A Project on

Access Control System

in

Century Rayon

(under the Management & Operation of Grasim Industries Ltd.)

A Summer Intern Report

Submitted by

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Abstract

An Access Control System (ACS) is a type of security that manages and controls who or what is allowed entrance to a system, environment or facility. It identifies entities that have access to a controlled device or facility based on the validity of their credentials. The internship report covers how the access control system works in bigger companies like Century Rayon, Shahad. It also emphasizes on how the cards of the workers are being written. These cards help the workers to check in and check out of company. The procedure about how this card is used is explained in the report.

Using biometric security, an ACS can be used to authorize only legitimate access to a data centre facility. The individuals must provide their thumb print, focal or vocal credentials to an ACS, which is then verified through comparison with its database, and grants access only with valid permission.

This automatized system saves lot of money of the company. Also it becomes easy to manage the attendance of workers and other employees.

ACKNOWLEDGEMENT

I have taken efforts in this project. However it would not have been possible without SIES Graduate School of Technology's kind help and support. I would like to extend my sincere thanks to **The Principal of SIES Graduate School of Technology - Mr. Vikram Patil** Sir for granting me permission to do internship in my vacation period. I am highly indebted to **Century Rayon** for their guidance and constant supervision and providing me the necessary information related to my project. I would like to express my gratitude towards my parents and members of Century Rayon for their kind co-operation and encouragement which helped me in completion of this project. I would also like to thank **Mr. S.A. Patil Sir** and **Mr. Leonardo Dsouza Sir** for giving me the opportunity to do internship in the company. I would like to express special gratitude and thanks to industry persons for giving me such attention and time. I would also like to thanks **Mr. Bhalchandra Bhoir** and other related people for explaining me the Access Control System in Century Rayon, Shahad.

Products

Century Rayon manufactures high-quality VFY, continuous spun yarn, rayon tyre yarn and a number of chemicals.

Sr. no	Component name	Installed capacity per annum
1.	Viscose filament yarn and viscose tyre yarn	25,000
2.	Caustic Soda	20,500
3.	Sulphuric Acid	71,000
4.	Carbon-disulphide	18,000
5.	Liquid Chlorine	17,500
6.	Hydrochloric acid	19,241
7.	Compressed Hydrogen	62,00,000

The current installed capacities are as shown in table :

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Chapter 1

Introduction

Introduction

Century Rayon is one of the finest industry in India. Century Textiles and Industries is a textile, cement, paper manufacturing and export company based in Mumbai. The main business involves manufacturing of Cotton textiles ,yarn ,denim, viscose filament rayon yarn ,tire-cords ,caustic soda, Sulphuric Acid , Salts ,cement ,pulp and paper. The company also has a substantial dominance in international textile market and exports its product to almost 45 countries across the world.

Also the Government of India has awarded it with "*Three Star Export House*" status.

1.1 Background and Context

- The company established as 'Century Textile Limited' in 1897 and listed on BSE with its registered office in Mumbai.
- The company operated only one cotton textile mill till 1951 in Mumbai.
- In 1956 the company began its Rayon division in Kalyan, near Mumbai to manufacture Viscose Filament Rayon Yarn.
- The Company started its cement production by establishing its first cement plant at Baikunth , near Raipur in 1974.
- Due to increase in operating cost, the Company stopped its production in Mumbai in 2006.
- The new plant in Jhagadia became functional in 2009 with the name 'Birla Century' and is producing only finer fabrics in 100% cotton fabrics.
- The company has its exclusive showrooms in Mumbai, Delhi, Jaipur, Kota, Ahmedabad, etc.

