

# **PYTHON PROJECT REPORT (INT 213)**

## ON

## PARKING MANAGEMENT SYSTEM

### SUBMITTED BY

S.NO	ROLL NO	NAME OF THE STUDENT	REG NO
01	RK20RRBB64	JEEVAN JYOTHI KUMAR	12018267

JEEVAN JYOTHI KUMAR – PROGRAMMING
JEEVAN JYOTHI KUMAR – REPORT

### PARKING MANAGEMENT SYSTEM

#### INTRODUCTION:

In this project we made a parking management system interface using graphical user interface, functions, files in python. In the the user gives the details of his/her name ,vehicle number, entry time, exit time, by this info we will calculate the parking fee and display the details of vehicle and display the parking fee to be paid. And all the details will be stored in files.

#### **EXPLANATION:**

#### **GRAPHICAL USER INTERFACE:**

Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications. Creating a GUI using tkinter is an easy task.

There are two main methods used which the user needs to remember while creating the Python application with GUI.

- 1. **Tk**(screenName=None, baseName=None, className='Tk', useTk=1): To create a main window, tkinter offers a method 'Tk(screenName=None, baseName=None, className='Tk', useTk=1)'. To change the name of the window, you can change the className to the desired one.
- 2. **mainloop():** There is a method known by the name mainloop() is used when your application is ready to run. mainloop() is an infinite loop used to run the application, wait for an event to occur and process the event as long as the window is not closed.

tkinter also offers access to the geometric configuration of the widgets which can organize the widgets in the parent windows. There are mainly three geometry manager classes class.

- 1. **pack() method:** It organizes the widgets in blocks before placing in the parent widget.
- 2. **grid() method:** It organizes the widgets in grid (table-like structure) before placing in the parent widget.
- 3. **place() method:** It organizes the widgets by placing them on specific positions directed by the programmer.

There are several widgets which you can put in your tkinter application,

- **Button**: To add a button in your application, this widget is used.
- Canvas: It is used to draw pictures and other complex layout like graphics, text and widgets.
- **Check Button:** To select any number of options by displaying a number of options to a user as toggle buttons.
- **Entry:** It is used to input the single line text entry from the user.. For multi-line text input, Text widget is used.
- **Label**: It refers to the display box where you can put any text or image which can be updated any time as per the code.

• **List box**: It offers a list to the user from which the user can accept any number of options.

### **FUNCTIONS IN PYTHON:**

A function is a block of organized, reusable code that is used to perform a single, related action. Functions provide better modularity for your application and a high degree of code reusing.

As we already know, Python gives you many built-in functions like print(), etc. but you can also create your own functions. These functions are called *user-defined functions*.

## Defining a Function

You can define functions to provide the required functionality. Here are simple rules to define a function in Python.

- Function blocks begin with the keyword **def** followed by the function name and parentheses (()).
- Any input parameters or arguments should be placed within these parentheses. You can also define parameters inside these parentheses.
- The first statement of a function can be an optional statement the documentation string of the function or *docstring*.
- The code block within every function starts with a colon (:) and is indented.
- The statement return [expression] exits a function, optionally passing back an expression to the caller. A return statement with no arguments is the same as return None.

# Calling a Function

Defining a function only gives it a name, specifies the parameters that are to be included in the function and structures the blocks of code.

Once the basic structure of a function is finalized, you can execute it by calling it from another function or directly from the Python prompt. Following is the example to call printme() function

## **Function Arguments**

We can call a function by using the following types of formal arguments,

- Required arguments
- Keyword arguments
- Default arguments
- Variable-length arguments

#### FILES IN PYTHON:

Python provides basic functions and methods necessary to manipulate files by default. You can do most of the file manipulation using a **file** object.

## The open Function

Before you can read or write a file, you have to open it using Python's built-in *open()* function. This function creates a **file** object, which would be utilized to call other support methods associated with it.

