

# MODELLING AND SIMULATION FOR FOOD ORDERING SYSTEM FOR A DIGITAL CAFETERIA

**SUBMITTED BY:**

**PARTICIPANT 01:**

**NAME: SRISTI MITRA**

**ROLL: 2K19/CO/389**

**PARTICIPANT 02:**

**NAME: ZISHNENDU SARKER**

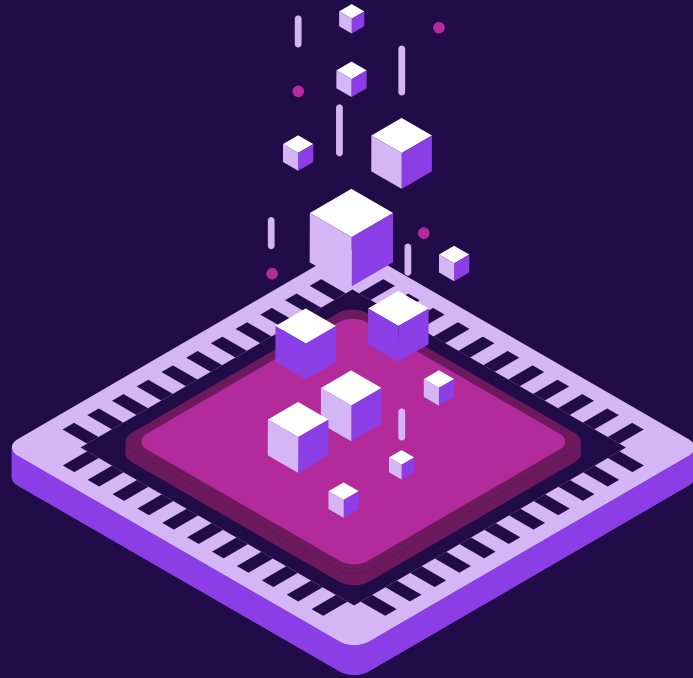
**ROLL: 2K19/CO/450**

**SUBMITTED TO:**

**PRATIBHA KAMAL MAAM**

**DELHI TECHNOLOGICAL UNIVERSITY**





# INTRODUCTION

Here we start presenting our aim, objective and the whole work done for the project.

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## INTRODUCTION

*Here we will describe about our aim , work and objective of the project*

03

## TECHNICAL DOCUMENTATION AND RESULT

*Here we show the code of the system, its concept, implementation and its output*

02

## APPROACH

*Here we are mentioning the methodology of our work*

04

## CONCLUSIÓN

*Here we stretching an end to our project and also including the references which inspired us to the work*

## OUR AIM

Nowadays, we can see the restaurant business is on its peak. So, we choose our project to,

- a digital cafeteria, where the system is under a computer program
- be more feasible
- give most comfort to the customers
- save time of the customer



