

PROBLEM STATEMENT

Finding modern solution for conventional problems: Washing clothes

Design a program for managing and organizing a washing center

Data Structures used

- **Array**

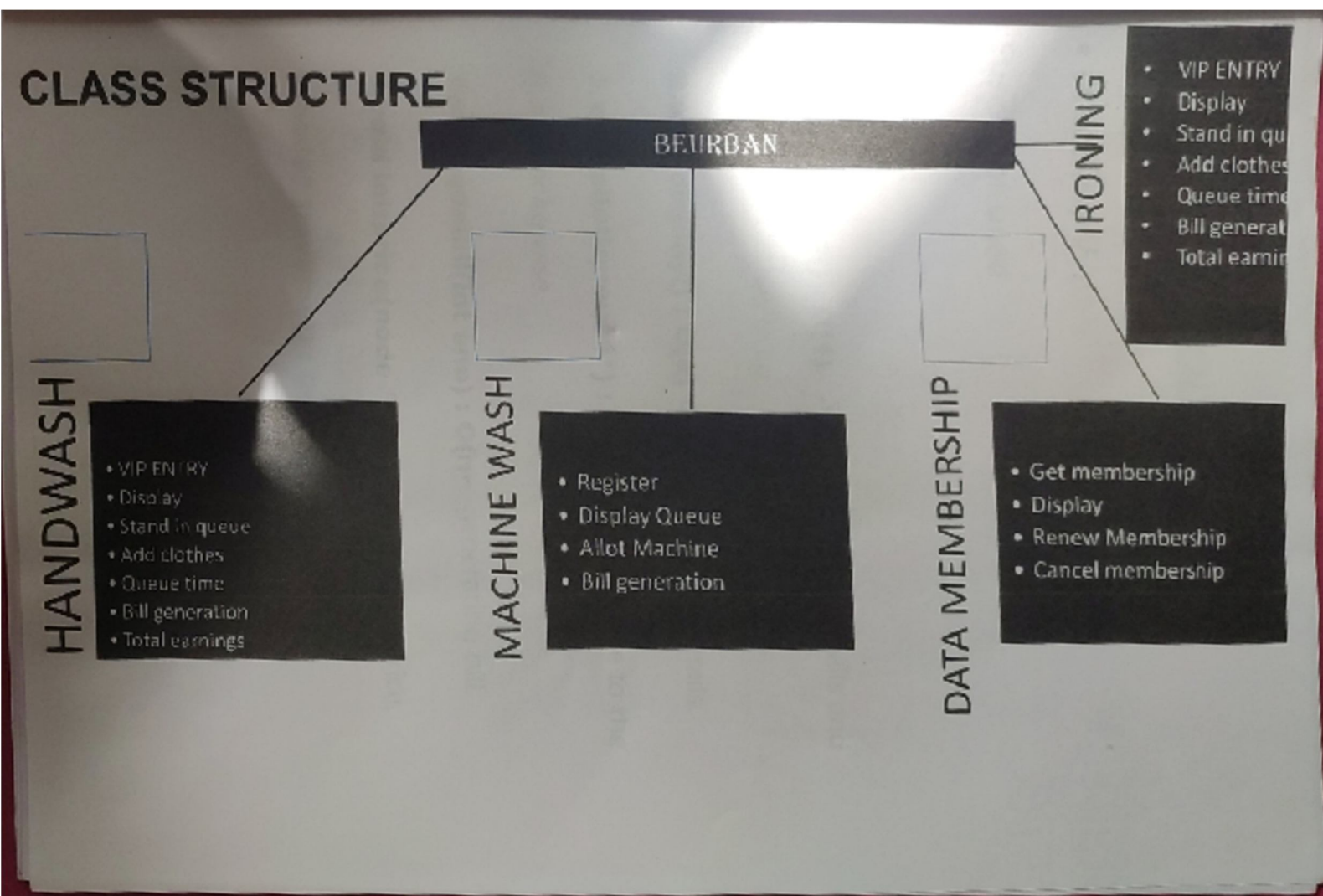
an **array data structure**, or simply an **array**, is a data structure consisting of a collection of *elements* (value or variable), each identified by at least one *array index* or *key*. An array is stored such that the position of each element can be computed from its index by a mathematical formula. The simplest type of data structure is a linear array, also called one-dimensional array. It is used to represent multiple data items of same type by using only single name. It can be used to implement other data structures like linked lists, stacks, queues, trees, graphs etc. 2D arrays are used to represent matrices.