Some are parameter details –

- **file\_name** The file\_name argument is a string value that contains the name of the file that you want to access.
- access\_mode The access\_mode determines the mode in which the file has to be opened, i.e., read, write, append, etc. A complete list of possible values is given below in the table. This is optional parameter and the default file access mode is read (r).
- **buffering** If the buffering value is set to 0, no buffering takes place. If the buffering value is 1, line buffering is performed while accessing a file. If you specify the buffering value as an integer greater than 1, then buffering action is performed with the indicated buffer size. If negative, the buffer size is the system default(default behaviour).

## Different modes of opening a file

#### 1. r

Opens a file for reading only. The file pointer is placed at the beginning of the file. This is the default mode.

### 2. w

Opens a file for writing only. Overwrites the file if the file exists. If the file does not exist, creates a new file for writing.

#### 3. a

Opens a file for appending. The file pointer is at the end of the file if the file exists. That is, the file is in the append mode. If the file does not exist, it creates a new file for writing.

#### 4. ab

Opens a file for appending in binary format. The file pointer is at the end of the file if the file exists. That is, the file is in the append mode. If the file does not exist, it creates a new file for writing.

## The file Object Attributes

Once a file is opened and you have one *file* object, you can get various information related to that file.

## Attributes related to file object

s.no	Command	description	
01	file.closed	Returns true if file is closed, false otherwise.	
02	file.mode	Returns access mode with which file was opened.	
03	file.name	Returns name of the file.	
04	file.softspace	Returns false if space explicitly required with print, true otherwise.	

## The close () Method

The close() method of a *file* object flushes any unwritten information and closes the file object, after which no more writing can be done.

Python automatically closes a file when the reference object of a file is reassigned to another file. It is a good practice to use the close () method to close a file.

# Reading and Writing Files

The *file* object provides a set of access methods to make our lives easier. We would see how to use read() and write() methods to read and write files.

# Opening a File

It is done using the open () function. No module is required to be imported for this function.

#### note

The file should exist in the same directory as the python program file else, full address of the file should be written on place of filename.