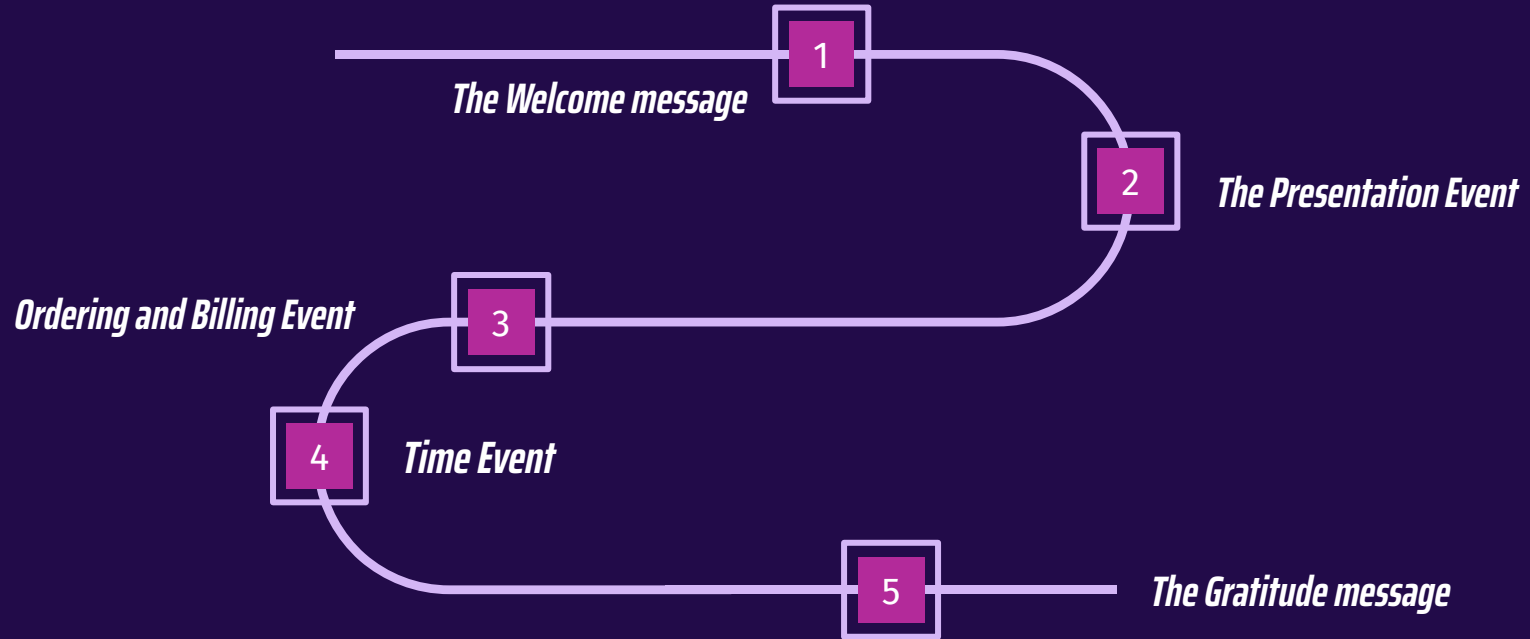


## OBJECTIVE

- This system of food ordering, no customer has to stay in line
- They are available with the overview of the whole menu card with which food's price
- They are being able to be conscious about the time event.
- They are also paying digitally where it is safer for the customer and also for the restaurant.

And if we see the current situation where the pandemic is preventing us from going outside and human interaction is not safe anymore, our digital restaurant or cafeteria system is a safer option for people to dine outside by avoiding crowd.

# APPROACH



# APPROACH

## WELCOME MESSAGE



They may arrive alone or in a group and as soon as they arrive, they will be treated with a welcome message such as “Welcome to the restaurant. Hope you are having a smile on your face”.

## THE PRESENTATION EVENT



The system will show the menu card where there will be price , quantity available with the foods. The customer will also be able to see the time for preparing food. They will be able to order food as their sweet-will.

# APPROACH

## ORDERING AND BILLING EVENTS



System will allow the option ordering the preferable meals and also the option for modifying the order. Then according to the order, calculation and payment of bill will occur

## TIME EVENT



The system will show the customer the waiting time , and inform him how much time he needs to wait for food and he can be conscious about time

## THE GRATITUDE EVENT



After the payment of the order, the system will also show gratitude for receiving the food ordered by them with a message like “Thank you for ordering from us. Hope you will like your meal. Have a nice day.” This will complete the system



# TECHNICAL DOCUMENTATION AND RESULT

HERE WE WILL PRESENT OUR CODE , RESULTS AND THE EXPLANATION OF THE CODES AND CONCEPTS FOR MAKING THIS PROJECT SUCCESSFUL.



AND ALSO INCLUDE THE GRAPH CHART AND ALSO THE SURVEY RESULTS

# DOCUMENTATION PLAN



*Our goal is present a proper working , efficient , beneficial food ordering system for a digital cafeteria*



*Conducted a quick survey with people to get the opinion about this system*



*Taking c++ language for to build the code*



*Identifying the problem and making a structure to solve and implement it*



*Codeblocks, Turbo C++ as software and some websites as references help us to reach our goal*

# STRUCTURE AND DESIGN



We took our project name as  
“FOOD ORDERING SYSTEM FOR  
A DIGITAL CAFETERIA”



Sort out the problem step by  
step and also build the solution  
alongside



We combine all the solutions  
sequentially and make it  
easier to understand and also  
make it feasible.



We try to make this  
system user friendly



After completing the whole  
code, it will be easier for  
the developers to  
understand the code to  
develop further if needed.



After identifying the  
problem, firstly we make a  
draft



Secondly, according to the  
draft we made a flowchart



We took all necessary  
information and followed  
the proper steps for the  
accuracy of the flowchart.



Double checked the  
flowchart for better  
options



According to the flowchart,  
we build our code.

