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OPTIMIZED PRINTER WAITING TIME FOR DOMESTIC AND EDUCATIONAL PURPOSES

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ABSTRACT

Despite the numerous efforts of being completely paperless, there are still some places and works in which the use of paper is needed. The regulated use of paper should be our first step towards going paperless. In this paper, we implement an IoT based printing process in which the user can print the documents through their phone selecting the nearest printer hub given the GPS(1) and the printer hub in return gives the user the estimated arrival time of the user when the print work is done. The android application eases the use of the interface from which the actions are carried on.

KEYWORDS: *Optimized Printing, Printing, Print Servers, Location-Based, Waiting Time, Global Positioning Systems*

INTRODUCTION

The printing process has seen an evolution from dot matrix printer to inkjet printers to modern laserjet printers. The services of the printers still remain the same. The people still prefer to get the documents printed by the local print center because of the following factors. The operation and maintenance of the printers are still costly and high maintenance along with the refill cartridges. These factors lead to user still following up to the print centres. The print center can be any local shop which provides printing and photocopy services. The Standard of work done is not always the kind of what we want but we have to negotiate with the quality and demands because of the rush at these center s. The printing charges when considered varies from place to place. There are not only the problems on the customer side there are problems faced by the service providers also. They find it difficult to calculate the total amount when there are different kind of paper and different printing methods. The different files when printed then page count gets mis-numbered and they have to suffer a loss. The wastage of pages happens when the user demands something which is not fulfilled by them. The printer maintenance also sums up more because of the over-usage of the printers. The toner of the printer because of the over usage needs maintenance too frequently. This is why a platform is needed to optimize this task and problems.

SERVICE PROVIDED

We provide many services to the client. We provide numerousservice to the user: -

- We provide flexible time slot to the user can have their output at their time.

- We provide easy payment options to the user.

- We provide the user with a fast track option so the user can get print immediately.

- Our app also recommends the shop which is nearest and with least time to complete work.

By using our application, the data which is uploaded on the print server then we recommend the user the nearest shop and the shop which take the least time for the work to be completed. Now after the shop is confirmed a payment option comes, we can pay via cash when we get the documents back or we have various payment gateway which provides the user for pre-payment. After we have selected everything, we click on the get print option then the document is send to the shop and we can get our service at the chosen time slot and go to the shop to get our product delivered.

Through this system, we provide a platform which deals with the problems faced on the domestic and educational purposes. It will directly connect to the printer and the user can upload the files and set it according to the needs like font, color, margin etc. It also solves the issue for managing the transactions for the printer center manager and the user pays for what he/she prints.

As it locates allthe available print center nearby to the user location and also the waiting time for the job to be done so we see a more convenient and more optimized way of doing work. By providing the option for the user to schedule the print or fast-forward it, we are easily able to make things fast and work efficient with less hassles like waiting in a queue or standing for our work to be done now we will go to the shop only when our task is completed and the user will collect the printed papers from the center by themselves. And by providing the option to pay through the app or pay on collection of the printed papers the payments are also easy and more convenient for the user.

PROPOSED SYSTEM

The proposed system for the model includes modules as mentioned in Fig.1. The proposed system can be divided into 4 sub-partitions. They can be

- Mobile Application

- Print server

- Print status and confirmation

- Print hub end

The Mobile application is the user interface with which the user end. Here, the user can upload the documents they want to get printed along with the pre-requisite conditions like the font, margin, font-color, font size etc. The user can only upload the permitted file formats on the application which are.pptx,.docx,.doc,.pdf, jpeg,.png etc. The documents need to be unlocked in case the document is locked because the locked document can't be printed. After the user uploads the file and enters all the requests, The file is uploaded onto the print server.