#### **SOURCE CODE:**

```
import tkinter
from tkinter import *
from tkinter import ttk
import time
root = tkinter.Tk() #defining main window
root.title("Parking Management System")
root.geometry('1028x400')
root.config(bg = "#091833")
root.resizable(0,0)
#fonts
font11 = "{U.S.101} 20 bold"
font2 = "{Segoe UI} 13 bold"
font3 = "Arial 13 bold"
font4 = "{Courier New} 10 bold"
font5 = "{Courier New} 10 normal"
localtime = time.asctime(time.localtime(time.time()))
#defining labels
a1 = tkinter.Label(root,text="PARKING MANAGEMENT SYSYTEM",
bg="#091833",fg="orange",font=font11)
a1.place(relx = 0.268, rely = 0.02, height = 51, width=507)
a2 = tkinter.Label(root,text="Select the type of vehicle",bg="#091833",fg="white",font= font2)
a2.place(x = 410, y = 90)
a = tkinter.Label(root,text=localtime,bg="#091833",fg="steel blue",font=font2)
a.place(x = 410, y = 50)
#define the fuction
def fourwheels():
  #defining another window
  newwindow = tkinter.Toplevel(root)
  newwindow.title("Four wheeler Parking")
  newwindow.geometry('500x400+600+40')
  newwindow.config(bg="#091833")
  a3 = tkinter.Label(newwindow,text="Four wheeler parking details",bg="#091833",fg="white",
font=("Aries",15,"bold"))
  a3.place(x = 200, y = 25)
  a4 = tkinter.Label(newwindow,text = "Enter the vehicle number",bg = "#091833",fg = "white", font =
font2)
  a4.place(x = 150, y = 60)
  num_entry = StringVar()
```

```
num_entry = tkinter.Entry(newwindow,textvariable = num_entry,width = 25)
  num entry.place(x = 400, y = 65)
  a5 = tkinter.Label(newwindow,text = "Enter the name of the driver",bg = "#091833",fg = "white",
font = font3
  a5.place(x = 150, y = 95)
  name_entry = StringVar()
  name_entry = tkinter.Entry(newwindow,textvariable = name_entry,width = 25)
  name entry.place(x = 400, y = 100)
  a6 = tkinter.Label(newwindow,text="Time at which vehicle entered ",bg = "#091833",fg = "white",
font = font3)
  a6.place(x = 150, y = 130)
  time_entry1 = IntVar()
  time_entry1 = tkinter.Entry(newwindow,textvariable = time_entry1,width = 25)
  time_entry1.place(x = 400, y = 135)
  a7 = tkinter.Label(newwindow,text = "Time at which vehicle left ",bg = "#091833",fg = "white", font
= font3)
  a7.place(x = 150, y = 165)
  time_entry2 = IntVar()
  time_entry2 = tkinter.Entry(newwindow,textvariable = time_entry2,width = 25)
  time_entry2.place(x = 400, y = 170)
  def print_bill():
    num = float(time_entry1.get())
    num0 = float(time_entry2.get())
    result = (num0-num)*50
    total = str(result)
    p = tkinter.Label(newwindow,text="vehicle number: " + num_entry.get(),bg = "#091833",fg =
"white",font = font3, width = 30)
    p.place(x = 250, y = 230)
    p1 = tkinter.Label(newwindow,text="vehicle owner: " + name_entry.get(),bg = "#091833",fg =
"white",font = font3,width = 30)
    p1.place(x = 250, y = 255)
    p2 = tkinter.Label(newwindow,text="vehicle entry time: " + time_entry1.get(),bg = "#091833",fg =
"white", font = font3, width = 30)
    p2.place(x = 250, y = 280)
```

```
p3 = tkinter.Label(newwindow,text="vehicle exit time: " + time_entry2.get(),bg = "#091833",fg =
"white",font = font3,width = 30)
    p3.place(x = 250, y = 310)
    p4 = tkinter.Label(newwindow,text = "vehicle parking fee: " + total,bg = "#091833",fg =
"white",font = font3,width = 30)
    p4.place(x = 250, y = 340)
    def save_info():
      reg_no = num_entry.get()
      driver_name = name_entry.get()
      entry_time = time_entry1.get()
      exit_time = time_entry2.get()
      parking_fee = total
      print("Vehicle number",reg_no)
      print("Vehicle driver name",driver_name)
      print("Vehicle entry time",entry_time)
      print("Vehicle exit time",exit_time)
      file = open("four.txt","a")
      file.write("vehicle registration number: " + reg_no)
      file.write("\n")
      file.write("vehicle driver name: " + driver_name)
      file.write("\n")
      file.write("vehicle entering time: " + str(entry_time))
      file.write("\n")
      file.write("vehicle leaving time: " + str(exit_time))
      file.write("\n")
      file.write("Vehicle parking fee: " + parking_fee)
      file.write("\n")
      file.close()
```

```
return save_info()
  bill_btn1 = tkinter.Button(newwindow,text="Print bill",command=print_bill)
  bill_btn1.place(x = 400, y = 200)
def twowheels():
  #defining the another window
  newwindow1 = tkinter.Toplevel(root)
  newwindow1.title("Two wheeler Parking")
  newwindow1.geometry('500x300+400+60')
  newwindow1.config(bg="#091833")
  b = tkinter.Label(newwindow1,text="Details of Two wheeler
Parking",bg="#091833",fg="white",font=font2)
  b.place(x = 200, y = 25)
