RESEARCH METHODS

for

COMPUTING & TECHNOLOGY

CLASS PRESENTATION

IoT Based,

ADVANCED CAR PARKING SYSTEM

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Presenting to,

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ABSTRACT

Concept of ‘Advanced Car Parking System’

Based on IoT and operated with Mobile Application

Focus on minimizing extensive traffic congestion

Consequences claims to provide sufficient parking whilst saving time and fuel energy

INDEX TERMS

Advanced Parking

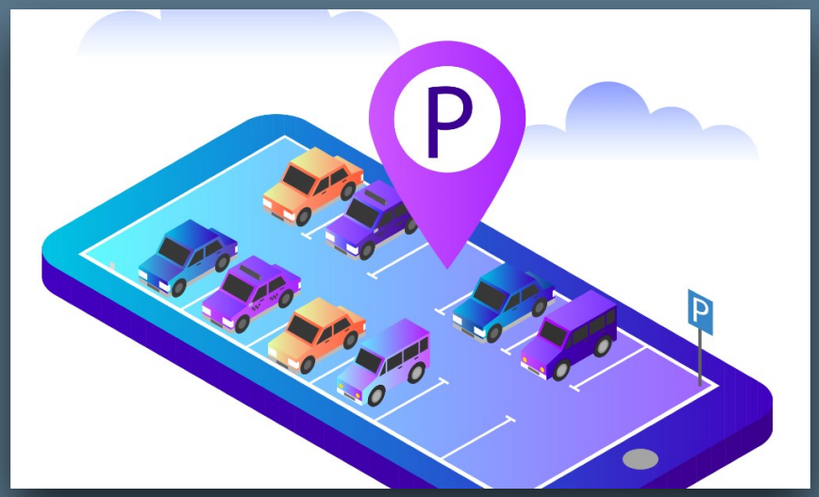
IR Sensors

Traffic Congestion

Internet of Things

Mobile Application

INTRODUCTION



- Rise in automobile has given rise to some serious challenges (eg. Traffic jams and insufficient parking, etc.)
- Traffic jam has costed around 116 billion rupees in Kathmandu city only (Chand, 2021)

LITERATURE REVIEW

As noted by Adler (2016), the city of Barcelona has provided automobile drivers with a sensor system that automatically escort them towards the vacant parking spaces. It was found that around 4,000 authorizations were issued each day with this concept of parking.

Niculescu et al. (2015) put forward an idea of intelligent driver assistant also known as IDA. IDA, unlike most of other applications would interact to drivers via speech. Their intention is to eliminate traffic congestion caused due to poorly managed traditional parking.

SIMILAR SYSTEMS

Blinkay

- Canada based smart parking app
- Allows their users to reserve vacant space to park their cars
- Sends timely notifications and offers Online payment as well

- Application available in 15,000 cities
- Allows users allows users to find and book parking spot using current address
- Provides real-time information to users, showing space, cost and parking time

COMPARISON BETWEEN AVAILABLE AND PROPOSED SYSTEMS

	Blinkay	Parko pedia	Proposed System
Cross Platform	Yes	Yes	Yes
Real-time Data	No	Yes	Yes
Matrix Indicator Guidance	No	No	Yes
Online Payments	Yes	Yes	Yes

PROBLEM STATEMENT

A research from Weishuber (2015) claims that around 40% of accidents occur during vehicle parking.

- **Traditional and road- side parking causes huge traffic congestion which results in loss of fuel, energy and time.**

- **A driver has to drive aimlessly for hundreds of meters just to find a vacant space to park his car.**

RESEARCH AIMS

- To establish an IoT based car parking system that will facilitate users with convenient parking service and reduce traffic congestion in manifold locations.

RESEARCH OBJECTIVES

- Provide facile parking service to diminish time wastage and fuel consumption.
- Differentiate and contrast similar systems to find out problem gap
- To implement the parking system by April 2023, reducing traffic congestion by 60% and making environment carbon free.

RESEARCH QUESTIONS

- What would be the impact of advanced parking system to automobile owners?

- How does the use of LED matrix indicator benefits car owners?

- What role will IoT play in controlling the traffic congestion with advanced parking system?

