



Efficient Laptop Rental System (Mobile Application for Laptop Rental)

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Key words: Android application, customized laptops, 24/7 availability, pre installed software

Abstract: In today's competitive world, learning skills through a laptop or system has become a basic need for almost every student and employee. But that requirement comes with a cost. A well configured laptop costs a fortune for a middle class family. Net Centers can provide a solution but the problem comes when a question about flexible time and location and the quality of the infrastructure provided, it fails to satisfy these needs that users want. To all these problems, renting a laptop can stand as a solution but an integrated platform needs to be present to make the task done. The basic idea is to create an android application platform to rent and let people lend the laptops on demand online which is available 24/7. The users on entering the app, can check the features they want and search for the laptops and their availability. The app provides an easy way to any user to upload the information of their devices to rent if they want. The most significant feature for renters is that the user can even get a laptop with customized features and pre installed software such as java, python, etc. The user can request for specific software installation saving a great amount of time to him. If the laptop is available, he goes ahead and gives his details and address and automatically a rent requested is formatted to the lender's mail. The lender if unable to lend the laptop can chose not to approve of the rent request. On successful approval, with in a promised time, the lender reaches out to the agreed net center and delivers the laptop. A lender can lend more than one device. To ensure the security, partial responsibility is send to the net centers where they make sure to take the biometrics of the renter to ensure the safety of the laptop.

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INTRODUCTION

Basic computer skills and practice of theoretical skills on Personal computer has become a new need for

almost every student and employees regardless of their relevance with IT industry^[1]. Although, desktops and laptops may show equal performances, a report showed that people prefer laptops over desktops and tablets owing

to high demand of laptops which in turn took a change on its prices. The gigabytekingdom.com states that the average cost a new laptop would be 600-700\$ which is nearly 40,000-50,000 INR. From the reports released from the government of India, the average salary of a person ranges from 8080-143,000 INR implying that buying a good laptop is still dream to many people in countries like India. Such people approach net centers for system use but people living in rural areas face the crisis since not many net centers could be present in those areas. Mostly people lend laptops from their acquaintances and use them but not every person have such acquaintances. In such cases laptop renting can solve the problem. Not every person need a same configured laptop and not every person need the same software in a laptop, so, net centers cannot gear up to the customer needs. The present system of rental provides a person a laptop chosen with basic software but now the expectations have crossed that bar. People find it useful to rent a laptop on demand and with pre installed required software without having to waste their time. The problem is that there is no such platform to cater the needs of the demand. Considering all problems together and putting the solutions to them in one platform gives our android app "Laptop Rental System App"^[2]. Through his application user can select the laptop of his desired configuration and choose one with his required pre installed software to be delivered at his place and date of his convenience. The users after sign up can put their laptop for rent or rent one. To enable security in the first phase release of the app, the laptops are only delivered to the particular net centers which are near to the customer and net centers take partial responsibility in providing the lender of the laptop with security.

Motivation: Laptop is very basic need for any literate irrespective of their domain. In unfortunate situations like pandemic corona where no net centers can help in obtaining system services. In such situations a personal laptop can be of a great help but unfortunately not everyone can afford to buy one. The purpose of developing an Online Laptop Rental System comes from the idea to make everyone to access a good configured laptop services. This app eases the task of renting a laptop online. Many think of giving laptops for rent to outsiders but due to problems like security since no center of authority is established online. So, many people back off lingering in these thoughts. Issues like this can be solved once a structured online interface is established. The project intends on reaching the services to the most remote areas and helping everyone in getting the services.