  b1 = tkinter.Label(newwindow1,text="Enter the vehicle
number",bg="#091833",fg="white",font=font2)
  b1.place(x = 150, y = 60)
  text entry1 = tkinter.Entry(newwindow1,width=25)
  text_entry1.place(x = 400, y = 65)
  b2 = tkinter.Label(newwindow1,text="Enter the name of the
driver",bg="#091833",fg="white",font=font2)
  b2.place(x = 150, y = 95)
  text_entry2 = tkinter.Entry(newwindow1,width=25)
  text_entry2.place(x = 400, y = 100)
  b3 = tkinter.Label(newwindow1,text="Time at which vehicle entered
",bg="#091833",fg="white",font=font2)
  b3.place(x = 150, y = 130)
  time_entry3 = tkinter.Entry(newwindow1,width=25)
  time_entry3.place(x = 400, y = 135)
  b4 = tkinter.Label(newwindow1,text="Time at which vehicle left
",bg="#091833",fg="white",font=font2)
  b4.place(x = 150, y = 165)
  time_entry4 = tkinter.Entry(newwindow1,width=25)
  time_entry4.place(x = 400, y = 170)
```

```
def print_bill1():
    num1 = float(time entry3.get())
    num2 = float(time_entry4.get())
    result = (num2-num1)*25
    total = str(result)
    q = tkinter.Label(newwindow1,text="vehicle number: " +
text_entry1.get(),bg="#091833",fg="white",font=("Aries",10), width= 30)
    q.place(x = 250, y = 230)
    q1 = tkinter.Label(newwindow1,text="vehicle owner: " +
text entry2.get(),bg="#091833",fg="white",font=("Aries",10),width = 30)
    q1.place(x = 250, y = 255)
    q2 = tkinter.Label(newwindow1,text="vehicle entry time: " +
time_entry3.get(),bg="#091833",fg="white",font=("Aries",10), width = 30)
    q2.place(x = 250, y = 280)
    q3 = tkinter.Label(newwindow1,text="vehicle exit time: " +
time_entry4.get(),bg="#091833",fg="white",font=("Aries",10),width = 30)
    q3.place(x = 250, y = 310)
    q4 = tkinter.Label(newwindow1,text="vehicle parking fee: " +
total,bg="#091833",fg="white",font=("Aries",10),width = 30)
    q4.place(x = 250, y = 340)
    def save_info2():
      reg_no = text_entry1.get()
      driver_name = text_entry2.get()
      entry_time = time_entry3.get()
      exit_time = time_entry4.get()
      parking_fee = total
      print("vehicle number:",reg_no)
      print("Vehicle driver name:",driver_name)
      print("Vehicle entry time:",entry_time)
      print("vehicle exit time",exit_time)
      print("parking fee:" , parking_fee)
      file = open("two.txt","a")
      file.write("vehicle registration number: " + reg_no)
      file.write("\n")
```

```
file.write("vehicle driver name: " + driver_name)
      file.write("\n")
      file.write("vehicle entering time: " + str(entry_time))
      file.write("\n")
      file.write("vehicle leaving time: " + str(exit_time))
      file.write("\n")
      file.write("Vehicle parking fee: " + parking_fee)
      file.write("\n")
      file.close()
    return save_info2()
  bill_btn2 = tkinter.Button(newwindow1,text="Print bill",command=print_bill1)
  bill_btn2.place(x = 400, y = 200)
def threewheels():
  #defining another window
  newwindow2 = tkinter.Toplevel(root)
  newwindow2.title("Three wheeler Parking")
  newwindow2.geometry('500x500+400+40')
  newwindow2.config(bg="#091833")
  c0 = tkinter.Label(newwindow2,text="Details of Three wheeler
Parking",bg="#091833",fg="white",font=font3)
  c0.place(x = 200, y = 25)
  c1 = tkinter.Label(newwindow2,text="Enter the vehicle
number",bg="#091833",fg="white",font=font2)
  c1.place(x = 150, y = 60)
  text_entry1 = StringVar()
  text_entry1 = tkinter.Entry(newwindow2,textvariable=text_entry1,width=25)
  text_entry1.place(x = 400, y = 65)
  c2 = tkinter.Label(newwindow2,text="Enter the name of the
driver",bg="#091833",fg="white",font=font2)
```

```
c2.place(x = 150, y = 95)
  text_entry2 = StringVar()
  text_entry2 = tkinter.Entry(newwindow2,textvariable=text_entry2,width=25)
  text_entry2.place(x = 400, y = 100)
  c3 = tkinter.Label(newwindow2,text="Time at which vehicle
entered",bg="#091833",fg="white",font=font2)
  c3.place(x = 150, y = 130)
  time_entry3 = IntVar()
  time entry3 = tkinter.Entry(newwindow2,textvariable=time entry3,width=25)
  time_entry3.place(x = 400, y = 135)
  c4 = tkinter.Label(newwindow2,text="Time at which vehicle
left",bg="#091833",fg="white",font=font2)
  c4.place(x = 150, y = 165)
  time_entry4 = IntVar()
  time entry4 = tkinter.Entry(newwindow2,textvariable=time entry4,width=25)
  time_entry4.place(x = 400, y = 170)
  def print_bill2():
    num3 = float(time entry3.get())
    num4 = float(time_entry4.get())
    result = (num4-num3)*35
    total = str(result)
    r = tkinter.Label(newwindow2,text="vehicle number: " +
text_entry1.get(),bg="#091833",fg="white",font=font4, width= 30)
    r.place(x = 250, y = 230)
