IOT BASED SMART PARKING SYSTEM

A project report submitted in partial fulfilment
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Information technology

By

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SMART PARKING SYSTEM

Phase 3: Development part 1

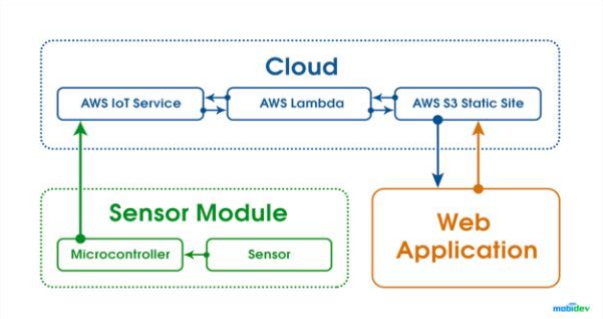
Smart Parking System. The Modern Trend or a Growing Need?

Parking problems are not uncommon, especially for big cities. By 2023, market spending for smart parking products and services is expected to

grow at a CAGR of 14% and surpass $3.8B according to an IoT Analytics report. The growth of market spending is good news because it will force people to try to find a solution to these traffic problems instead of taking no action.
The problem is quite obvious. But a bigger question is what can technology do to solve it? Is there any way to solve the problem?

Why Are Entrepreneurs Investing in IoT Based Smart Parking System Development?

Finding parking has become arduous whether you live in the USA, Europe, Australia, or India. When visiting a shopping mall, grocery store, or other popular places, you must have found it hard to find a parking spot for your vehicle. For this very reason, the investors are partnering with IoT-based smart parking system development companies to avoid further parking.



Effective Utilization Of Parking Space

There is no denying the fact that there is a huge difference between the number of vehicles and parking spaces in the city. The increasing construction within and nearby areas have further widened this gap. The IoT-based smart parking system has effectively utilized parking spaces, and users can easily book & park vehicles without any hassle.

Minimal Street Parking

Less parking spaces than the total number of vehicles and ineffective management are the biggest reasons for high street parking. With IoT-based smart parking system development, entrepreneurs are reducing users' parking hassle and reducing the

parking on the streets. Smart parking solutions effectively reduce congestion on the streets and avoid unnecessary traffic.

Reduced Waiting Period

Due to the non-regulation of the parking spaces, people have to wait to find a parking space, thus resulting in higher parking on the streets. A higher waiting period results in unwanted fuel wastage and increased stress levels. With IoT-based smart parking system solutions, users can book their parking spot in advance thus reducing the waiting period and on-street parking.

IoT-Based Smart Parking System Development For Various Sectors

Various sectors have shown interest in IoT-based smart parking system development for effectively managing parking spaces. These software solutions can be deployed anywhere to manage parking spaces and provide users with real-time parking solutions. Here's a list of sectors where IoT-based smart parking systems can be deployed;

- Government Buildings

- Residential Building
- Sports Stadium
- Municipality Councils
- Commercial Parking Operators
- Enterprises
- Mega Retail Stores
- Shopping Malls
- Hospitals

Smart Parking App Development Cost

The smart parking app development cost depends upon various factors. We have listed some of the major factors that directly impact the project development cost to ease your struggle. As a business owner, you can evaluate all these factors to know how much your smart parking solution will cost.

The IoT-based smart parking system development cost depends upon:

- Project complexity
- Add-on features of a smart parking app
- Security features
- Location of the development company
- Per hour development charges
- Development method, i.e., Scratch or Whitelabel solution
- Technology stack
- API integration
- Any additional services required

You can connect with a trusted, smart parking app development company like RisingMax Inc., to know the overall project development cost. Our professional team is well-versed with the leading technologies and has successfully built smart parking solutions for our customers over the years. Based on your project needs and business model, our team will suggest the best tech stack, the time needed, and the development cost after the initial project discussion.