Century Textile and Industries Ltd	
	
Type	**Public company (BSE: 500040 NSE: [1])**
Industry	**Textiles, Cement & Paper**
Founded	**1897**
Headquarters	**Mumbai, Maharashtra, India**
Key people	**Mr. B. K. Birla, Chairman, Kumar Mangalam Birla, AGM RK Dalmia, president**
Products	**fabrics, designer wear, denim, cosmetics & toiletries, engineering files & tools, prophylactics and air charter services**
Revenue	**▲45,431.8 million(US$680 million) (2009–2010)**
Net Income	**▲3,394.7 million(US$51 million) (2009–2010)**
Parent	**Birla Group**
Subsidiaries	**Birla Century**
Website	**http://www.centuryrayon.co.in/**

1.2 Scope of the Project

The project covers most of the details of how access controlling is carried out in the company. But the report is limited to only Shahad branch of Century Rayon. Also some of the information is not present in the report due to some security reasons. It also covers how cards of the workers and other staff members are written and how they can be erased or rewritten, etc. There are other interesting sections too in this company but this project only covers the access control part. Generally an internship contains exchange of services for experience between the student and the organization. Internship program is a good platform for us to show our learning or understanding skills. Students can also use an internship to determine if they have an interest in a particular career. It helps to build good Curriculum Vitae (CV) for student.

Objectives of ACS

1. Protect company from unauthorized access, which may threaten company safety.
2. Ensure company workers attendance is maintained properly.
3. Easy to restrict entry of workers who do not follow company's rules and regulations.
4. Maintain discipline among workers

1.3 Preface

Century Rayon is one of the leading producers of Rayon in this competitive world of industries.

The topic which I have selected for my internship project is:

Access Control System in Centruy Rayon,Shahad

Disciplinary actions taken by the Company for worker's entry into Company :-

- The company blacklists the workers who do not follow the norms of Company.
- The blacklisted worker is not allowed to enter in Company's premises.
- The blacklisted worker then have to submit the written application for whatever reasons he was not able to follow Company's norms.
- If the reason is valid then he is given warning and allowed entry in Company.
- But if the reason is not valid then he is blocked for some days depending on the mistake he has performed.

Methodology

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques. A methodology does not set out to provide solutions - it is therefore, not the same as a method. Instead, a methodology offers the theoretical underpinning for understanding which method, set of methods, or can be applied to a specific case, for example, to calculate a specific result.

It has been defined also as follows:

1. "The analysis of the principles of methods, rules, and postulates employed by a discipline".
2. "The systematic study of methods that are, can be, or have been applied within a discipline".
3. "The study or description of methods".

Primary Methodology :

Raw data or primary data is a term for data collected at source. This type of information is obtained directly from first hand sources by means of surveys, observations and experimentation and not subjected to any processing or manipulation and also called primary data. The

information regarding the access control system was given to the internee by Mr. Bhalchandra Bhoir and other staff members in the Time Office of Century Rayon, Shahad. The colleagues were very friendly and were ready to help whenever asked. Most of the information given in this project about biometric attendance system is a primary information given by the members of Time Office. The minute details of each and every concept of access control software were explained in most easy manner by the related colleagues.

Secondary Methodology:

Secondary data refers to data that was collected by someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organizational records and data that was originally collected for other research purposes. Primary data, by contrast, are collected by the investigator conducting the research.

