

# ITC508 – Case Study 1

## Collin's Parking: Car Park System

Collin's Parking operates twenty car parks in Melbourne CBD. The city administration has a requirement for a new and innovative system to control its car parks. The new system should therefore be capable to handle the day-to-day operation of each car park, which include: generate tickets (i.e. daily, weekly, monthly, and annual), accept tickets, handle payments, control boom gates, record problems in a log book, and manage security.

Detailed information on some aspects of the Collin's Parking car parking system is listed below.

### Types of customers

There are two types of customers: ordinary customers, who pay every time whenever they use the car park; and fixed customers, who pay a fixed amount in advance to park their vehicles for week(s), month(s) and year in a specific car park. It is compulsory that a fixed customer can only park their vehicles in the designated spaces which are not available to ordinary customers.

### Tickets Generation

Depending on the type of user, the following types of tickets can be generated: (1) a fixed ticket is issued to a named individual or company, and the contact details (i.e. name, mobile number, residential address and emergency details) is recorded. These tickets could be issued for week(s), month(s) and year with a certain expiry date.

However, an ordinary ticket is issued for a short term (i.e. daily for few hours or a complete day) stay at the car park.

### Parking fees

Parking fees need to be calculated by using the following mechanism.

#### Fixed customer

1 week	50 AUD
2 weeks	95 AUD
1 month	150 AUD
3 months	350 AUD
6 months	575 AUD
12 months	800 AUD

#### Ordinary customer

Early bird (during weekday's midnight to 10 AM)	2.5 AUD per hour
Normal rate (during weekdays 10 AM to midnight)	5 AUD per hour
Early bird (during weekend's midnight to 10 AM)	5 AUD per hour
Normal rate (during weekend's 10 AM to midnight)	10 AUD per hour

### **Mode of payment**

Payment at car park can only be made through Card (Master / VISA / DEBT) or Cash (50c, 1\$, 2\$, 5\$, 10\$, 20\$, 50\$)

### **Access to the Car Park**

When a car approaches an entry barrier, its presence is detected by a sensor under the road surface, and a 'Press Button' display is flashed on the control pillar.

The ordinary customer must press a button on the control pillar, and a ticket is printed and issued. The ticket must be printed within five seconds. A 'Take Ticket' display is flashed on the control pillar. When the customer pulls the ticket from the control pillar, the barrier is raised. If the car park is full, no ticket is issued, and a 'Full' display is flashed on the control pillar.

The fixed ticket holder does not press the button, but insert their fixed ticket into a slot on the control pillar. A check is made that the ticket is valid for this car park and has not expired. If all these checks are passed, then the barrier is raised. The checks must take no longer than five seconds. A record is made of the time of entry.

### **Exit the Car Park**

Fixed ticket holders do not have to go to the pay station, when they are ready to leave the car park, they go to the exit and insert their ticket into a slot on the exit barrier control pillar. The barrier is raised and a record is made of the time at which the ticket holder left.

Ordinary ticket holders should go to the payment station to pay for their trip. To do so, the ticket is inserted into a slot, the bar code is checked and the fees will be calculated. Upon successful payment, the customer can go to the exit and insert their ticket into a slot on the exit barrier control pillar. The barrier is raised and a record is made of the time at which the ticket holder left.

### **Security Management**

The City administration has a contract with security companies to visit the car parks at regular intervals. The contract specifies the number of visits per day to each car park and the minimum duration of each visit. When a security guard arrives in a car park, he or she puts a card into the card reader and the date and time of arrival is recorded. When the security guard leaves, he or she puts the card in again, and the departure time is recorded. (This card also allows security guards to enter and leave the car park in the same way as fixed ticket holders. However, this is not used to record the arrival and departure of security guards, as they may not be able to enter with a vehicle if there is a queue of cars at the barrier.)

### **Note**

In case of missing information, kindly make suitable assumptions and mention them in your assignment.