- **Linked list**

a **linked list** is a linear collection of data elements, whose order is not given by their physical placement in memory. Instead, each element points to the next. It is structure consisting of a collection of nodes which together represent a sequence. In its most basic form, each node contains: data, and a reference (in other words, a *link*) to the next node in the sequence. We have used linked list because it is a dynamic data structure that allows us to easily insert or delete an element at any given position and there is efficient memory utilization. Also, in linked list there is no limit for insertion.

- **Queue**

a **queue** is a collection of entities that are maintained in a sequence and can be modified by the addition of entities at one end of the sequence and removal from the other end of the sequence. By convention, the end of the sequence at which elements are added is called the back or rear of the queue and the end at which elements are removed is called the head or front of the queue. The operation of adding an element to the rear of the queue is known as *enqueue*, and the operation of removing an element from the front is known as *dequeue*. Queue works with **FIFO** (*First in First Out*) data structure.



classes

```

class node
{
    int data;
    node*link;
public:
    friend class list;

```

```
};
```

```
class list
```

```
{
```

```
    node*start;
```

```
public:
```

```
    list()
```

```
{
```

```
    start = NULL;
```

```
}
```

```
};
```

INTRODUCTION

• Machine Wash

Functions used

class list:

1.void insert() : $O(1)$ - insert customer details and quantity of clothes in kg.

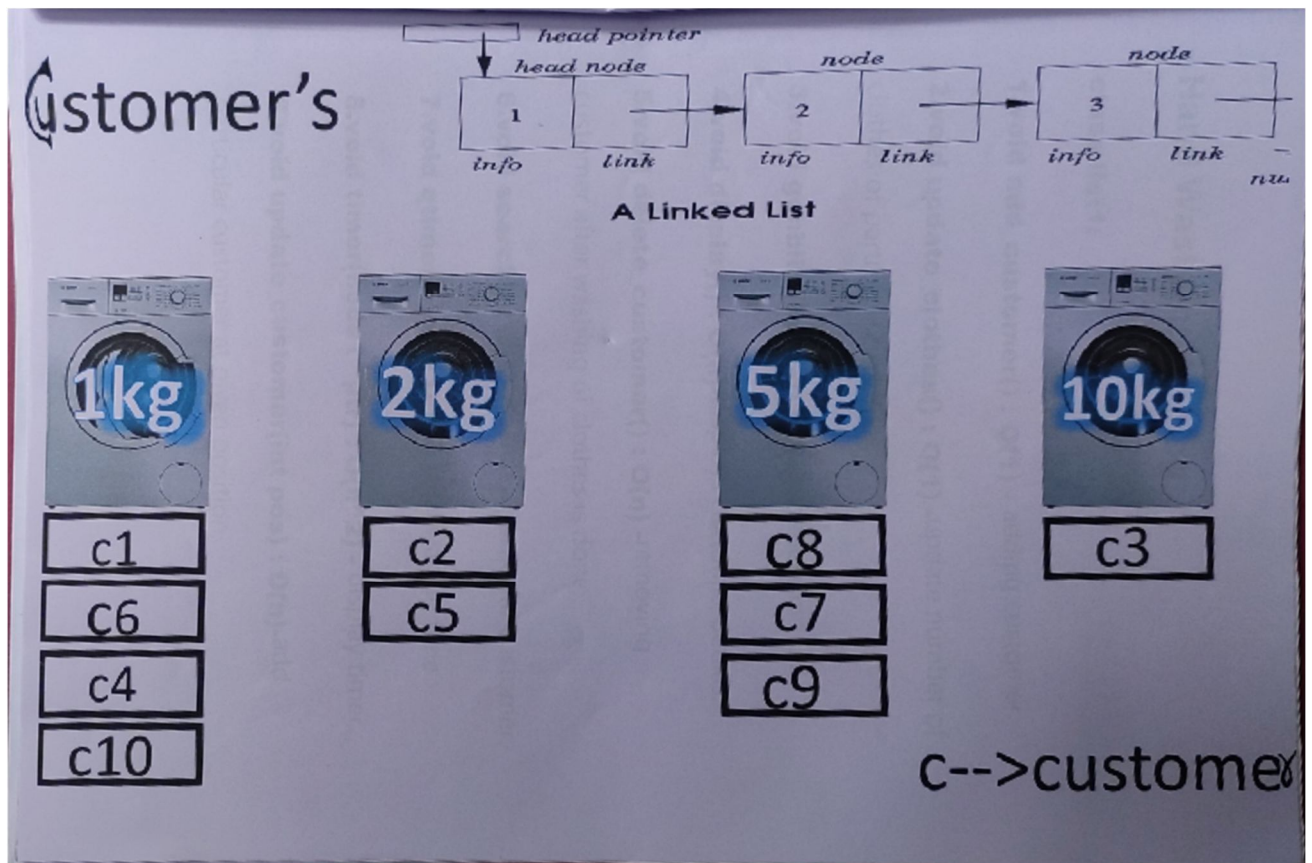
2.void display() : $O(n)$ - display customer details.