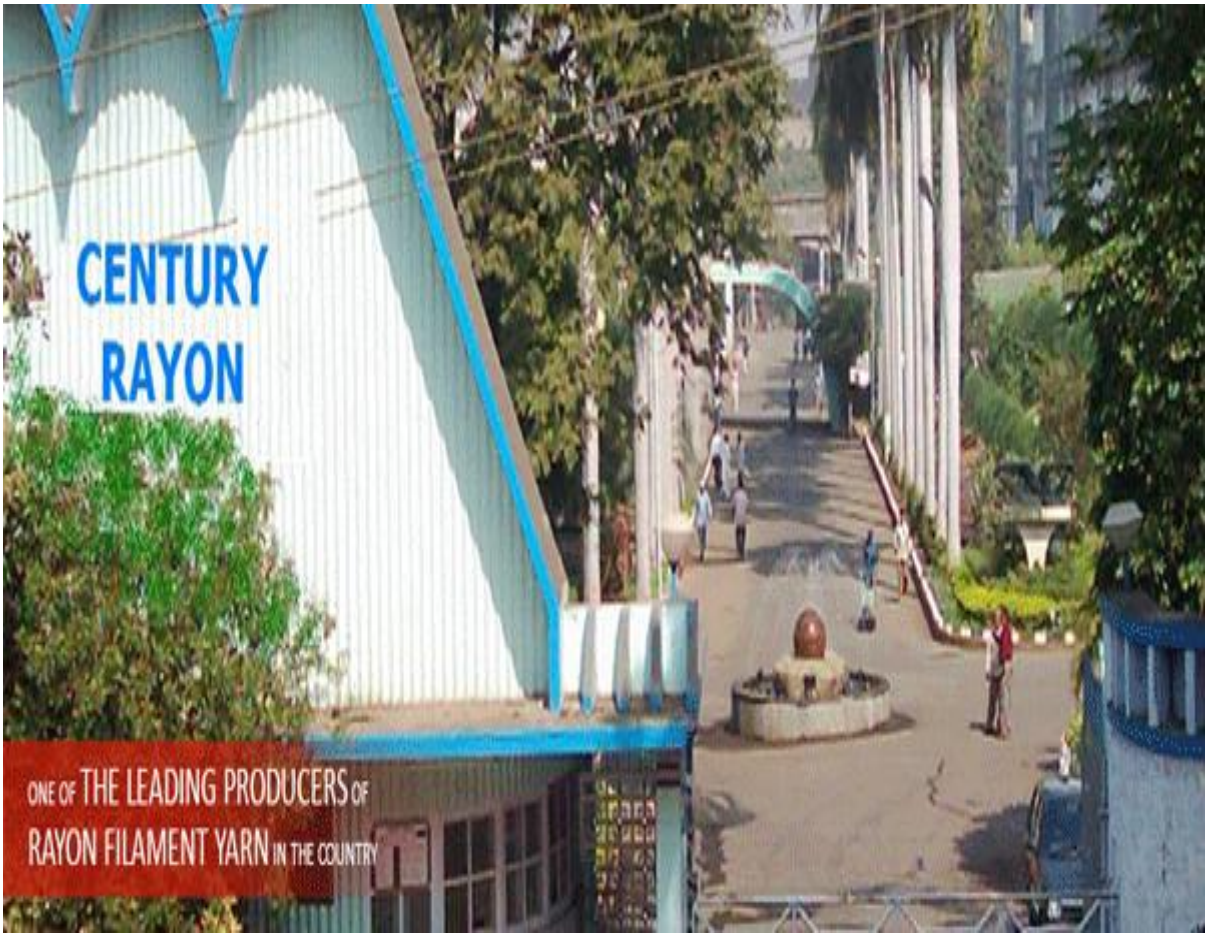
Secondary data analysis can save time that would otherwise be spent collecting data and, particularly in the case of quantitative data, can provide larger and higher-quality databases that would be unfeasible for any individual researcher to collect on their own. In addition, analysts of social and economic change consider secondary data essential, since it is impossible to conduct a new survey that can adequately capture past change and/or developments. However, secondary data analysis can be less useful in marketing research, as data may be outdated or inaccurate.

Secondary data can be obtained from different sources:

- Information collected through censuses or government departments like housing, social security, electoral statistics, tax records
- internet searches or libraries
- progress reports

CENTURY RAYON

B K BIRLA GROUP OF COMPANIES



Company Profile

Recently, in terms of agreement signed between the Board of Directors of Century Textiles and Industries Limited(a flagship company of Mr. B.K.Birla Group) and Grasim Industries Limited (one of the major group companies of Aditya Birla Group), the management and operation of Century Rayonhad been given to Grasim Industries Limited for a period of 15 years beginning from 1st February,2018 or such other earlier date as defined in the agreement.

By virtue of this agreement Century Rayon, a leading player in Viscose Filament Yarn Business in India is now under the Management and Operation of Grasim Industries Limited belonging to Aditya Birla Group(ABG).

The group has diversified interest in textile,cement, metals, carbon black, financial services, insurance, chemicals, fertilizers, insulators and telelophony,etc.

Century Rayon contributes to the Viscose Filament Yarn(VFY) business in the group and has the distinct of being the largest producers of the product in India.