- Determine both hardware and software components that will be essential for the development of advanced parking system

- Specify the procedures in pre-booking a parking slot through a mobile application

RESEARCH SIGNIFICANCE

- New intuition into the concept of traditional parking system.
- Save time as well as the amount of fuel consumed.
- Ensures vehicle safety and outstandingly reduce road congestion.
- Convenient parking experience without any blockages or obstructions.

METHODOLOGY

SURVEY

Chosen Method : Questionnaire

- Questionnaire to be conducted in two ways : virtually and physically
- To be conducted among 120 - 150 vehicle owners and drivers within 5 days
- Set of questions to be posted online for online survey

SAMPLING

Chosen Type : Purposive Sampling

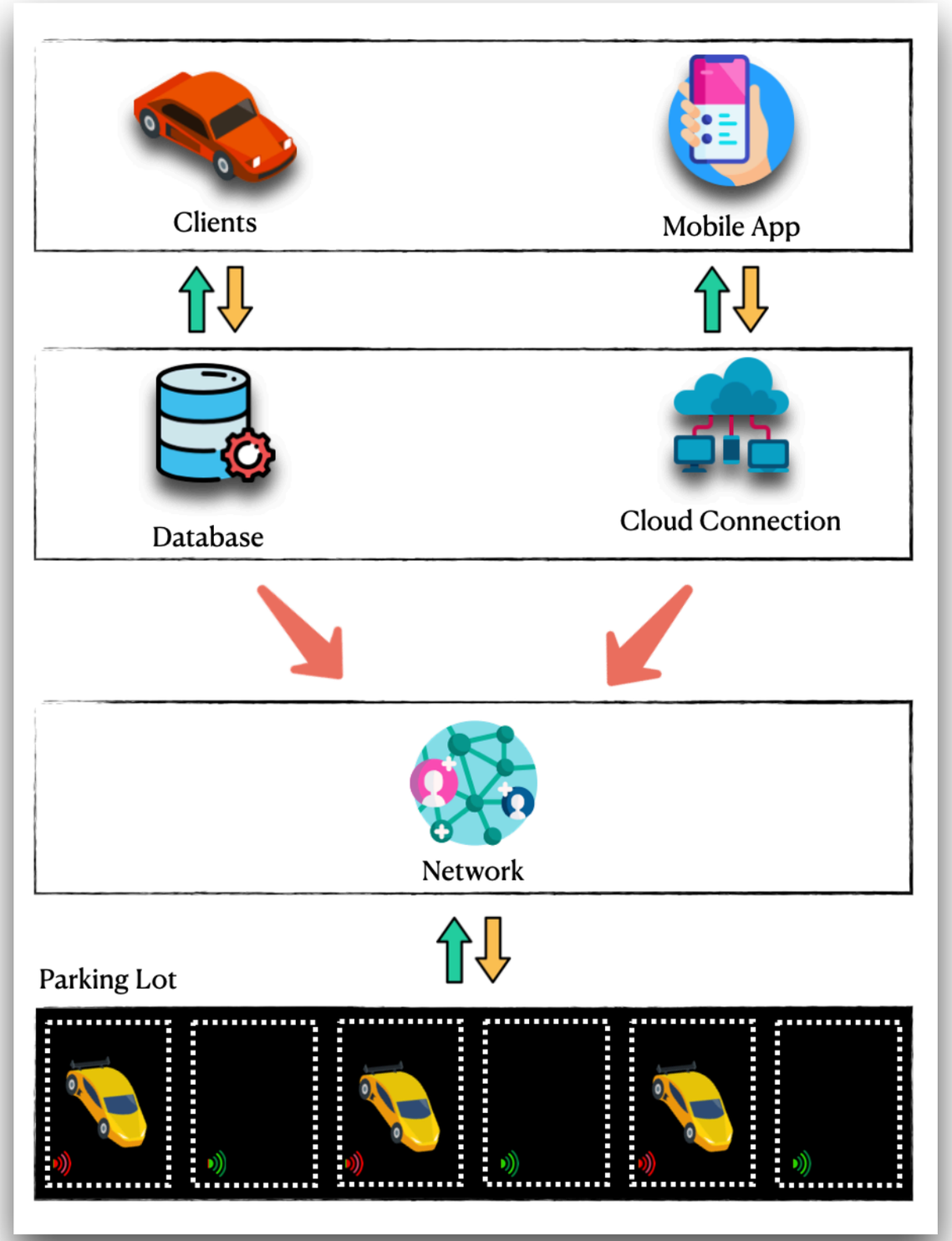
- **Choosing impactful population (eg. Drivers, car sellers and owners)**
- **Including traffic officers as the research aims in traffic fluency and road safety as well**
- **Additional information will be gathered regarding parking ideologies**