The Print server stores the documents temporarily till the user selects which print hub they want to print the document to. The Print server gives the user an option of selecting the print centers according to the distance of commute and the Estimated printing time. It shows the estimated arrival time for the job completion which can be called the sum of the commute distance and the print job time.

$$estimated\ arrival\ time = TIme\ of\ commute + the\ printing\ time$$

1 MOBILE APPLICATION

- The document to be printed is upload
- The user defines the different parameters for the documents like margin,font,font size etc.
- The document format is checked and if not the accepted format then a pop message displays which asks the user to upload only specific permitted file format

2 PRINT SERVER

- The file is uploaded on the google cloud
- Through GPS, The user can select the nearest print hub
- The estimated time of print job is also displayed which is the sum of commute time and the printing time
- After selection of the suitable print centre the user clicks on "Confirm and payment page"

3 PRINT STATUS AND CONFIRMATION

- the user can chose from available payment options.
- The confirmed address of the print centre is also mentioned here.
- Once the user selects the payment option and confirms.
- The print status pop up appears with the estimated time for job completion

4 PRINT HUB END

- Actual printing process occurs here.
- The documents to be printed are arranged in queue data structure with FCFS
- The user request are carefully followed and documents are converted to pdf before printing to avoid hindrance of the system default setting.
- After printing the documents are carefully handled and privacy of the customer is maintained
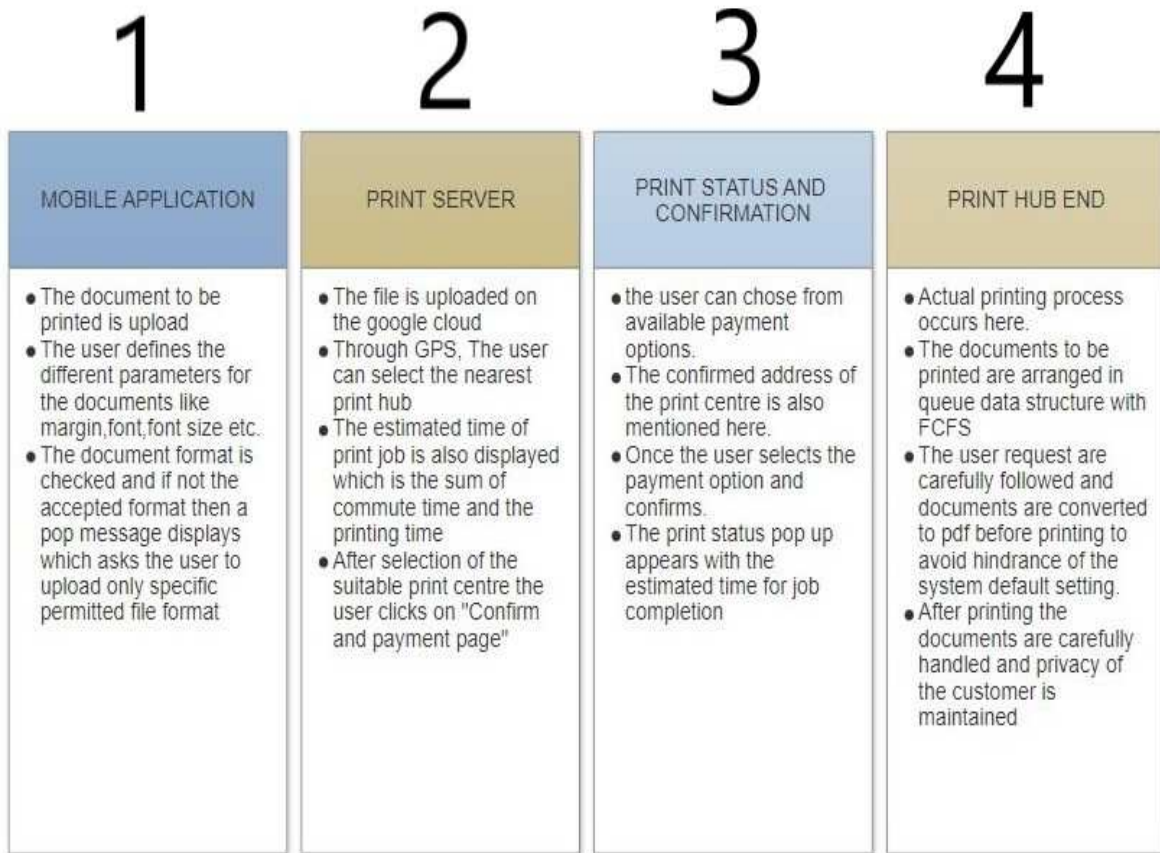
Figure 1: The Different Modules and Steps Followed

The estimated arrival time is variable to the commute time and the printing time. Consider in the case of traffic congestion in the area then the Estimated time will increase by the factor of which the congestion of traffic. The traffic data will be accessed through the Google Maps real time and it will refresh in every 5 minutes. The print job is variable for the conditions of the breakdown of the printer or the electricity supply crisis. The following factors will be looked upon and used for calculating the close approximation of the arrival time.