Objective: This study main objective is to focus on solving societal problems. The objective of this initiative is:

- To understand the problems and struggles faced by the rural people and poor literates in obtaining computer services
- To establish a system of laptop rental services available to each and every person
- To find a simple way in providing an efficient method of renting laptop

Scope:

- This is an Android application available to anyone who downloads the app to get the services
- Any user of this app can rent a laptop as well as put their devices for rent in simple steps guided by the application

Literature review

University of Cape Town laptop project report: The report states the pilot program of handing all the students at University of Cape Town a laptop. It summarises that the students after getting benefitted by the flexibility of laptop, the students productivity increased and the security increased as well since the students protect their own laptops. Since, the students do not have to reach out labs for their system requirements the time wasted on the travelling has been effectively went on to the work. The report also emphasized that the learning capabilities of the students increased. The aftermath survey states that 84% of the students agreed that using a laptop, they can easily find relevant resources online. One more survey about "using a laptop during lectures allows me to better capture all of the information presented" >50% students agreed on this note. The survey on "Using a laptop during lectures improves my problem solving skills" 35% students agreed and 36% students were uncertain. To the question "Using a laptop during lectures gives me access to more information" >85% students agreed. From the report it clearly states the importance of laptops for the students in their daily learning.

A hardware based model for an asset monitoring and tracking system; Case of laptops: This is mostly fuelled by availability of affordable and more powerful mobile computing devices, especially laptops and tablets^[3]. One direct consequence of this is a sharp increase in laptop theft; this is partly driven by the fact that laptops are portable and easy to conceal and pocket away, they fetch a good second-hand price on the informal market and availability of easy online disposal platforms such as Gumtree where they are sold cheaply and anonymously. Despite the fact that many solutions have been developed in an attempt to annihilate this growing calamity, their cost has left many small and medium organizations preferring to do without one. In an attempt to bridge this gap, the research reported in this paper aimed at designing a generic middleware

architecture for use in a hardware-based (RFIDs, wireless sensor nodes, fingerprint scanners and mobile phones) affordable laptop monitoring and tracking system. The resulting system prototype was evaluated using diverse experimental cases within a university in South Africa.

MATERIALS AND METHODS

Block diagram design: The block diagram represents the pictorial working of our prototype model. This block diagram shows how our app works step by step (Fig. 1).

Working mechanism:

- When the user opens the app welcome message is displayed and the application prompts the user to login or register
- First user have to register giving his mail id and setting a password
- If the user wants to rent a laptop he can go to the catalog and search for his desired laptop and look up its features and availability
- If it is available, the user next books the laptop for a date and specifies the hours and place and wait for approval

- If the user wants to put his laptop for rent, he goes to my devices and add a device for rent
- The user then receives rent requests and can reject or accept requests after reviewing the requests
- After successful approval, both users meet at the net center with their id proof and gives their details and exchange the laptop
- After the rent time expires the users again repeats step 7

Implementation: The application implementation screenshots are shown in Fig. 2-17.

