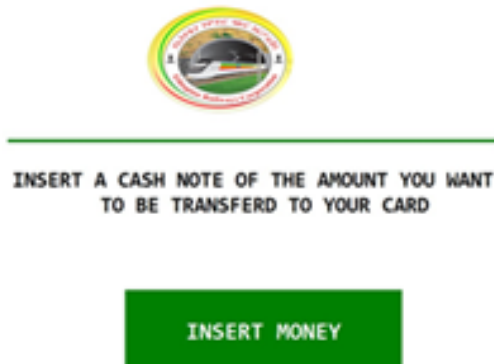
The second task the machine does is charging a metro/bus card. The Ethiopian Railways Corporation is planning to make the trains work with card in the near future. The trains already have a card reader attached with them. But card system is not implemented yet. CNET is planning to provide this service as soon as Ethiopian Railways Corporation starts the card system. The kiosk machine will be found in the nearby places and as we did in the electric utility, we insert card, the system will provide us some leading information



Source	Destination	Price
St. Lideta	Meskel Square	2 Birr
Menelik Square	Kaliti	6 Birr
Ayat	Tor Halloch	4 Birr
Ayat	CMC	2 Birr
Ayat	Gurd Shola 1	2 Birr
Ayat	Gurd Shola 2	2 Birr
Tor Halloch	Stadium	2 Birr
Kaliti	Lancha	4 Birr
Menelik Square	Sebategna	2 Birr

**Fig 5: Window of the kiosk machine for metro, information**

On the payment tariff and travel routes. We will insert money, insert the amount of money and then we have charged our card. So whenever we want to use a train we use our charged card and make it read on the train card reader slot. It also prints out card information, machine station, date and time, and the amount of money we paid.



**Fig 6: Window of the Kiosk Machine for Metro, Insert Money**

### **Mobile Air Time**

Prepaid mobile air time is currently charged using scratch card. Scratch card has so many side effects, it is not environmental friendly. It is costly to make it and also the paper that is scratched could be a cause for cancer and other health problems so in order to reduce this if we have the kiosk machine around us, at our office, our home or every place nearby us. We can just go to the machine and recharge our balance.

If someone want to recharge his balance, he goes to the kiosk machine, choose the Mobile Air Time option, insert the amount of money he wants to store, charge, insert his phone number then done, since this application has connection with Ethio-telecom, the amount of money he inserted will be directly transferred to his phone and a short confirmation message will be delivered to the person.

### **Air Ticket**

Currently, if someone wants to travel via Ethiopia airlines he/she needs go to the main office or other branch offices of the company and there may be a long queue of people or other uncomfortable things. But the new system can avoid such uncomfortable things. The system is all about domestic/local flights. If someone wants to travel from one place to another place within Ethiopia, he/she choose the 'Air Ticket' option among the other options that matches his/her destination . After that Ethiopia map appears on the screen

has buttons for the cities and the airport routes. Next, the person chooses his/her departure city afterword his/her arrival city. After all this process are completed, the screen displays some alternatives for the passenger, for example, One way/Round trip, Business class/Economy class, number of passengers and the amount of money for the route he/she chooses. The next step, the passengers can pay through his/her visa/master or other payment cards or he/she can pay manually. Then after paying, the Kiosk machine prints out a receipt containing every pieces of information that a flight ticket must contain.

Note that since your receipt has a random ticket number which cannot be guessed nobody can fly with a forged ticket.

**Fig 7: Window of the Kiosk Machine For air Ticket, Selecting Departure and Arrival**





The screenshot shows the 'BOOK A FLIGHT' interface. At the top is the Ethiopian Airlines logo with the Amharic text 'የኢትዮጵያ ጉልበት ማስተላለፊያ ኃይል' below it. The main heading is 'BOOK A FLIGHT'. Below this are two rows of selection buttons: 'ONE WAY TRIP' (green) and 'ROUND TRIP' (grey) in the first row; 'ECONOMY CLASS' (green) and 'BUSINESS CLASS' (grey) in the second row. Underneath is a 'DEPARTURE' label and a 'PICK A DATE' button. Below that is a 'QUANTITY' label and a numeric input field showing '1' with left and right arrow buttons. At the bottom are two large buttons: 'CANCEL' (grey) and 'CONFIRM' (green).