After selection of the print center the document is forwarded to the user selected print center and the real-time print status and the arrival time is shown to the user.

Print Status is given to the user in real time by mentioning the queue number to which the job is being assigned to the user. The estimated time will also be shown to the user along with the complete address of the print center. The print status will show the estimated time calculated by the print server and the commute time between the user and the print hub.

A print hub is the destination where the actual printing work will take place, the requirements of the user are considered here and the operations are queued up in FCFS(First Come First Serve) with no pre-emption. Each job is considered at the most priority and the confidentiality of the user and user document is followed. The file after the print job is done is deleted from the hub and the hub sends the message to the user about the printing process been complete.
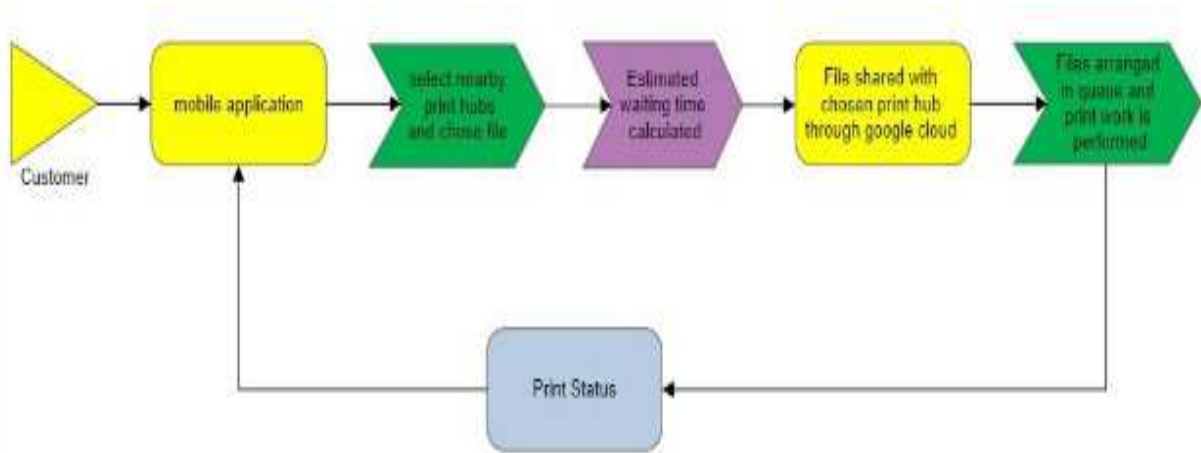
Figure 2: Process Model for the Architecture

FUTURE SCOPE

For future scope, the application can be updated as:-

- We can add the home delivery feature of the printed documents.

- A feature for adding more security so that the application is more secured and the uploaded data is not.

- To decrease the waiting time by the optimised algorithm.

- We can also provide discounts and coupon for bulk orders and cash back on various payment options.

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CONCLUSIONS

The above paper represents an android application which is used to have an optimised printing method for efficient and fast printing methods which helps in saving time reducing paper wastage and many more.

The main aim of the project is overcoming the drawbacks of using traditional printing methods so that one can experience an overall enhanced way of getting the printed material fast and hassle-free. The application provides flexible time slot to the user can have their output at their time, provides easy payment options to the user, provides the user a fast track option so the user can get print immediately. And also recommends the shop which is nearest and with least time to complete work.

By reducing all the efforts which we face in our day to day life for either standing in a queue or not getting the desired output which we want or struggling through not getting the right format or the way we did it or wants to be done due change in the application software version also wasting paper at a large scale because of above issues and many we have completely optimized the way of getting a fast and more efficient way of getting print so that we can save our time and get more efficient results.

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