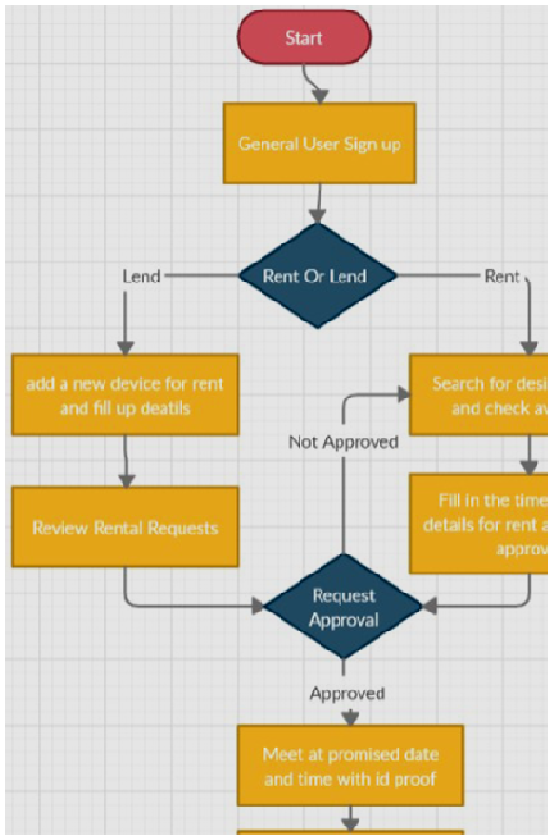


Fig. 1: Block diagram



Fig. 2: When user enters app also Login

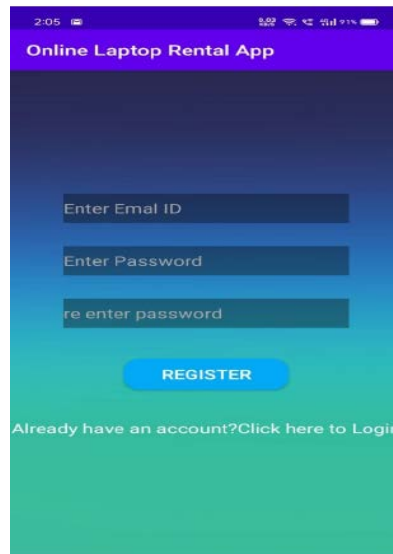


Fig. 3: User Sign Up

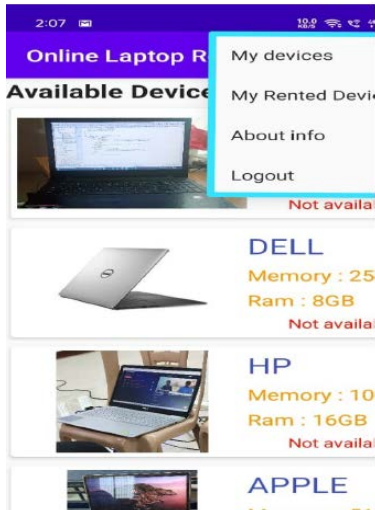


Fig. 4: Catalog



Fig. 7: Adding available softwares



Fig. 5: My devices contains devices kept for rent

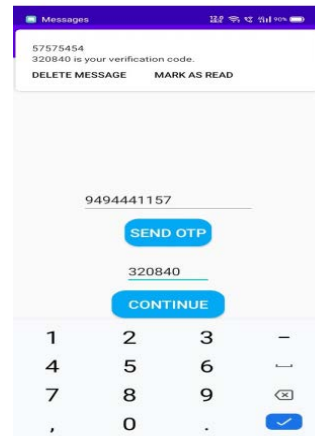


Fig. 8: Phone number verification

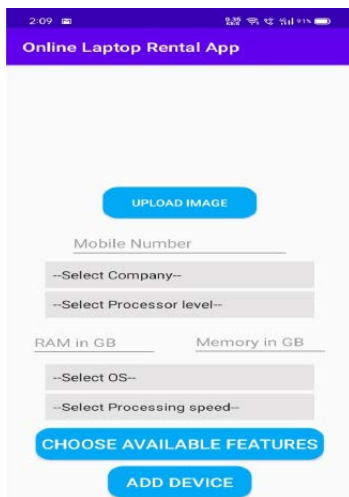


Fig. 6: Adding device for rent



Fig. 9: Device Information

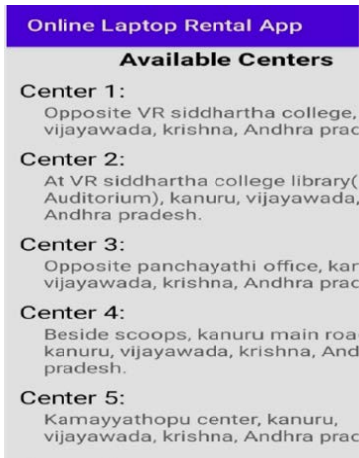


Fig. 10: Available net center deliver locations

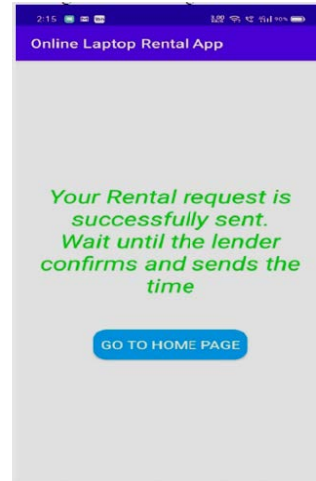


Fig. 13: Renting confirmation

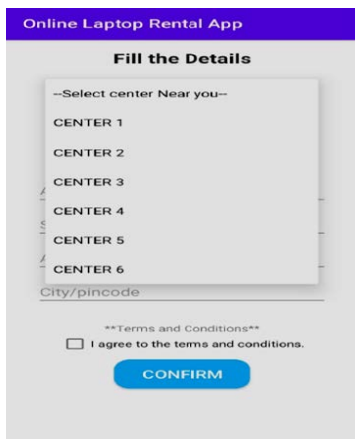


Fig. 11: renting process

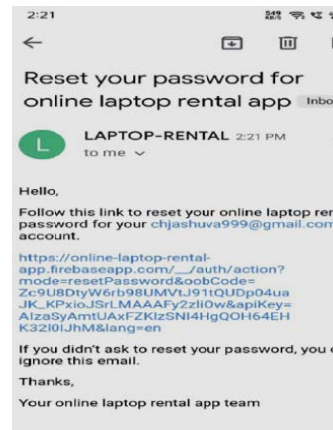


Fig. 14: Email alert to lender

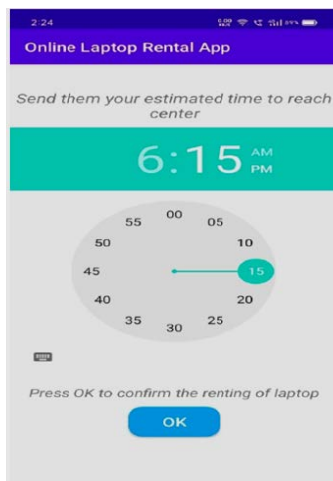


Fig. 12: Choosing date of rent

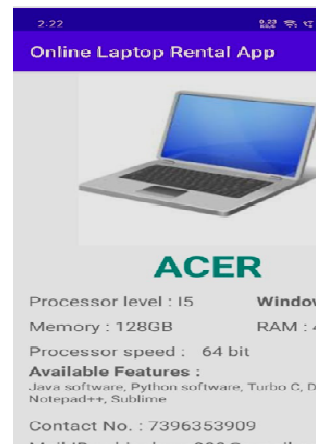