**Fig 8: Window of the Kiosk Machine for air Ticket, Booking Flight**

The screenshot shows the 'CONFIRM YOUR BOOKING' confirmation screen. It features the Ethiopian Airlines logo at the top. The main heading is 'CONFIRM YOUR BOOKING'. Below the heading, the booking details are displayed in a smaller font: 'ONE WAY TRIP ticket from ADDIS ABABA to DIRE DAWA on MAY 25 for 1 PASSENGER in ECONOMY CLASS'. At the bottom, there are two buttons: 'CANCEL' (grey) and 'CONFIRM' (green).

**Fig 9: Window of the Kiosk Machine for Air ticket, Confirmation**



Fig 10. Window of the kiosk machine for air ticket, fee information

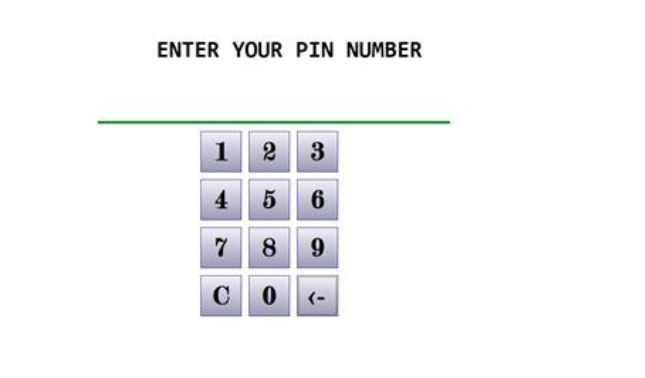


Fig11. Window of the kiosk machine for air ticket, pin number

## Task2

### A Passport Scanner

The other project was a passport scanner that works with the CNET hotel ERP system. There was a passport scanner device which was not programmed. We make it read and fetch the information on the passport to the CNET hotel ERP system. So that when a guest comes to a hotel to book a room, he will not be asked to give information verbally or fill in forms. A guest will simply give his passport and it will be scanned in the passport scanner, His details will be feed to the computer screen with 3seconds.