    r1 = tkinter.Label(newwindow2,text="vehicle owner: " +
text_entry2.get(),bg="#091833",fg="white",font=font4,width = 30)
    r1.place(x = 250, y = 255)
    r2 = tkinter.Label(newwindow2,text="vehicle entry time: " +
time_entry3.get(),bg="#091833",fg="white",font=font4, width = 30)
    r2.place(x = 250, y = 280)
    r3 = tkinter.Label(newwindow2,text="vehicle exit time: " +
time_entry4.get(),bg="#091833",fg="white",font=font4,width = 30)
    r3.place(x = 250, y = 310)
```

```
r4 = tkinter.Label(newwindow2,text="vehicle parking fee: " +
total,bg="#091833",fg="white",font=font4,width = 30)
    r4.place(x = 250, y = 340)
    def save_info3():
      reg_no = text_entry1.get()
      driver_name = text_entry2.get()
      entry_time = time_entry3.get()
      exit_time = time_entry4.get()
      parking_fee = total
      print("vehicle number:",reg_no)
      print("Vehicle driver name:",driver_name)
      print("Vehicle entry time:",entry_time)
      print("vehicle exit time",exit_time)
      print("parking fee:" , parking_fee)
      file = open("three.txt","a")
      file.write("vehicle registration number: " + reg_no)
      file.write("\n")
      file.write("vehicle driver name: " + driver_name)
      file.write("\n")
      file.write("vehicle entering time: " + str(entry_time))
      file.write("\n")
      file.write("vehicle leaving time: " + str(exit_time))
      file.write("\n")
      file.write("vehicle parking fee: " + parking_fee)
      file.write("\n")
      file.close()
    return save_info3()
  bill_btn3 = tkinter.Button(newwindow2,text="Print bill",command=print_bill2)
```

```
bill_btn3.place(x = 400, y = 200)
def others():
  #defining another window
  newwindow3 = tkinter.Toplevel(root)
  newwindow3.title("Other Parking")
  newwindow3.geometry('750x450+400+40')
  newwindow3.config(bg="#091833")
  d0 = tkinter.Label(newwindow3,text="Details of other types of vehicle
Parking",bg="#091833",fg="white",font=font2)
  d0.place(x = 200, y = 25)
  d1 = tkinter.Label(newwindow3,text="Enter the vehicle
number",bg="#091833",fg="white",font=font2)
  d1.place(x = 150, y = 60)
  text_entry1 = StringVar()
  text entry1 = tkinter.Entry(newwindow3,textvariable=text entry1,width=25)
  text entry1.place(x = 400, y = 65)
  d2 = tkinter.Label(newwindow3,text="Enter the name of the
driver",bg="#091833",fg="white",font=font2)
  d2.place(x = 150, y = 95)
  text_entry2 = StringVar()
  text_entry2 = tkinter.Entry(newwindow3,textvariable=text_entry2,width=25)
  text_entry2.place(x = 400, y = 100)
  d3 = tkinter.Label(newwindow3,text = "Time at which vehicle entered ",bg = "#091833",fg =
"white",font = font2)
  d3.place(x = 150, y = 130)
  time_entry3 = IntVar()
  time_entry3 = tkinter.Entry(newwindow3,textvariable = time_entry3,width=25)
  time_entry3.place(x = 400, y = 135)
  d4 = tkinter.Label(newwindow3,text = "Time at which vehicle left ",bg = "#091833",fg = "white",font
= font2)
  d4.place(x = 150, y = 165)
  time entry4 = IntVar()
  time_entry4 = tkinter.Entry(newwindow3,textvariable = time_entry4,width = 25)
  time entry4.place(x = 400, y = 170)
```

```
def print_bill():
    num1=float(time entry3.get())
    num2=float(time_entry4.get())
    result=(num2-num1)*50
    total = str(result)
    s = tkinter.Label(newwindow3,text="vehicle number: " +
text_entry1.get(),bg="#091833",fg="white",font=font4, width= 30)
    s.place(x = 250, y = 230)
    s1 = tkinter.Label(newwindow3,text="vehicle owner: " +
text entry2.get(),bg="#091833",fg="white",font=font4,width = 30)
    s1.place(x = 250, y = 255)
    s2 = tkinter.Label(newwindow3,text="vehicle entry time: " +
time_entry3.get(),bg="#091833",fg="white",font=font4, width = 30)
    s2.place(x = 250, y = 280)
    s3 = tkinter.Label(newwindow3,text="vehicle exit time: " +
time entry4.get(),bg="#091833",fg="white",font=font4,width = 30)
    s3.place(x = 250, y = 310)
    s4 = tkinter.Label(newwindow3,text="vehicle parking fee: " +
total,bg="#091833",fg="white",font=font4,width = 30)
    s4.place(x = 250, y = 340)
    def save_info1():
      reg_no = text_entry1.get()
      driver_name = text_entry2.get()
      entry_time = time_entry3.get()
      exit_time = time_entry4.get()
      parking_fee = total
      print("vehicle number:",reg_no)
      print("Vehicle driver name:",driver_name)
      print("Vehicle entry time:",entry_time)
      print("vehicle exit time",exit_time)
      print("parking fee:" , parking_fee)
      file = open("others.txt","a")
      file.write("vehicle registration number: " + reg_no)
      file.write("\n")
      file.write("vehicle driver name: " + driver_name)
```