Fig. 15: Details viewed by lender

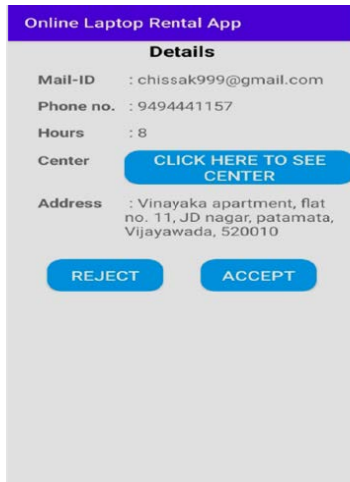


Fig. 16: Lender approval

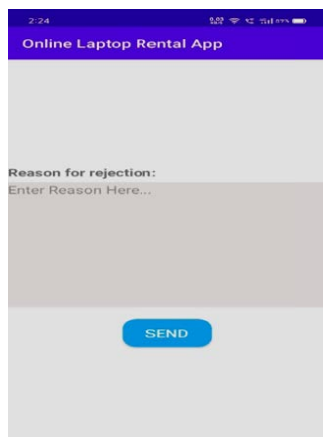


Fig. 17: If lender rejects, the further process

RESULTS AND DISCUSSION

The application response time and request processing is up to the mark and an actual client satisfactory rental has been tested. The user reported that the interface is simple to use and good. The renter is satisfied with the safety provided by the application guidelines^[4]. The application works good and within the expected metrics.

CONCLUSION

This study summarizes an efficient way of renting a well configured laptop to users. The app provides users to lend a laptop at a reasonable price and convenient place with customized software requirements unlike the traditional system of approaching a net center at inflexible time and limited hardware and software resources.

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