UNIVERSITY OF PETROLEUM AND ENERGY STUDIES, DEHERADUN

SESSION: 2022-23

CLOUD APPLICATION DEVELOPMENT

WEEK 1

TOPIC: Choose a problem statement, explain why cloud deployment is necessary for the solution of the problem, include all relevant research findings, do a thorough literature analysis, demonstrate how the application functions, and further build a flowchart for the complete project from planning to cloud deployment.

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Project Title

A website that will allow users to rent vehicle easily.

Abstract

An online platform that allows users to search for and rent vehicles from a fleet of vehicles owned by a rental company. The system would likely include features such as a user-friendly interface for searching and reserving vehicles, options for different types of vehicles and rental lengths, and a secure payment system. Additionally, the system may also include tools for managing the fleet of vehicles, such as tracking maintenance schedules and monitoring usage. Overall, the goal of the system is to provide a convenient and efficient way for individuals and businesses to rent vehicles on demand.

1. Introduction

There are several problems that people may face when renting a vehicle offline:

- **Limited availability**: Rental locations may have a limited selection of vehicles available, and they may not have the specific type of vehicle that a customer is looking for.
- **Limited hours of operation**: Rental locations may have limited hours of operation, which can make it difficult for customers to pick up or return a vehicle outside of regular business hours.
- **Limited information**: Customers may not have access to all the information they need to make an informed decision about which vehicle to rent, such as detailed images or customer reviews.
- **Long wait times**: Customers may have to wait in line to speak with a representative or complete paperwork before being able to rent a vehicle.
- **Higher prices**: Offline rental may have higher prices than online rental, especially if the customer is not able to negotiate or compare prices from different rental companies.
- **Limited payment options**: Rental locations may not accept all forms of payment, such as credit cards, or may charge extra fees for using certain forms of payment.
- **Inconvenient location**: Rental locations may not be located in convenient locations, which can make it difficult for customers to pick up or return a vehicle.

This project is intended to solve these problems. Vehicle Renting Website provide a convenient and efficient way for individuals and businesses to rent vehicles. It will allow users to search for and compare different types of vehicles, view availability and pricing, and make reservations online. This can save time and effort compared to traditional methods of renting vehicles. Additionally, this website can also provide additional information, such as customer reviews, and the ability to purchase additional services like rental insurance.

2. Problem Statement

Customers seeking to rent vehicles face several challenges when using traditional offline methods, such as limited availability, limited hours of operation, limited information, long wait times, higher prices, limited payment options, limited insurance options, and inconvenient locations. Additionally, many customers are increasingly turning to online platforms for their shopping and rental needs. There is a need for a user-friendly, easily accessible online platform that allows customers to quickly and easily search for, compare, and rent vehicles, with all necessary information and options readily available. The platform must also be secure and reliable, allowing customers to make reservations and payments with confidence.

3. Objective

The objective of this project is to provide a convenient and efficient way for customers to search for, compare, and rent vehicles, to offer a wide range of vehicles, with detailed information and images, so that customers can make informed decisions about which vehicle to rent. The aim is provide a user-friendly and easily navigable website, that allows customers to quickly find the information they need and make reservations with minimal effort also ensuring the security and reliability of customer transactions and personal information.

The website will provide users a transparent pricing structure and easy payment options, including online payment options. It will provide customer support through email, phone or chat to help customers with any issues or questions they may have.

4. Reasons why cloud deployment is necessary for the solution of this problem.

- **Scalability**: Cloud deployment allows the website to easily scale up or down to handle changes in traffic and user demand. This is important for a vehicle renting website as it needs to be able to handle large numbers of users and reservations at peak times.

- **Cost-effectiveness**: Cloud deployment can be more cost-effective than traditional on-premises deployment, as it allows the website to pay only for the resources it uses and eliminates the need for expensive infrastructure.