3.void allot(queue1*) : $O(n)$ - allot machine to the customer kg wise.

4.void genbill(int sno) : $O(n)$ – generating bill.

5.void initprice(node *) : $O(1)$ - set initial price.

6.node* traverse() : $O(n)$ - traversing list.



• Hand Wash And Ironing

class list1:

1.void add_customer() : $O(1)$ - adding customer.

2.void update_clothes() : $O(1)$ - update number of clothes of particular customer.

3.void genbill1(int sid) : $O(n)$ - generating bill.

4.void display() : $O(n)$ - displays customer details.

5.void delete_customer() : $O(n)$ - removing customer after washing of clothes is done.

6.void search() : $O(n)$ - search a particular customer.

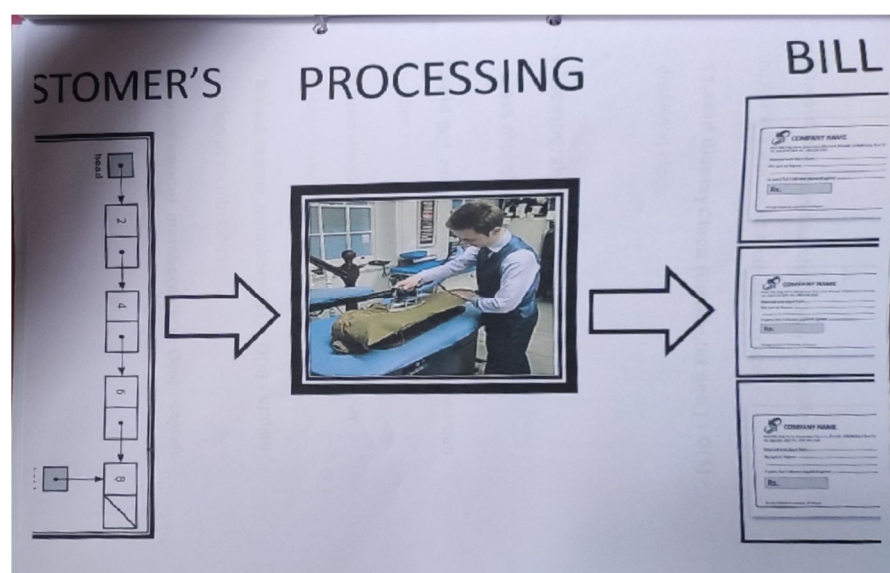
7.void qtime(int zid) $O(n)$ - total waiting time.