OVERVIEW OF PROPOSED SYSTEM

Advanced Car Parking System

- A modern notion of parking system
- Easy parking slots reservation via mobile application
- Can simply log in, check details and pay from the system
- Use of IoT and hardware components

ARCHITECTURE OVERVIEW



Architecture Components

Application Layer

User-system Interaction

Network Layer

Communication among stations
& integrated systems

Transaction Layer

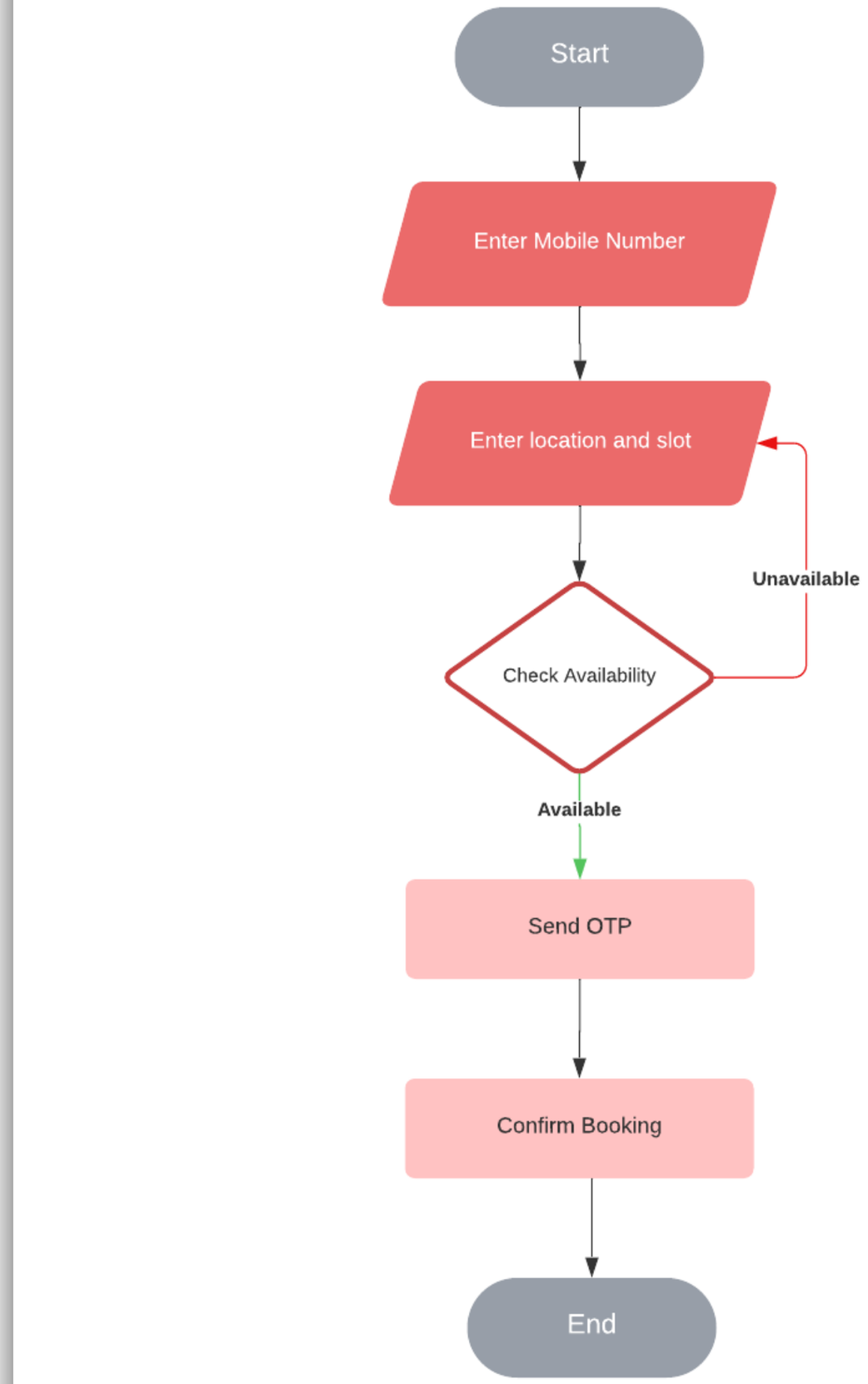
Nodes transaction in network

Physical Layer

Mechanisms and IoT devices

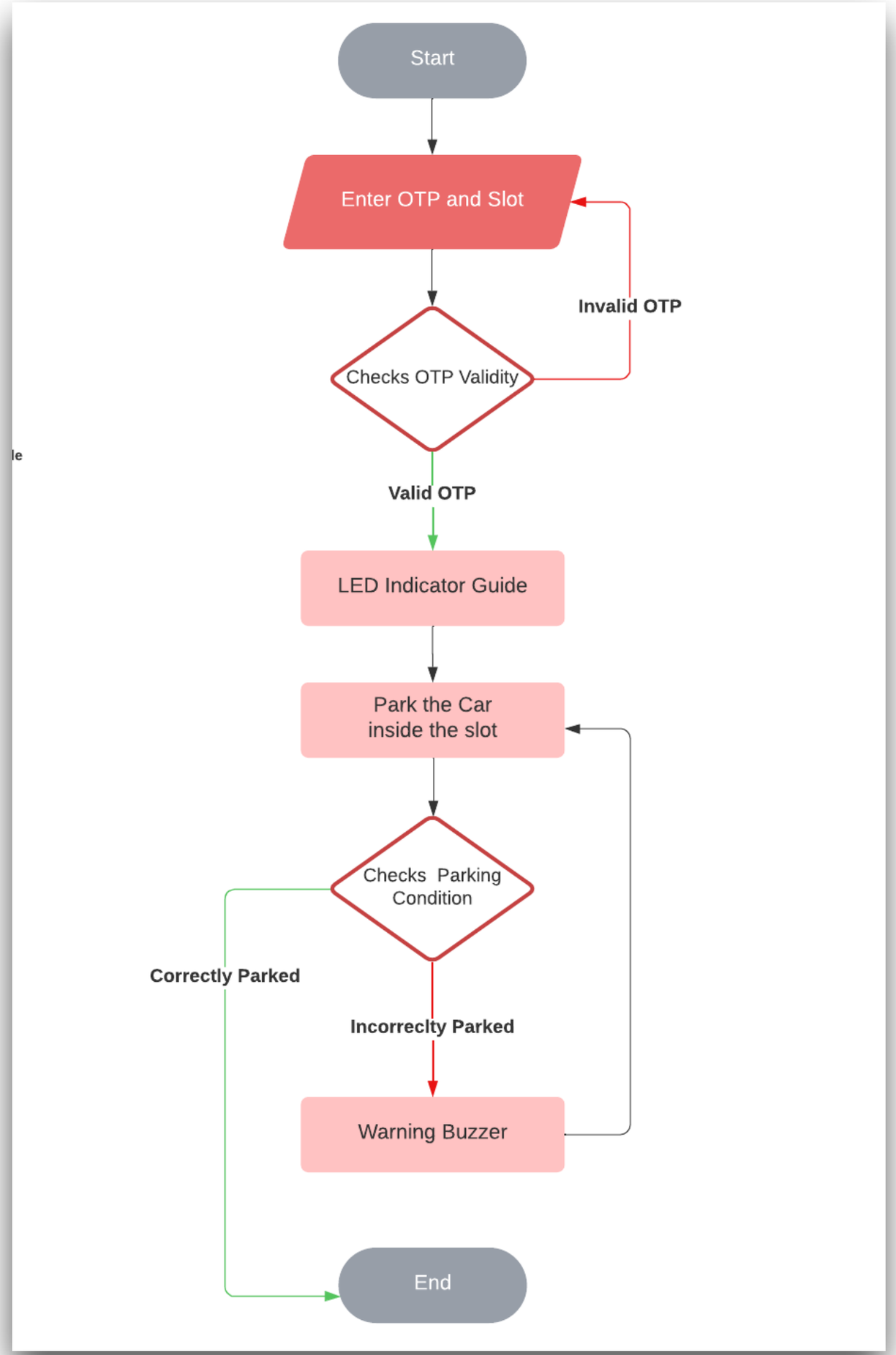
SYSTEM FLOWCHART

Booking a parking slot



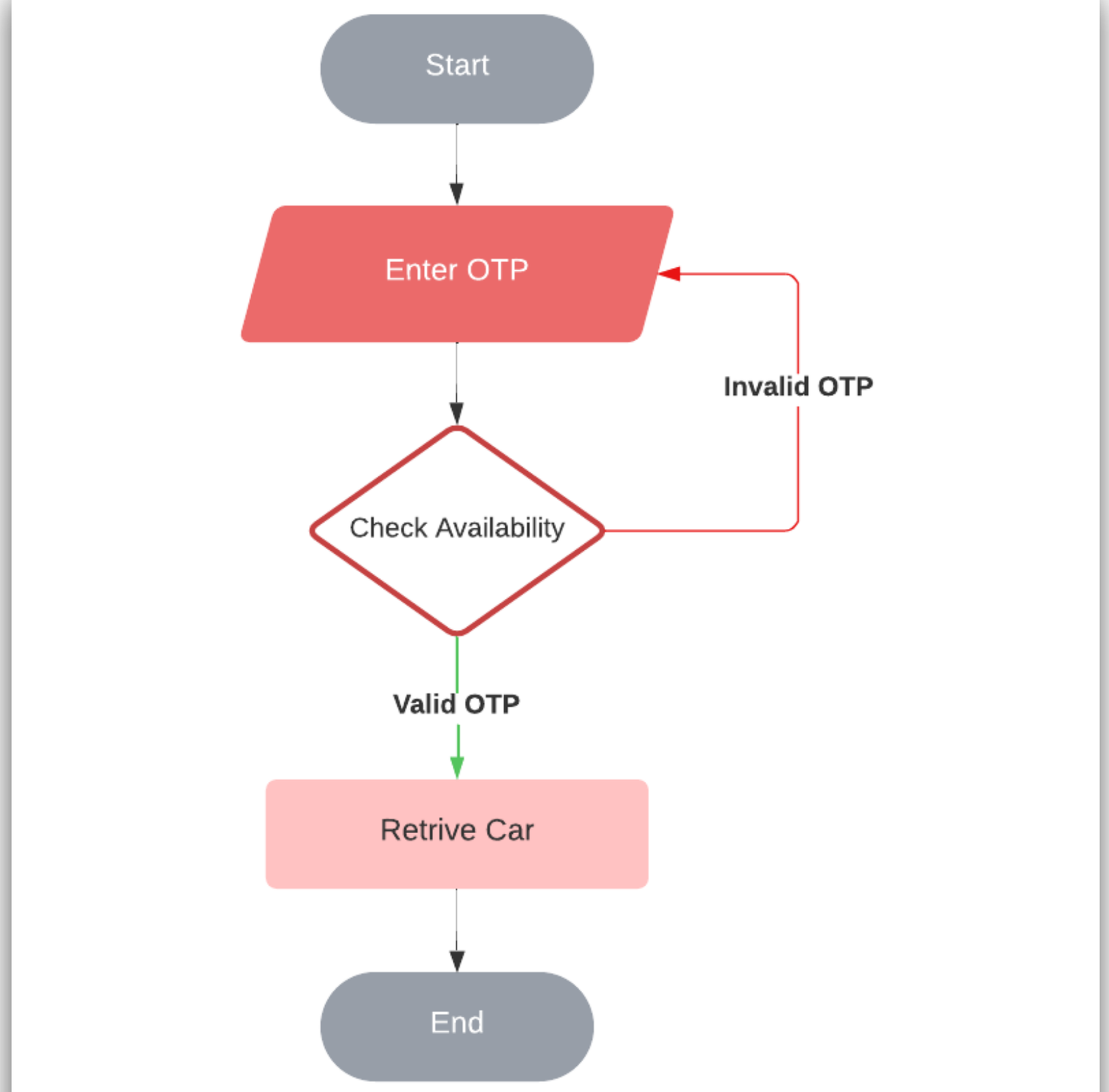
SYSTEM FLOWCHART

Parking a car



SYSTEM FLOWCHART

Retrieving a car



CONCLUSION

- Implementation of IoT concept, software and network data

- Can be consequential in overcoming currently existing parking issues

- Expected to reduce traffic congestion by almost 50%

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