Complete Code to Create a Smart Parking Management Project in Python

```
#Import Time import
time

Vehicle_Number=['XXXX-XX-XXXX']
Vehicle_Type=['Bike'] vehicle_Name=['Intruder']
Owner_Name=['Unknown']
Date=['22-22-3636']
Time=['22:22:22']
bikes=100 cars=250
bicycles=78 def main():
global bikes,cars,bicycles
try:        while True:
          print("-------------------------------------------------------------------------------------------")
print("\t\tParking Management System")
          print("-------------------------------------------------------------------------------------------")
print("1.Vehicle Entry")            print("2.Remove Entry" )            print("3.View
Parked Vehicle ")            print("4.View Left Parking Space ")
print("5.Amount Details ")            print("6.Bill")
          print ("7.Close Programme ")
          print ("+-----------------------------------------+")
          ch=int(input("\tSelect option:"))
if ch==1:                no=True
while no==True:                        no=not
True
                    Vehicle_Number.append(Vno)
else:
                    print("###### Enter Valid Vehicle Number ######")
```

```
            typee=True              while typee==True:                  Vtype=str(input("\tEnter vehicle
type(Bicycle=A/Bike=B/Car=C):")).lower()                    print("###### Please Enter Owner
Name ######")                  else:
                    Owner_Name.append(OName)
                    o=not True
)
                    t=not True
            print("\n.....Record detail
saved.....")           elif ch==2:
no=True               while no==True:
                Vno=input("\tEnter vehicle number to Delete(XXXX-XX-XXXX) - ").upper()
if Vno=="":
                    print("###### Enter Vehicle No. ######")
elif len(Vno)==12:
                    if Vno in Vehicle_Number:
i=Vehicle_Number.index(Vno)
                        Vehicle_Number.pop(i)
Vehicle_Type.pop(i)                         vehicle_Name.pop(i)
                        Owner_Name.pop(i)
                        Date.pop(i)
Time.pop(i)                         no=not
True
                        print("\n.....Removed
Sucessfully.....")                      elif
Vno not in Vehicle_Number:                          print("###### No Such
Entry ######")                      else:
                        print("Error")
else:
                    print("###### Enter Valid Vehicle Number ######")
elif ch==3:                 count=0
            print("----------------------------------------------------------------------------------------------------------------------
")
            print("\t\t\t\tParked Vehicle")
            print("----------------------------------------------------------------------------------------------------------------------
")
            print("Vehicle No.\tVehicle Type       Vehicle Name\t      Owner Name\t     Date\t\tTime")
            print("----------------------------------------------------------------------------------------------------------------------
")              for i in
range(len(Vehicle_Number)):
count+=1
                print(Vehicle_Number[i],"\t  ",Vehicle_Type[i],"\t          ",vehicle_Name[i],"\t
",Owner_Name[i],"      " ,Date[i],"         ",Time[i])
            print("----------------------------------------------------------------------------------------------------------------------
")
            print("---------------------------------------- Total Records - ",count,"----------------------------------------
```

```
----------")
            print("----------------------------------------------------------------------------------------------------------------------
")          elif ch==4:               print("----------------------------------------------------------------------------------------------
--------------------------
")
            print("\t\t\t\tSpaces Left For Parking")
            print("----------------------------------------------------------------------------------------------------------------------
")              print("\tSpaces Available for Bicycle -
",bicycles)               print("\tSpaces Available for Bike -
",bikes)              print("\tSpaces Available for Car -
",cars)
            print("----------------------------------------------------------------------------------------------------------------------
")
         elif ch==5:               print("----------------------------------------------------------------------------------------------
----------------------
")
            print("\t\t\t\tParking Rate")
            print("----------------------------------------------------------------------------------------------------------------------
")              print("*1.Bicycle      Rs20 /
Hour")              print("*2.Bike        Rs40/
Hour")              print("*3.Car         Rs60/
Hour")
            print("----------------------------------------------------------------------------------------------------------------------
")                                                                  elif       ch==6:
print("..................................................... Generating Bill
.....................................................")
no=True             while no==True:
                Vno=input("\tEnter vehicle number to Delete(XXXX-XX-XXXX) - ").upper()
if Vno=="":
                    print("###### Enter Vehicle No. ######")
elif len(Vno)==12:                      if Vno in
Vehicle_Number:
i=Vehicle_Number.index(Vno)                         no=not
True                    elif Vno not in Vehicle_Number:
print("###### No Such Entry ######")
else:
                        print("Error")
else:
                    print("###### Enter Valid Vehicle Number ######")
print("\tVehicle Check in time - ",Time[i])               print("\tVehicle
Check in Date - ",Date[i])              print("\tVehicle Type -
",Vehicle_Type[i])              inp=True              amt=0              while
inp==True:                  hr=input("\tEnter No. of Hours Vehicle Parked
- ").lower()                    inp=not True                elif int(hr)==0 and
Vehicle_Type[i]=="Car":                     amt=60                     inp=not
True                elif int(hr)>=1:                     if
```

```
Vehicle_Type[i]=="Bicycle":                    amt=int(hr)*int(20)
inp=not True                elif Vehicle_Type[i]=="Bike":
amt=int(hr)*int(40)                inp=not True                elif
Vehicle_Type[i]=="Car":
                    amt=int(hr)*int(60)
inp=not True              print("\t Parking Charge -
",amt)              ac=18/100*int(amt)
print("\tAdd. charge 18 % - ",ac)
print("\tTotal Charge - ",int(amt)+int(ac))
            print(".....Thank you for using our
service.....")
a=input("\tPress Any Key to Proceed - ")          elif ch==7:
print(".....Thank you for using our
service.....")
            print("                    **********(: Bye Bye :)**********")
break              quit     except:        main() main
```

Output

```
1.Vehicle Entry
2.Remove Entry
3.View Parked Vehicle
4.View Left Parking Space
5.Amount Details
6.Bill
7.Close Programme
+---------------------------------------------+
    Select option:1
    Enter vehicle number (XXXX-XX-XXXX) - KH12 ST 3646
    Enter vehicle type(Bicycle=A/Bike=B/Car=C):C
    Enter vehicle name - Altos
    Enter owner name - Ravi
    Enter Date (DD-MM-YYYY) - 12 09 2017
    Enter Time (HH:MM:SS) - 7 12 60
###### Please Enter Valid Date ######
    Enter Time (HH:MM:SS) - 07 12 60

.....Record detail saved.....
```