LIST OF DEPARTMENT

1. Personnel and Administration.
2. Accounts and Finance.
3. Purchase and Stores.
4. Gardening and Civil.
5. Total Quality Management
6. Safety
7. Management Information System
8. Production and Maintenance.

Rayon Division

1. Viscose (Production & Maintenance)
2. Spin Bath (Production & Maintenance)
3. Spinning (Production & Maintenance)
4. After Treatment (Production & Maintenance)
5. Textile (Production & Maintenance)
6. Laboratory

Tyre Cord Division

1. Viscose (Production & Maintenance)
2. Spin Bath (Production & Maintenance)
3. Spinning (Production & Maintenance)
4. Textile (Production & Maintenance)
5. Laboratory

Auxiliary

1. CS2 (Production & Maintenance)
2. H2so4 (Production & Maintenance)
3. ETP (Production & Maintenance)

Chemicals

Power House (Production & Maintenance)

Water Plant

Pilot Plant

Chapter 2

Technical Chapter

2.1 Biometric Attendance System

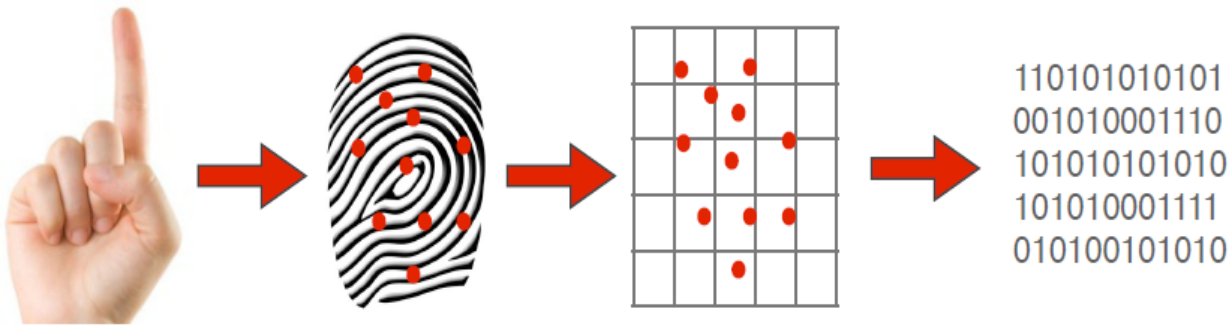
- Biometric attendance system has brought more precise system to measure the individual's activities and attendance as well.
- Biometric attendance machine captures your unique biological or physical feature such as hand or finger print, iris pattern and sometimes even your voice as a record for identity verification and allows you to perform something that you are authorized to do.
- Biometric time attendance machines also count employee's work schedule, like what he did and at what time he do it, etc.
- Biometric System is a full proof technology to ensure the accuracy of attendance and is useful to the ones who deal with large number of employees.

2.2 How biometric System actually works?

- Biometric fingerprint scanner works effectively and quickly.
- For fingerprint identification process, a biometric system works on two basic principles :

    1. First it takes the image of the finger.
    2. Then finger scanner saves specific characteristics of every unique finger and saves it in the form of biometric encrypt key

- Actually fingerprint scanner never saves images of a finger only series of binary code for verification purpose as shown in figure.



- No one can change the algorithm into an image so it is totally impossible to duplicate your fingerprints so no need to worry about it.
- Secondly the biometric attendance system determines whether the pattern of ridges and valleys in the image

matches the pattern of ridges and valleys in pre-scanned images.

- So now fingerprint scanner is operational and you can easily manage employee's attendance and every aspect related to time.

There are three access control paradigms - meaning ways to organize how people have access.For this context let's stick with the Google Mail example as defined by the Trusted Computer System Evaluation Criteria:

Discretionary Access Control (DAC):

The user has complete control over all the programs and files the system owns.
That's definitely not the case in google mails' example. In access control this would mean one method of access always opens all doors.

