



COLLEGE OF COMPUTING, INFORMATICS AND MATHEMATICS,  
UNIVERSITI TEKNOLOGI MARA,  
MERBOK, KEDAH

DIPLOMA IN LIBRARY INFORMATICS  
(CDIM144)

PROGRAMMING FOR LIBRARIES  
(IML208)

**“INDIVIDUAL PROJECT”**

**PREPARED BY:**

RAJA NUR HANIS SYAHIDA BINTI RAJA NASYRUL HAFIZ (2022891354)

**CLASS:** KCDIM1443F

**PREPARED FOR:**

SIR AIRUL SHAZWAN BIN NORSHAHIMI

**SUBMISSION DATE:**

4 JANUARY 2024

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## **ACKNOWLEDGEMENT**

First of all, I would like to sincerely thank Sir Airul Shazwan Bin Norshahimi for his significant role behind the accomplishment of the assignment. I have been guided with lots of his valuable suggestions and experience throughout the process of completion of the assignment.

I would also like to express my gratitude to my peers, without their support and cooperation this assignment could not have been accomplished. Finally, I would like to thank my parents for their support, love, and blessings.

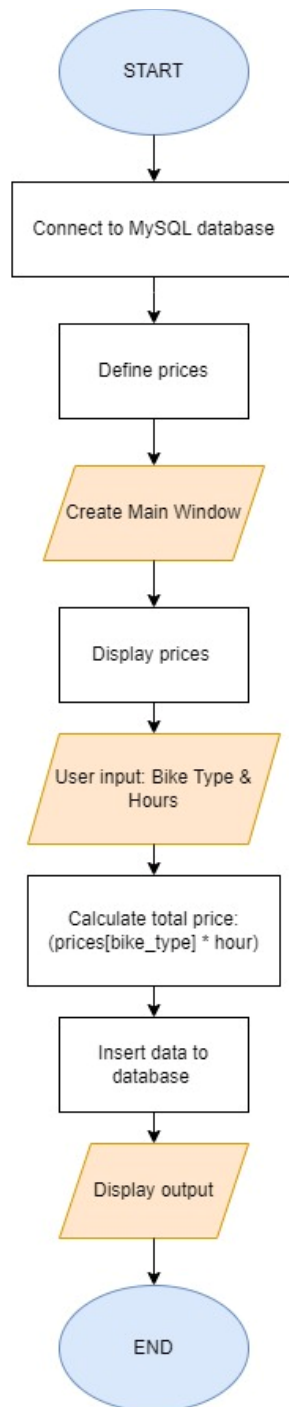
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## **1.0 INTRODUCTION**

Tourists, commuters, students, and leisure riders are among those that use bike rental services. These businesses can be found in a variety of settings, but they are most common in urban centers, tourist attractions, university campuses, and residential districts. The bike rental industry is a growing industry that is attracting entrepreneurs who want to address the growing need for affordable and convenient transportation options. A bike rental is a hired vehicle that can be utilized for a price for a set amount of time. Getting a rental bike allows people to go around more conveniently, even if they do not have access to their own personal vehicle or do not own one at all. Individuals in need of a bike must call a rental bike company and hire a vehicle. This solution improves client retention while also streamlining vehicle and crew management. In this assignment, there are several types of bikes provided according to age and the customers' convenience.

