# Baby Carrier Rental Application with Recommendation Feature

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**Abstract:** Today, using baby carriers has become very famous as an alternative to holding the child. However, some parents might not want to buy instead, they only want to rent a baby carrier for a while. This paper presents a different method for renting baby carriers, to simplify manual searching and renting from various resources. It assists to choose baby carriers by recommending suitable and matching carriers with their child. The purpose of developing this rental system with a recommendation feature is to suggest a way for parents renting the right and fit carrier. Essentially parents are facing many difficulties in finding baby carriers to rent as there is not much information provided. It is also very important for parents to use the right baby carrier because it will eventually affect the health of both parents and children. Using not ergonomic baby carriers may cause significant complications to the child such as hip dislocation, knee problem, back injury, rashes and many more. This system also improves the manual renting of the baby carrier by providing a solution for recommending an acceptable baby carrier to rent.

## INTRODUCTION

Along with the time, the number of parents or people with child tend to travel and move a lot. There will be a time where the baby does not want to sit still in the stroller and want to be held by parents. Some places are not stroller-friendly that urge parents to carry their baby. Thus, they choose a baby carrier as an alternative way to hold their baby. With baby carriers, parents can ensure the baby close to them while bonding together in new ways. Parents' daily tasks also will be eased as both arms and hands are free and available. Additionally, carrying babies for 3 hours a day was seen to reduce crying and fussing by up to 51 percent during the evening hours. Wearing baby close, particularly with a special carrier designed for skin-to-skin contact, may help regulate the baby's heartbeat, temperature, and breathing patterns while they're in the neonatal intensive care unit [1].

However, buying baby carriers has been a problem financially for some people. This is because baby carriers are often expensive and pricey. For other people, they do not use baby carrier often making them feel buying a baby carrier is not worth the price. Parents that do not afford to buy branded carriers tend to go with cheaper options. This can lead to people buying baby carriers that are not suitable for their baby. Some types of baby carriers and other equipment may interfere with healthy hip positioning. Such devices include but are not limited to baby carriers, slings, and wraps. These devices could inadvertently place hips in an unhealthy position, especially when used for extended periods. [2] Any device that restrains a baby's legs in an unhealthy position should be considered a potential risk for abnormal hip development. It is also important to assess the size of the baby and match the device and carrier to the size of the child so that the hips can be in a healthy position during transport The most unhealthy position for the hips during infancy is when the legs are held in extension with the hips and knees straight and the legs brought together, which is the opposite of the fetal position. The risk to the hips is greater when this unhealthy position is maintained for a long time. Healthy hip positioning avoids positions that may cause or

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contribute to the development of hip dysplasia or dislocation. The healthiest position for the hips is for the hips to fall or spread (naturally) apart to the side, with the thighs supported and the hips and knees bent. This position has been called the jockey position, straddle position, frog position, spread-squat position or human position. Free movement of the hips without forcing them together promotes natural hip development [3].

Due to these problems, people are encouraged to rent baby carriers for them to use for a while. With this method, they can save their money rather than spending on buying a baby carrier that they only use rarely. Manual renting need people to contact the host and make their booking. The hosts usually will ask the customer all the details such as name, selected product, date, time. Then the host will write or jotted down all the data collected to paper or notebook that they had prepared. This manual renting process has a high risk of losing the data. The data might be written by the host on a paper and the paper might be misplaced by anybody or the data written is unclear thus assume that the booking is not valid. When this happens, if there is another person wants to make a booking of the same product on the same date or time, it would lead to a redundant booking.

This is where Baby Carrier Rental Application with Recommendation Feature takes place. This system would solve all the problems of manual renting is facing. If the data is collected and saved, it would decrease the risk of data loss and redundant data. The system provides a solution for people who wants to rent a baby carrier and do not know which carrier is suitable for their baby. User will input their baby's age and weight and the system will display baby carriers that are matching with the input details. Thus, people will select a baby carrier that is relevant and does not harm both parent and baby. This system is believed to educate people to wear and use the right baby carrier.

## LITERATURE REVIEWS

For the first article, written by [4], they proposed a cloud computing customer relationship management for the online rental system. They stated that users with an internet connection can access the cloud for online backup, social services, personal data

services, online applications, hardware services, and mirrored services. The main idea is to give a platform for providers or vendors to market their products and deal with customers by themselves. The website or frameworks provider will act as a platform for customers to act with the vendor. They used SalesForce technology to implement the project as it gives so many facilities such as customer service software and support, Customer Relationship Management (CRM) and cloud computing to grow the business, maintenance-free, access everywhere, better security and also fast implementation.

The second article is titled Design of Bajaj Transportation Rental Application System with First Come First Serve Algorithm. It is published by [5]. They stated that Bajaj is a public transportation that has existed since the 1970s and still running, but still not computerized properly. This application is made to facilitate the transcribe to replace the previous manual system that can facilitate in terms of data processing both in terms of rental and return Bajaj, so the Bajaj transportation business can run well. The application is a website based application using the First Come First Served algorithm. This application is expected to process bajaj transportation data to facilitate owners in transcribe borrowing and return and decision making on the bajaj transportation business.