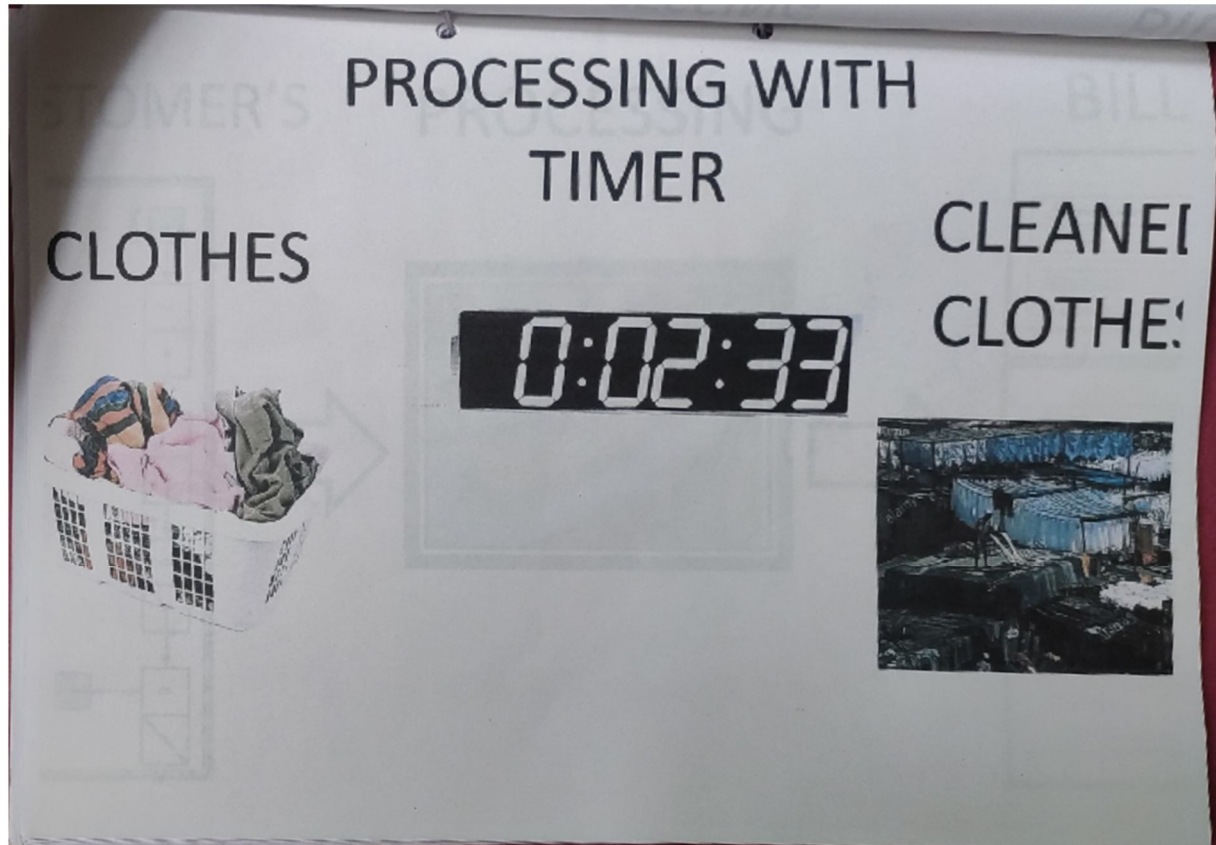
8.void timer(node1 *ptr) : $O(n^2)$ - display timer.

9.void update_customer(int pos) : $O(n)$ - add particular customer at given position.

10.void bill_handwash() : $O(n)$ - generates bill of customers who used handwash service.

11.void displayClock (int min,int sec) : $O(1)$ - displaying clock.





Membership

class membership

1. void get_membership() : $O(n)$ - be a BeUrban member.
2. void display_members() : $O(n)$ - display customers having membership.
3. void renew_membership() : $O(n)$ - update duration of membership.
4. void cancel_membership() : $O(n)$ - cancels BeUrban membership.

INSPIRATION

We visited Laundromat on Sinhagad Road and analysed their working.

1. We analysed how their database management is done.
2. Discussed about future prospects of his new shop at Kothrud.
3. Also, talked about multidisciplinary washing center.
4. Got to know about providing membership, offers and coupons to expand business.
5. Also, for better quality service we provided ironing and VIP entries for working class.

OUTPUT

output::

<BeUrban>

~~~~~

1.Machine Wash Section

2.Hand Wash Section

3.Ironing

4.BeUrban Membership

~~~~~

1

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

1.Insert customer

2.Display list

3.Display queue

4.Generate bill

0.Exit

Enter your choice1

Enter details::

Name::

vallari

Phone number::

9011452944

Weight of clothes in kg::

2

Arrival time of the customer::(Please enter in minutes) 10

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

1.Insert customer

2.Display list

3.Display queue

4.Generate bill

0.Exit

Enter your choice1

Enter details::

Name::

samruddhi

Phone number::

7448037689

Weight of clothes in kg::

5

Arrival time of the customer::(Please enter in minutes) 20

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|-------|---------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |

| | | |
|-------|--------|-------------------------|
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