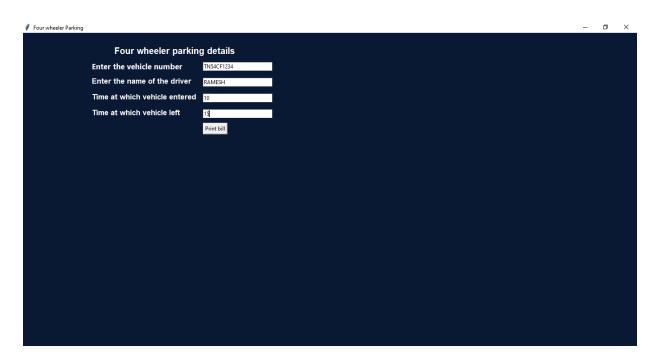
```
file.write("\n")
      file.write("vehicle entering time: " + str(entry_time))
      file.write("\n")
      file.write("vehicle leaving time: " + str(exit_time))
      file.write("\n")
      file.write("parking fee: " + total)
      file.write("\n")
      file.close()
    return save_info1()
  bill_btn1 = tkinter.Button(newwindow3,text="Print bill",command=print_bill)
  bill_btn1.place(x = 400, y = 200)
#defining buttons
btn1 = tkinter.Button(root, text= "Two wheeler",borderwidth = 5,width = 10, command = twowheels)
btn1.place(x = 470, y = 150)
btn2 = tkinter.Button(root,text = "Three wheeler",borderwidth = 5,width = 10, command =
threewheels)
btn2.place(x = 470, y = 200)
btn3 = tkinter.Button(root,text = "Four wheeler",borderwidth = 5,width = 10,command = fourwheels)
btn3.place(x = 470, y = 250)
btn4 = tkinter.Button(root,text = "Others",borderwidth = 5,width = 10,command = others)
btn4.place(x = 470, y = 300)
root.mainloop()
```