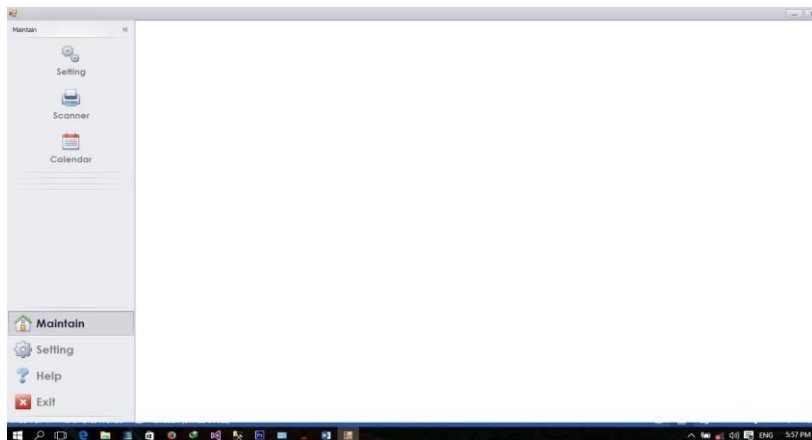


Fig 12: Home Window of Passport

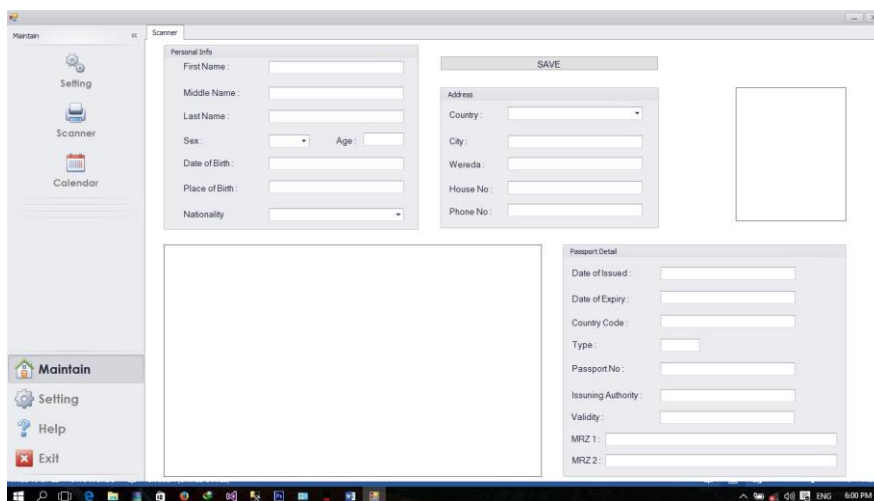


Fig13: Main Window of Passport Scanner

## 2.4. Methodology

Common methodologies include waterfall, prototyping, iterative and incremental development, spiral development, rapid application development, extreme programming and agile methodology.

**Waterfall:** is a sequential design process, used in software development processes, in which progress is seen as flowing steadily down wards (like a waterfall) through the phases of Conception, Initiation, Analysis, Design, Construction, Testing, Production/Implementation and Maintenance.

**Prototyping:** is the activity of creating prototypes of software applications, i.e., incomplete versions of the software program being developed. It is an activity that can occur in software development and is comparable to prototyping as known from other fields, such as mechanical engineering or manufacturing.

**Iterative and Incremental Development:** the basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing software developers to take advantage of what was learned during development of earlier parts or version soft the system. Learning comes from both the development and use of the system, where possible key steps in the process start with a simple implementation of a sub set of the software requirements and it relatively enhance the evolving versions until the full system is implemented. At each iterations, design modifications are made and new functional capabilities are added.

**Spiral Development:-**is a risk-driven process model generator for software projects. Based on the unique risk patterns of a given project, the spiral model guides a team to adopt elements of one or more process models, such as incremental, water fall, or evolutionary prototyping.

**Rapid Application Development (RAD)** is both general term used to refer to alternatives to the conventional water fall model of software development as well as the name for James Martin's approach to rapid development. In general, RAD approaches to software development put less emphasis on planning tasks and more emphasis on development. In contrast to the water fall model, which emphasizes rigorous specification and planning, RAD approaches emphasize the necessity of adjusting requirements in reaction to knowledge gained as the project progresses.

**Extreme Programming and Agile:** is a software development methodology which is intended to improve software quality and responsiveness to changing customer requirements. As a type of agile software development, it advocates frequent "releases" in short development cycles, which is intended to improve productivity and introduce check points at which new customer requirements can be adopted. Out of the above six software development methodologies, we choose iterative (Agile) Methodology because as a beginner, we have to continuously consult with our supervisor and make corrections as we go on.

## **2.1. Impact of the Project**

Currently, the kiosk machine project is not implemented, but CNET is making deal with the mentioned governmental and non-governmental organizations by advertising this demo application.

When it is really implemented, it has a great deal of advantage for both for the organizations and the society. The society will be benefited by saving his time, saves one's time, money, energy since

- Can be found nearby
- Increase efficiency of work
- 24/7 service
- Modern System

It also reduces workloads for the organizations. And no need to use of extra human resource. The system stands alone by its own.

### **2.1. Problems we observed at the Company**

CNET is a big technology company but there were different machines at the company that were imported from abroad and machines assembled from different countries for special purposes. But these machines were simply kept at the office without giving function for a long time. There was no one to program them. Also the kiosk machine did not give change. It also took one note at a time. This was a problem on the machine. But the next machine model will solve this problem. Our main objective was to learn and get experience from every project. We tried to address the problems we observed and changed the machines to valuable products to make something that is useful to the society.

## **2.2. Challenges**

### **2.2.1. Challenges We Have Faced During the Entire Internship and the Project**

There weren't that much challenges. But there were few, and these challenges helped us learn better mostly. There were some minor challenges from the coding and debugging part, but they weren't major issues. But the fewer ones were library dependencies or deprecated method and incompatibility issues due to deprecated functions and so on.

- Driver problems—can't easily find drivers for the passport reader device
- SDK problems
- The basic challenge we faced was lack of SDK and documentations from the vendors.