- 1.Insert customer
- 2.Display list
- 3.Display queue
- 4.Generate bill
- 0.Exit

Enter your choice1

Enter details::

Name::

rutvika

Phone number::

8275284242

Weight of clothes in kg::

2

Arrival time of the customer::(Please enter in minutes) 80

Queue moved ahead

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|-------|---------------|
|------------------|-------|---------------|

Weight of clothes: 5

Arrival: 20

[illegible][illegible]

Customer no: 3

Name: rutvika

Phone: 8275284242

Weight of clothes: 2

Arrival: 80

[illegible]

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

- 1.Insert customer
- 2.Display list
- 3.Display queue

4.Generate bill

0.Exit

Enter your choice33

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

1.Insert customer

2.Display list

3.Display queue

4.Generate bill

0.Exit

Enter your choice3

1) One kg

2) Two kg

3) Five kg

4) Ten kg

Enter which machine queue you want to display?? 2

Customer no: 3

Job no: 2

Start time: 80

End time: 110

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

1.Insert customer

2.Display list

3.Display queue

4.Generate bill

0.Exit

Enter your choice3

1) One kg

2) Two kg

3) Five kg

4) Ten kg

Enter which machine queue you want to display?? 3

Customer no: 2

Job no: 1

Start time: 20

End time: 95

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

1.Insert customer

2.Display list

3.Display queue

4.Generate bill

0.Exit

Enter your choice4

Enter customer number to generate bill1

[illegible]

BILL

| Cust. no. | Kg clothes | Price per kg | Total amount |
|-----------|------------|--------------|--------------|
|-----------|------------|--------------|--------------|

| | | | |
|---|---|----|----|
| 1 | 2 | 20 | 40 |
|---|---|----|----|

[illegible]

Here are the details of the job::

There are 4 machines ,

| Machine capacity | Price | Time duration |
|------------------|--------|-------------------------|
| 1 kg | 20 Rs | 15 min. |
| 2 kg | 40 Rs | 30 min. |
| 5 kg | 100 Rs | 75 min.(1 hour 15 min.) |
| 10 kg | 200 Rs | 150 min(2 hrs 30 min) |

- 1.Insert customer
- 2.Display list
- 3.Display queue
- 4.Generate bill

0.Exit

Enter your choice0

1.Machine Wash Section

2.Hand Wash Section

3.Ironing

4.BeUrban Membership

2

1.Get in the Queue

2.VIP register

3.Display registration Module

4.Search Details

5.Add Clothes

6.Wait and Count down Time

7.Total Earnings of the days

8.Generate bill

Enter choice1

ENTER THE BeUrban ID-101

ENTER NAME:sakshi

ENTER NUMBER OF CLOTHES:2

ESTIMATED BILL :10 INR

ESTIMATED TIME FOR THESE CLOTHES: 2 min

1. Get in the Queue
2. VIP register
3. Display registration Module
4. Search Details
5. Add Clothes
6. Wait and Count down Time
7. Total Earnings of the days
8. Generate bill

ENTER THE BeUrban ID-102

ENTER NUMBER OF CLOTHES:10

Stay calm, we are working as fast as we can

ESTIMATED TIME FOR THESE CLOTHES:10 min

1. Get in the Queue
2. VIP register
3. Display registration Module
4. Search Details
5. Add Clothes
6. Wait and Count down Time

```
8.Generate bill
Enter choice3
```

Enter choice3

[illegible]

6.Wait and Count down Time

8. Generate bill

Enter the id:102

ID:102

CLOTHES:10

TIME:10

QUEUE TIME:0

1. Get in the Queue

2.VIP register

3.Display registration Module

4. Search Details

5.Add Clothes

6.Wait and Count down Time

7.Total Earnings of the days

8. Generate bill

Enter choice5

Enter the id:102

NAME:anushka

ID:102

No of Clothes:2

CLOTHES:12

1. Get in the Queue
2. VIP register
3. Display registration Module
4. Search Details
5. Add Clothes
6. Wait and Count down Time
7. Total Earnings of the days
8. Generate bill

Enter ID:101

BILL

| No. of clothes | Rate | Amount |
|----------------|------|--------|
|----------------|------|--------|

1. Get in the Queue
2. VIP register

- Total revenue of the section is 60