# CONCEPT USED

Single Server Queue



Discrete System

Multiple server Queue

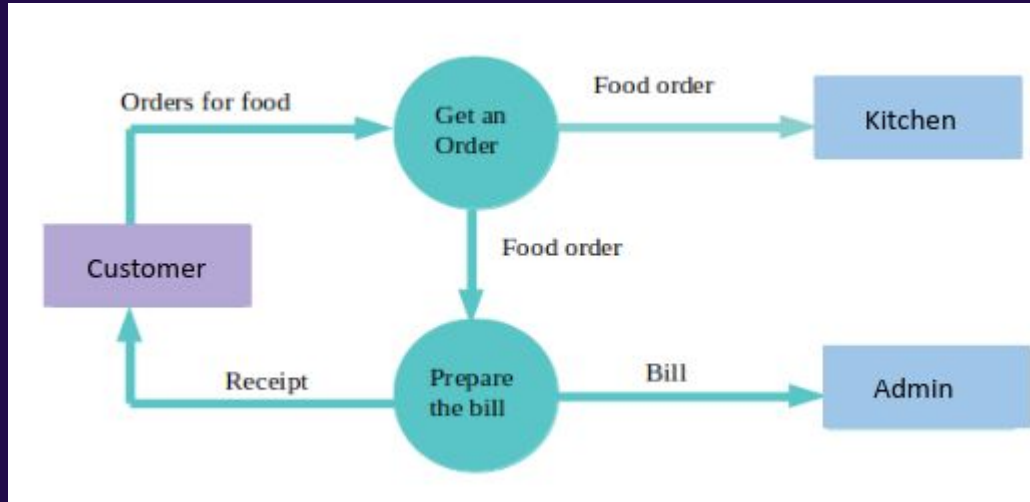


Time Advance Mechanism



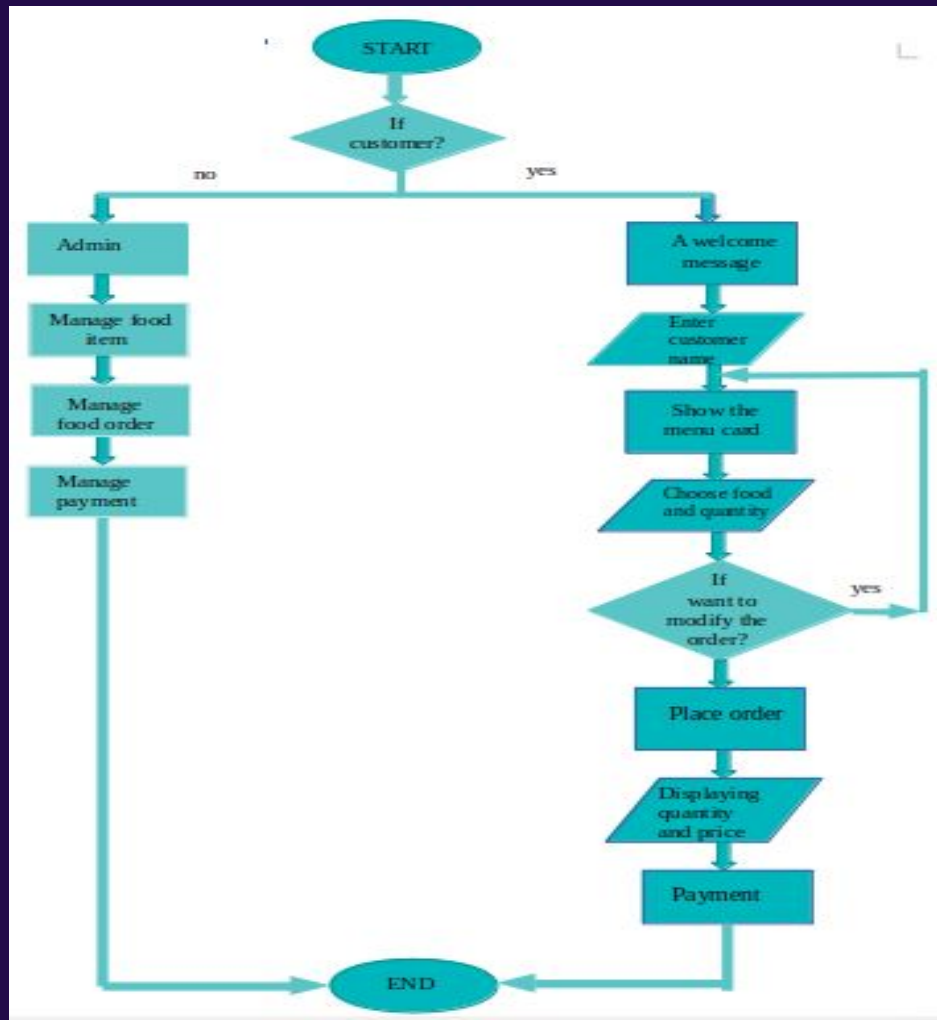
Concepts Of C++ Programming

# DATA FLOW DIAGRAM



# FLOWCHART

CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon**, and infographics & images by **Freepik**.