Coding and debugging wise, there were some problems due to library dependencies or deprecated method and incompatibility issues due to deprecated functions and so on.

Other than those, we can't call the other minor problems that occurred as challenges because things always happen in a working environment.

### **2.2.2. Measures We Have Taken in Order to Overcome these Challenges**

To overcome the challenges that were mentioned on the previous topic, we have used the following measures:

- The first was finding the right SDK and build tools and configuring it well.
  - Communicating with the vendors via our advisor and get the right drivers for the devices. Searching related topics and documentation which may help us through the development process.
3. Goggling unfamiliar topics and get some ideas which may clarify them. Asking for help from our advisor and get important solutions for our problems. Overall Benefits Gained from the Internship

### **3.1. Improving Practical Skills**

Practical skill wise, We have gained and developed some skills like, for example, following guide lines, architectures and design patterns. Earlier at school when we were given projects, we simply did the project without a design pattern. Therefore, by the internship program, we have learned and developed some practical skills.

### **3.2. Upgrading Theoretical Knowledge**

We have upgraded my theoretical knowledge as much as we have improved my practical skills. At school the learning process was more of theory based than practice. At CNET even though practical things took majority of the work, they also gave us manuals, modules, packages to read in detail. We would also be asked to make a presentation every week what we had learned

so far. Therefore, we would say we have upgraded our theoretical knowledge more than we expected we would upgrade.

### **3.3. Improving Team Playing Skills**

Every project and every task, we have been given in CNET was a team work. There was no individual work. So as we were doing at school when a project was given, we did as team and separate works. Here, we have improved that skill a little and I myself had great role in my team. I organized my team, checked each individual's progress and told them mine.

It's good to know we can work as a team at the offices too. In the future, I will add more techniques from the things I have seen and learned.

### **3.4. Improving Leadership Skills**

I have learned how to be a good leader. Especially when we were working on the kiosk machine project we got the chance to work with the managing director and the owner of CNET Ato Bemnet Demisse. He is a very passionate person about his work, the decisions he made, the comments he gave us was very wise and I have learned so many things from my good leader. Besides that, there are things that sometimes need a decision as soon as possible. That's how you know you make a good decision. I can say in general I have gained good leadership skills.

### **3.5. Understanding Work Ethics Related Issues**

On our first day when we came to CNET, there was an orientation given by the Research and Development Head and the Human Recourse Manager. They gave us some information about the company, work ethics, office ethics, what we should wear, how we should behave around the office, and the time of work from morning 2:30 – 11:30 through Monday to Saturday.

They also registered us on the finger print punch attendance machine so that we can punch when we arrive at the office and when we leave the office. This helped them to manage us as a regular stuff. They would deduct money from our pocket money if we were late or absent.

This was a really good experience for us. We would have never got this kind of chance to know about office culture.

### **3.6. Entrepreneurship Skills**

This internship has changed a lot of things. It has shaped me to be a hard worker and how I should be attending my classes next year more seriously. I have also increased my entrepreneurship skill in a way that I should start my own company if possible as soon as I graduated.

## **4. Conclusion and Recommendation**

### **4.1 Conclusion**

For an engineering student, internship is a period of stay at Host Company for a four month during the fourth year, second semester of the academic year. Internship can help a student practice what he/she has learned theoretically in four years. I have been working on two big projects that the company was using on its restaurant management system and a kiosk machine that was planned to work with governmental organizations. I have been working hard to accomplish the given task on time. Internship is good in many ways, it makes us develop our communication skill, makes us know about office ethics and working environment, makes our brighter about entrepreneurship and so many to mention.

Also by working in internship, I got a job by the host company after I graduated. So I believe working in an internship is the right decision and relevant for one's future. To conclude, internship is a stepping stone for the next step on the ladder which we develop our social skills, learning skills, and create contacts for the future.

### **4.2 Recommendation**

CNET Software Technology has been a great host company. We were not treated as students or as interns at CNET. We were considered as an employee.

In general, we had a wonderful time at CNET. We used our energy and time fully for a good work.

We recommend an intern or an employee to work at CNET because it's a good company with quite good resources which is very helpful to develop one's own skill.

We also recommend CNET to continue taking interns every year since interns were a big input to the company.



**Reference**

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