## 2.0 FLOWCHART



## 3.0 SNAPSHOT OF THE CODE

### 3.1 Python code

```
bike_rental.py X
C:\Users\user\Desktop\IML208> bike_rental > bike_rental.py ...
1 import tkinter as tk
2 import mysql.connector
3
4 #Connecting to the MySQL database
5 mydb = mysql.connector.connect(
6     host = "localhost",
7     user = "root",
8     password = "",
9     database = "bike_rental"
10 )
11
12 #Creating a cursor object to execute SQL queries
13 mycursor = mydb.cursor()
14
15 #Function to handle the calculation and database saving
16 def collect_data():
17     bike_type = package_var.get()
18     hour = int(hours_entry.get())
19
20     #The prices below are to defined the value from the user selections
21     prices = {
22         "Comfort bike": 5,
23         "Kids' bike": 5,
24         "E-bike": 10,
25         "Recumbent bike": 6,
26     }
27
28     #Calculating the total price which derived from the selection. (Bike type, Hour).
29     total_price = (prices[bike_type] * hour)
30
31     #Inserting data to the database (using 3 attributes).
32     sql = "INSERT INTO `rental` (Package_type, Package_hour, Package_price) VALUES (%s,%s,%s)"
33     val = (bike_type, hour, total_price)
34     mycursor.execute(sql, val)
35     mydb.commit()
36
37 #Printing back the output
```

```
bike_rental.py X
C:\Users\user\Desktop\IML208> bike_rental > bike_rental.py ...
38     output_label.config(text=f"Bike type : {bike_type}, Hour : {hour}, Total Price: RM{total_price}")
39
40 #Main window
41 root = tk.Tk()
42 root.title("Bike Rental")
43 root.geometry('400x600')
44
45 #Page title
46 label = tk.Label(root, text= 'Choose your bike !', font = ("Times New Roman", "16", "bold"))
47 label.pack (ipadx = 10, ipady = 10)
48
49 #Prices list
50 prices_text = tk.Text (root, height = 15, width = 45)
51 prices_text.pack (pady = 20)
52
53 #Defining list using pricebox
54 prices_text.insert (tk.END, "Types of bike and prices per hour: \n\n")
55 prices_text.insert (tk.END, "Comfort bike: \nRM5 per hour\n\n")
56 prices_text.insert (tk.END, "Kids' bike: \nRM5 per hour\n\n")
57 prices_text.insert (tk.END, "E-bike: \nRM10 per hour\n\n")
58 prices_text.insert (tk.END, "Recumbent bike: \nRM6 per hour\n\n")
59 prices_text.configure (state = 'disabled')
60
61 #Bike type dropdown (label)
62 hours_label = tk.Label (root, text = "Choose your bike")
63 hours_label.pack()
64
65 #Bike type dropdown
66 package_var = tk.StringVar (root)
67 package_var.set ("Select your bike") #default value before selection
68 bike_dropdown = tk.OptionMenu (root, package_var, "Comfort bike", "Kids' bike", "E-bike", "Recumbent bike")
69 bike_dropdown.pack (pady=10)
70
71 #Hour entry. In this section, label and user can enter data through entry.
72 hours_label = tk.Label (root, text = "Hour: ")
```

```

File Edit Selection View Go ... Search
bike_rental.py x
C:\Users\user\Desktop\IML208> bike_rental > bike_rental.py ...
70
71 #Hour entry. In this section, label and user can enter data through entry.
72 hours_label = tk.Label (root, text = "Hour: ")
73 hours_label.pack ()
74 hours_entry = tk.Entry (root)
75 hours_entry.pack ()
76
77 #Save button
78 save_button = tk.Button (root, text= "Total", command = collect_data)
79 save_button.pack ()
80
81 #Output label & result
82 label = tk.Label (root, text = "Your order detail:", font = ("Times New Romans", 12))
83 label.pack (ipadx = 10, ipady = 10)
84 output_label = tk.Label (root, text = "")
85 output_label.pack ()
86
87 #Setting the background colour
88 root.configure(bg = '#355E3B')
89
90 root.mainloop()
Ln 1, Col 1

```

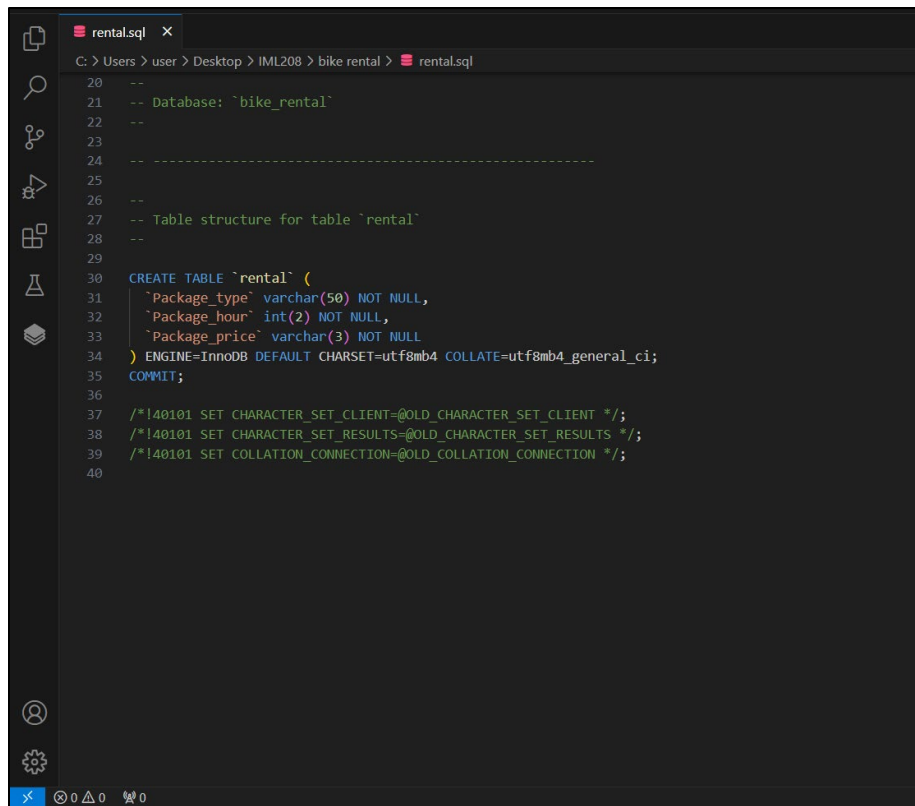
### 3.2 SQL

```

rental.sql x
C:\Users\user\Desktop\IML208> bike_rental > rental.sql
1  -- phpMyAdmin SQL Dump
2  -- version 5.2.1
3  -- https://www.phpmyadmin.net/
4  --
5  -- Host: 127.0.0.1
6  -- Generation Time: Dec 27, 2023 at 04:45 AM
7  -- Server version: 10.4.28-MariaDB
8  -- PHP Version: 8.2.4
9
10 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
11 START TRANSACTION;
12 SET time_zone = "+00:00";
13
14
15 /*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
16 /*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
17 /*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
18 /*!40101 SET NAMES utf8mb4 */;
19
20 --
21 -- Database: `bike_rental`
22 --
23
24 -- -----
25 --
26 -- Table structure for table `rental`
27 --
28 --
29
30 CREATE TABLE `rental` (
31   `Package_type` varchar(50) NOT NULL,
32   `Package_hour` int(2) NOT NULL,
33   `Package_price` varchar(3) NOT NULL
34 ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
35 COMMIT;
36
37 /*!40101 SET CHARACTER SET CLIENT=@@CHARACTER SET CLIENT */;