### **GUI SCREENSHOTS:**

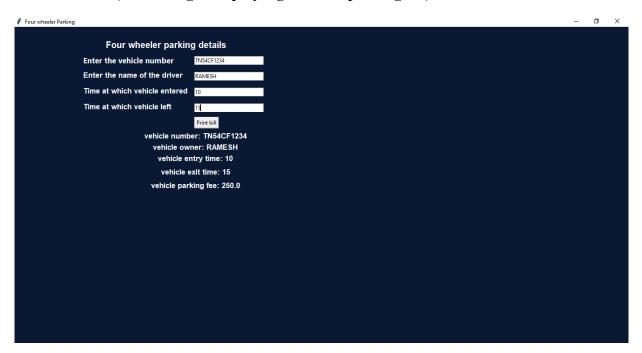
## 1. WELCOME SCREEN:



## 2.FOUR-WHEELER (on clicking four-wheeler button)



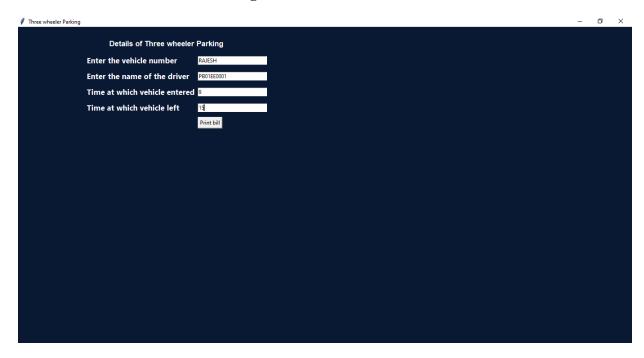
## 3.PRINTBILL(on clicking it display's generated parking fee)



### 4. FILE CREATED TO STORE DETAILS:



## **5.THREE-WHEELER** (on clicking three wheeler button)



### **6.PRINT BILL**(for three-wheeler details)



### 7.FILE FOR THREE-WHEELER



## **8.TWO WHEELER (on clicking button)**



### **9.PRINT BILL (on clicking button)**



### 10.FILE FOR TWO-WHEELER



### **RESULT:**

We finally got the end product as a "parking management system interface" that includes all the above-mentioned modules. We had learnt how to make a GUI using tkinter in python and learnt to store it in files.

In this project we can give details of the driver and enter the vehicle entry time and exit time. And with the given information we can generate parking fee and display to the driver

And all the records of two-wheeler, three-wheeler, and four wheeler are stored sequentially in the files along with parking fee .

Finally, by doing this project we learnt about GUI tkinter, functions, file handling in python.

### **REFERENCES**:

- <a href="https://www.tutorialspoint.com">https://www.tutorialspoint.com</a>
- <a href="https://stackoverflow.com">https://stackoverflow.com</a>
- https://www.w3schools.com
- https://www.geeksforgeeks.org