# IMPLEMENTATION OF QUEUEING SYSTEM

HERE, WE ARE SHOWING A DRAFT WHERE WE TOOK PEAK HOURS AS 12pm,  
TAKING 7 CUSTOMERS IN 10 MINUTES AND IMPLEMENTED FOR OUR SYSTEM

CUSTOMER	ARRIVAL TIME OF CUSTOMER	SERVICE TIME BEGINS	DURING SERVICE TIME	SERVICE TIME ENDS	WAITING TIME OF CUSTOMER	IDLE TIME OF THE SYSTEM
01	00	00	02	02	00	00
02	01	02	01	03	01	00
03	04	04	01	05	00	01
04	05	05	01	06	00	00
05	06	06	01	07	00	00
06	09	09	02	11	00	02
07	10	11	02	13	01	00

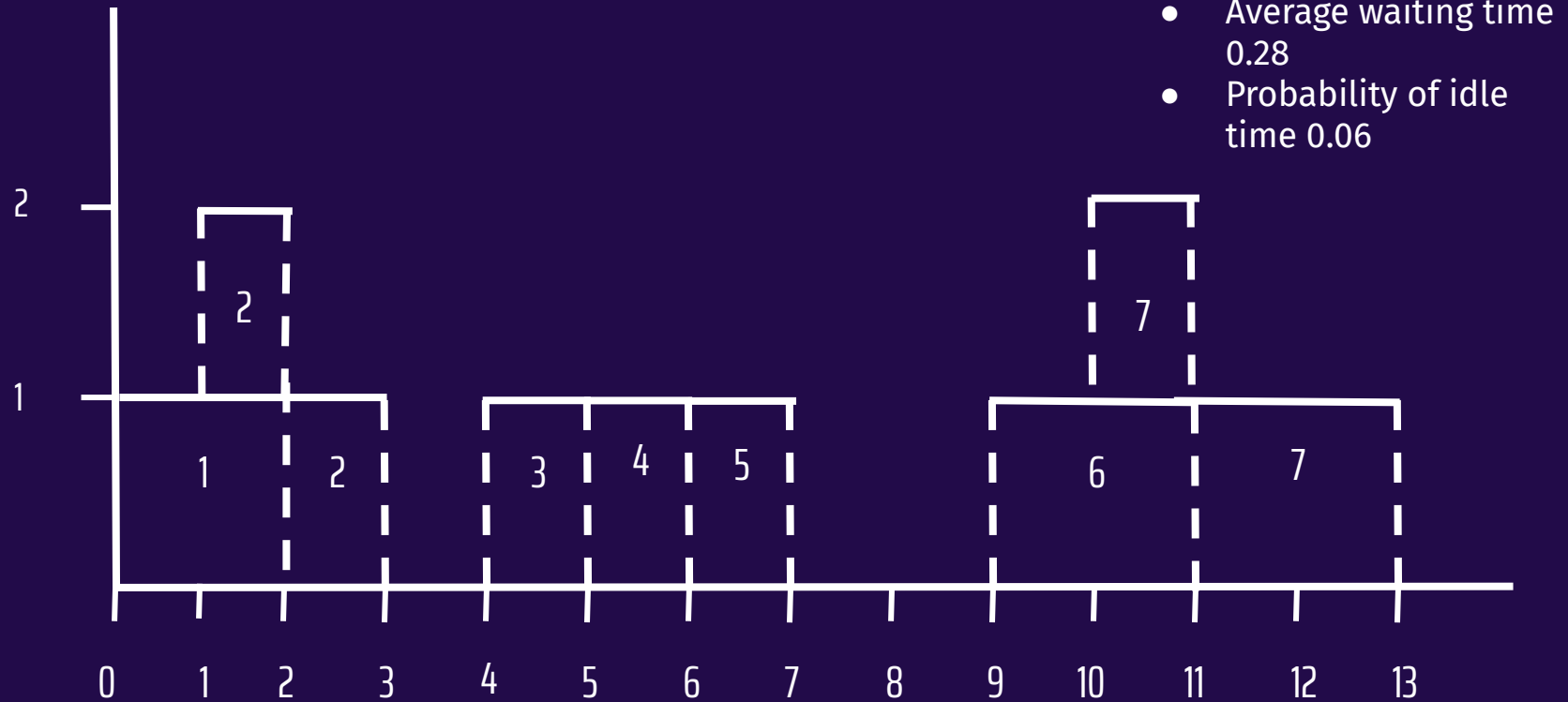
Table For Bar CHART

EVENTS	CUSTOMER NUMBER	CLOCK TIME
ARRIVAL	01	00
ARRIVAL	02	01
DEPARTURE	01	02
DEPARATURE	02	03
ARRIVAL	04	04
DEPARTURE	03	05
ARRIVAL	04	05