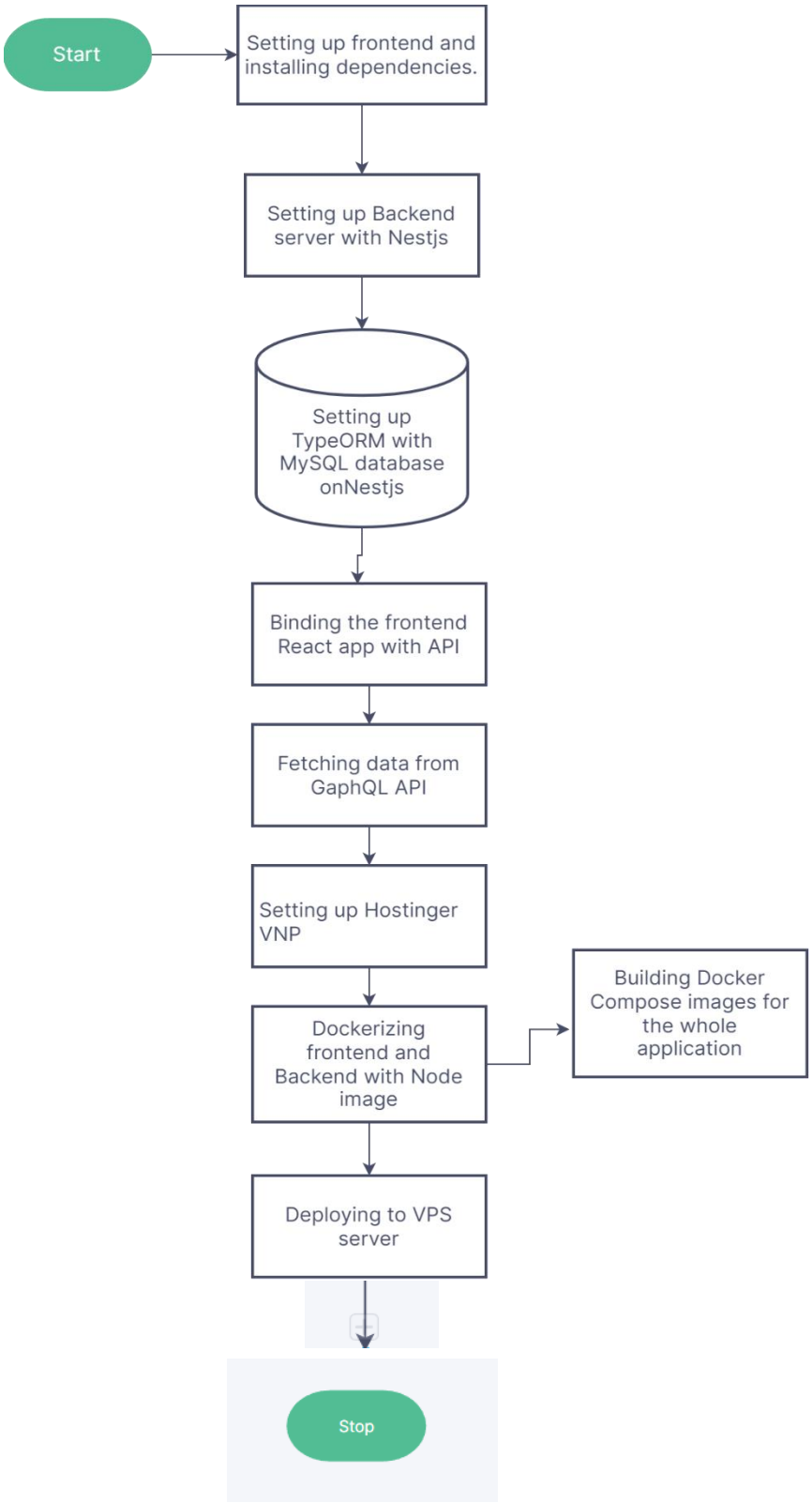
- **High availability**: Cloud deployment can provide high availability and disaster recovery capabilities, which are important for a website that handles sensitive information and transactions. This ensures the website is available for customers even in the event of hardware failure or other disruptions.

- **Security**: Cloud providers typically have robust security measures in place, such as encryption, secure data centers, and compliance with industry standards, which helps protect customer information and transactions.

- **Flexibility:** Cloud deployment allows for flexibility in terms of the number of server, storage and resources which can be adjusted as per the requirement.

- **Easy maintenance**: Cloud-based deployment allows for easy maintenance and updates, as the cloud provider handles many of the underlying technical details. This can help ensure that the website is always up to date and running smoothly.

5. Flow Diagram



6. Methodology

- This project is based on Incremental process Model or successive version model. In the start a Minimal viable product will be developed with few basic functionalities and will be considered as the backbone of the further advancements in the project.
- It would a full stack project with Frontend, Backend and Database. The technology that are going to be used are Reactjs, Nodejs, MongoDB, Express, GraphQL Tailwind and Docker
- The project gets deployed on cloud to make it accessible by everyone and usable. For providing this functionality, the folders would get containerized and will be hosted on Hostinger.