BabyQuip is a web-based system to rent baby equipment [6]. Whenever a user wants to browse the equipment, they need to enter their location and date. Next, the system will display providers that are registered within that location. The system also will display some promotions offered such as free local, charged delivery, charged setup and also pick up. Then, the user needs to choose a provider and the system will show the products that they own for renting service. User needs to add the equipment that they want to rent to reservation cart. Next, the cart will display the order summary as the date is already entered by the user on the previous page. Users can still change the date as they wish before proceeding to checkout. Then the user needs to fill in their information and details to be recorded by the system. This rental service is only available in the US.

Desert Baby Rentals is a web-based system that provides baby equipment renting services [7]. To browse and search equipment, they need to click a product and the system will redirect to another

interface. Then, the user can choose the product that they want to rent and add it to a cart. Then, they will enter the start date and end date to rent a particular product. Only then, the system will tell its availability of the product. This baby equipment rental system is not available at all locations.

Baby's On The Go is also a web-based system for renting baby equipment [8]. On the home page, users can choose to select packages, equipment or reserve. On the reserved interface, it will redirect to the equipment interface. Then the user can then choose a category of equipment and the system will display the items provided. For example, the user chooses to rent a stroller, then they need to add it to the cart to make their reservation. User needs to fill in details and their information. However, the system does not display the availability and it only emails to the user saying that their order has been created. They will send confirmation email regarding availability and its pricing.

## METHODOLOGY

Rapid Application Development (RAD) Model is the methodology that will be used for this project. This model includes planning requirements, user designs, rapid construction, and cutover.

At the initial state, goals, expectations, and issues that would be addressed during the project are determined. The main objective of this project is to ease parents or users to rent baby carriers. The goal of the system is to recommend baby carriers that are suitable for them to rent. Using the feedback and information gathered, the prototype is designed according to their preferences.

In the rapid construction phase, system interfaces for the application are created. The tool that is used is Android Studio. This is because the system is focused on android mobile applications. During this stage, the user can still able to give suggestions and input to alter, change or solve any issues that might happen.

Then, the finished project is tested after it is finished being developed. Data conversion, testing, and changeover to the system are involved, and also consists of user training. Before the user tests the system, a short briefing on how the system works are held. This can assist them to use the system smoothly, or as a user manual.
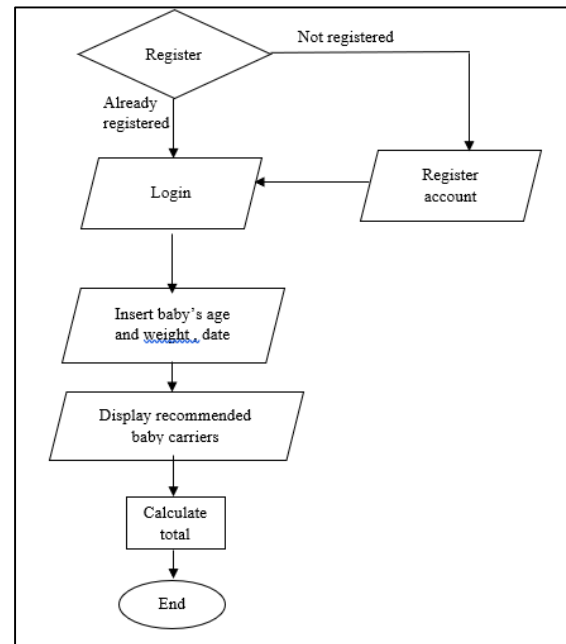


*Figure 1: System flow*

Based on Figure 1, on the home page, the user will insert the baby's age and baby's weight also date to rent the carriers. Then, the system will read the input, and search for matching baby carriers in the database. Thus, the system will display recommended baby carriers for the user to choose for them to rent. The user will select the desired baby carrier to be rent and will select the return date. After that system will calculate the total price that the user needs to pay.

On the other hand, users can favorite baby carriers that they like. Then they can view the baby carriers that they had like on the favorite interface. The user also shall view their account, booking history and also able to change their password.

## RESULTS

This Baby Carrier Rental Application with Recommendation Feature is expected to work smoothly with some features. Which are
- Users should be able to input the baby's age and the baby's height.
- The system should be able to display recommended baby carriers based on matching the input.

- The system will allow the user to view baby carriers that they had liked.
- User can view their profile

**CONCLUSIONS**

In conclusion, this Baby Carrier Rental Application with Recommendation Feature will give benefit to all parents out there especially to those who do not afford to buy a baby carrier. With this application system, users are able to rent to a baby carrier easily with the recommendation feature provided. Renting a not suitable carrier problem would be able to avoid, so both baby and parent will be comfortable during their trip.

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