```





The screenshot shows a SQL editor window with a dark theme. The title bar indicates the file is named 'rental.sql'. The path bar shows the file is located at 'C:\Users\user\Desktop\IML208\bike rental\rental.sql'. The editor contains SQL code for creating a table named 'rental' in a database named 'bike\_rental'. The code includes comments for the database name and table structure, followed by the 'CREATE TABLE' statement with columns 'Package\_type', 'Package\_hour', and 'Package\_price'. The table is created using the InnoDB engine with a default charset of utf8mb4 and a collation of utf8mb4\_general\_ci. The code ends with a 'COMMIT;' statement and three comments for character set and collation settings.

```
20 --
21 -- Database: `bike_rental`
22 --
23
24 -- -----
25
26 --
27 -- Table structure for table `rental`
28 --
29
30 CREATE TABLE `rental` (
31   `Package_type` varchar(50) NOT NULL,
32   `Package_hour` int(2) NOT NULL,
33   `Package_price` varchar(3) NOT NULL
34 ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
35 COMMIT;
36
37 /*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
38 /*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
39 /*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
40
```

#### 4.0 SNAPSHOT OF GUI

Bike Rental

### Choose your bike !

Types of bike and prices per hour:

Comfort bike:  
RM5 per hour

Kids' bike:  
RM5 per hour

E-bike:  
RM10 per hour

Recumbent bike:  
RM6 per hour

Choose your bike

Select your bike ▾

Hour:

Total

Your order detail:

## 5.0 SNAPSHOT OF THE DATABASE

The screenshot shows a database management interface with the following components:

- Top Bar:** Server: 127.0.0.1 » Database: bike\_rental » Table: rental. Navigation tabs: Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, Operations, Tracking, Triggers.
- Table Structure View:** Two tabs: Table structure (selected) and Relation view.
- Table Schema Table:**

| #                        | Name            | Type        | Collation          | Attributes | Null | Default | Comments | Extra | Action             |
|--------------------------|-----------------|-------------|--------------------|------------|------|---------|----------|-------|--------------------|
| <input type="checkbox"/> | 1 Package_type  | varchar(50) | utf8mb4_general_ci |            | No   | None    |          |       | Change  Drop  More |
| <input type="checkbox"/> | 2 Package_hour  | int(2)      |                    |            | No   | None    |          |       | Change  Drop  More |
| <input type="checkbox"/> | 3 Package_price | varchar(3)  | utf8mb4_general_ci |            | No   | None    |          |       | Change  Drop  More |
- Actions:** ☐ Check all With selected: Browse Change Drop Primary Unique Index Spatial Fulltext Add to central columns Remove from central columns
- Tools:** Print Propose table structure Track table Move columns Normalize
- Add Column:** Add 1 column(s) after Package\_price Go
- Indexes:** Indexes. Message: No index defined! Create an index on 1 columns Go
- Bottom Bar:** Partitions Console