Mandatory Access Control (MAC) :

This is the opposite of the previous discretionary access control meaning access control is a policy, software component, or hardware component that is used to restrict access to a resource. This could be a password, keypad, badge, or set of permissions granted to the resource.
In our Google Mail example this would be the PIN you enter when you try to unlock your phone or when you log into the software application itself with your username and password to see your emails.

In the access control world often there is just a badge or keycard which can be passed on to others, so having a user name and password is definitely better from a mandatory access control perspective.

Role-Based Access Control Technology (RBAC) means you give permissions to roles and assign a role to a user. It is considered to be more user friendly since you can centrally manage roles and administer them.

Advantages of using Biometric System

- Installation system of biometric attendance system is easy.
- Biometric time attendance system works very quickly and it's user interface is also very friendly.
- Accuracy rate of biometric attendance system is very high.
- No one can fake or create replica of your finger prints.
- Attendance by biometric scanner gives you always accurate data record.
- Biometric attendance system can easily reject an unauthorized person immediately and alert to the security person to catch such type of person.
- Companies with the help of biometric attendance system can check worker clock in and clock out time.
- System helps you to control labour cost by reducing excess payments.
- You don't need to calculate separately privilege leave , sick leaves , causal leave and over timing hours.

2.2.1 How a card is initialized?

The workers are given cards that have inbuilt RFID cards. These cards have unique indentity. The worker has to put his card on the machine. If the card is recognized then the worker has to put his thumb on scanner. If everything goes right then only the worker is allowed access in the company's premises. But the question that now arises is how the blank cards are initialized with all the labourers data? The answer to it is the Reader machine.

When the card is empty, the reader machine does not beeps. The card is placed on the machine and the data stored in the database of the company is copied onto the card using some computer programming. Once the card is initialized, it beeps which ensures that the card is successfully initialized.

Similarly, the card can be erased and rewritten using this programmed software.

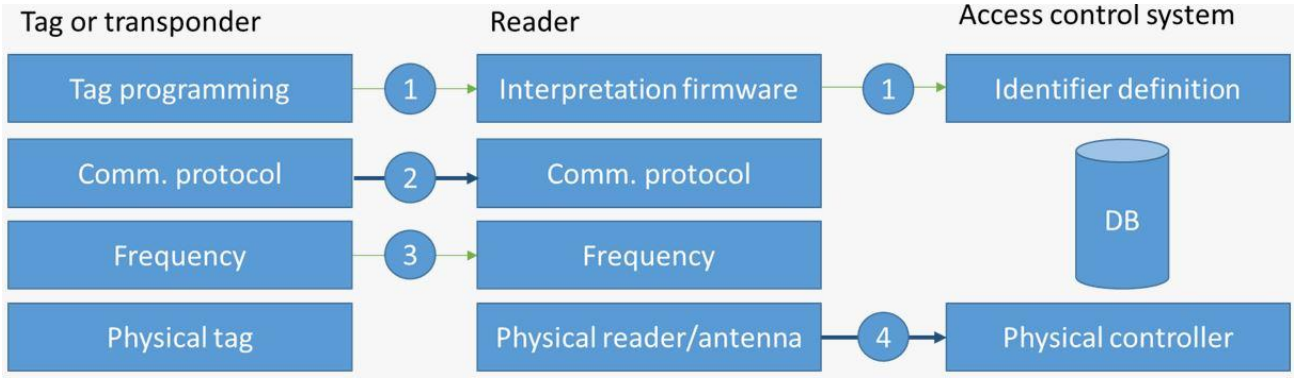
Many different access control systems exist worldwide. Most of these systems store access control rights for people (or vehicles) and also link those people to something that identifies them. Usually a number that is stored on an access control card. When an access control card (the RFID tag) is shown to the access control reader next to the door (the RFID reader with RFID antenna), that specific number is sent to the access control panel (a physical controller). The control panel connects with the access

control management software (at a server or in the cloud) to check who is connected to that number and if he/she has access to the door that is approached. When the person is authorized an event is stored at the server (for the event log book) and the access control panel is asked to open the door (by telling the physical lock to unlock).

The basic principle is easy. But a lot of software components and hardware devices are put to work to physically open the door when someone with the right access rights is showing their RFID card to the RFID reader.

2.2.2 How a card is read by the system?

The following model is an abstract representation of the access control system mechanism:



The model shows three columns with a few layers. The first column represents the tag. The tag is presented to the reader (center column) and the reader is connected to the access control system in the third column.

Each column is connected to another column at several virtual layers:

1. Tags are programmed with a number. That number needs to be in a format that is understood by the reader and that format should also be known in the access control system so that it can be processed. Tags usually have a facility code number (also called client code or facility code) and a card number. The facility code number links the tag to a specific installation, country

or application. The card number should be unique for the installation with that facility code and is used to identify an individual carrier (like a person or car).

2. The number is encoded in a specific way so that it can be sent through the air. This communication protocol makes sure that tag and reader understand each other.

3. The encoded number is sent using radio waves at a specific frequency. The frequency of the reader and tag should be the same so they are able to communicate.

4. The reader is physically connected through wires in a cable with a controller that is part of the access control system. A reader communication protocol is applied to encode information sent over the physical line.

"Bulk reading" is a strategy for interrogating multiple tags at the same time, but lacks sufficient precision for inventory control. A group of objects, all of them RFID tagged, are read completely from one single reader position at one time. Bulk reading is a possible use of HF (ISO 18000-3), UHF (ISO 18000-6) and SHF (ISO 18000-4) RFID tags. However, as tags respond strictly sequentially, the time needed for bulk reading grows linearly with the number of labels to be read. This means it takes at least twice as long to read twice as many labels. Due to collision effects, the time required is greater.

A group of tags has to be illuminated by the interrogating signal just like a single tag. This is not a challenge concerning energy, but with respect to visibility; if any of the tags are shielded by other tags, they might not be sufficiently illuminated to return a sufficient response. The response conditions for inductively coupled HF RFID tags

and coil antennas in magnetic fields appear better than for UHF or SHF dipole fields, but then distance limits apply and may prevent success.

Under operational conditions, bulk reading is not reliable. Bulk reading can be a rough guide for logistics decisions, but due to a high proportion of reading failures, it is not (yet) suitable for inventory management. However, when a single RFID tag might be seen as not guaranteeing a proper read, a bunch of RFID tags, where at least one will respond, may be a safer approach for detecting a known grouping of objects. In this respect, bulk reading is a fuzzy method for process support. From the perspective of cost and effect, bulk reading is not reported as an economical approach to secure process control in logistics.

RFID is a technology similar in theory to bar codes. However, the RFID tag does not have to be scanned directly, nor does it require line-of-sight to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet, in order to be read. RFID technology allows several items to be quickly scanned and enables fast identification of a particular product, even when it is surrounded by several other items. RFID tags have not replaced bar codes because of their cost and the need to individually identify every item.

3. Summary

The internship report is done completely by Mr. Ashutosh Nayan Dhondkar under the guidance of Mr. Bhalchandra Bhoir and other staff members. The information mentioned in the project is given after taking sufficient knowledge from the seniors. The internship period was of one month starting from 6th June,2018 to 6th July ,2018.

The overall setup made by the IT department of Century Rayon, Shahad is made with proper planning. The idea of biometric system is wonderful and it helps the company to save a lot of money. Also the attendance management of the staff members become easy and quick.

Although the cost of such a setup is more but it is definitely going to help the company to run effectively and with proper management. The cards that are provided to the users have unique id. Thus any member will not even think of cheating the system. The system set up in the company is one of the best system. If the system finds any error in loading the worker's data, it will not open the gate for worker, thus it helps to improve the security of the company.

The company has different class of workers working before they become permanent workers i.e. Apperentes, casual and temporary workers. The workers are given new cards after each stage and also their ticket number changes. The little contribution is made to the company as a part of my project at :

https://github.com/ashutoshdhondkar/Projects/blob/master/Timekeeper.py

4. References

1 http://www.centuryrayon.co.in/

2 https://www.google.com/

3 https://en.wikipedia.org/wiki/Century_Textile_and_Industries

4 https://en.wikipedia.org/wiki/Grasim_Industries