EVENTS	CUSTOMER NUMBER	CLOCK TIME
DEPARTURE	04	06
ARRIVAL	05	06
DEPARTURE	05	07
ARRIVAL	06	09
ARRIVAL	07	10
DEPARTURE	06	11
DEPARTURE	07	13



# BAR CHART



A DRAFT  
IMPLEMENTATION OF  
SINGLE SERVER  
QUEUE

TIME BETWEEN ARRIVAL	PROBABILITY	CUMULATIVE PROBABILITY	RANDOM DIGITS
01	0.07	0.07	0-07
02	0.07	0.14	08-14
03	0.07	0.21	15-21
04	0.07	0.28	22-28
05	0.07	0.35	29-35
06	0.07	0.42	36-42
07	0.07	0.49	43-49
08	0.07	0.56	50-56
09	0.07	0.63	57-63
10	0.07	0.70	64-70

## DISTRIBUTION TABLE OF SERVICE TIME:

Order time / service time	PROBABILITY	CUMULATIVE PROBABILITY	RANDOM DIGITS
01	0.30	0.30	0-30
02	0.25	0.55	31-55
03	0.2	0.75	56-75
04	0.1	0.85	76-85
05	0.1	0.95	86-95
06	0.03	0.980	96-98
07	0.02	1.00	98-100

RANDOM VALUES ARE: 15,25,30,40,35,55,44,60

DETERMINING THE TIME BETWEEN ARRIVAL:

CUSTOMER	RANDOM DIGIT	TIME BETWEEN ARRIVAL
01	0	0
02	15	3
03	25	4
04	30	5
05	40	6
06	35	5
07	55	9

RANDOM VALUES ARE: 11,25,35,38,60,98,96,44,65

DETERMINING THE TIME BETWEEN SERVICE:

CUSTOMER	RANDOM DIGIT	TIME BETWEEN SERVICE
01	11	1
02	25	1
03	35	2
04	38	2
05	60	4
06	98	7
07	96	6

# SINGLE SERVER QUEUEING SYSTEM

CUSTOMER	INTER ARRIVAL TIME	ARRIVAL TIME	SERVICE TIME	TIME SERVICE START	WAITING TIME OF CUSTOMER	TIME SPEND ENDS	TIME SPEND IN SYSTEM	IDLE TIME
1	0	0	1	0	0	1	1	0
2	3	3	1	3	0	4	1	2
3	4	7	4	7	0	11	4	3
4	5	12	2	12	0	14	2	3
5	6	18	6	18	0	24	6	4
6	5	23	7	24	1	31	7	0
7	9	32	6	32	0	38	6	1
TOTAL=			27		1		27	13

- Average Waiting time : 0.14 minute
- Probability of idle time of system : 0.34 . That means 34%

## OUTPUT

END

START

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

Your Total Bill is 100

Pay your Bill : 200

Your Change: 100 Rs.

Your Order Will be delivered in 4 Minutes

Your token number is : 1

Thank you For Ordering

ArrivalTime : Thu Nov 12 13:24:31 2020

Order Finishing Time : Thu Nov 12 13:29:11 2020

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

|| DIGITAL FOOD ORDERING SYSTEM OF A CAFETERIA

Hope you are having a smile on your face!

- 1.) Are you a Customer?
- 2.) Are you an Administrator?
- 3.) Read me
- 4.) EXIT

Please Enter this(1/2/3/4):

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

- 1.) Do you want to order your food?
  - 2.) Do you see your order?
- Give your choice :

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

ArrivalTime : Thu Nov 12 13:24:31 2020

----|| WELCOME TO OUR RESTAURANT ||----

----|| HOPE YOU HAVE A SMILE ON YOUR FACE ||----

Hello sristi389

Phone number : 8764673

-----Food Menu-----

- 01) TEA
- 02) PARATHA
- 03) DOSA
- 04) IDLI
- 05) EGG
- 06) SANDWICH
- 07) PIZZA
- 08) BURGER
- 09) BIRYANI
- 10) FRIED RICE
- 11) CHICKEN
- 12) FRENCH FRIES
- 13) ROLLS
- 14) DRINKS

- 15) Do you want to see your order?
- 16) Go back to previous menu

Please Enter your Choice: 1

## FOR CUSTOMER

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

- 1) Small Rs.50
- 2) Regular Rs.80
- 3) Large Rs.100
- 4) Go back to Previous Menu

Choose Size Please: 1

Please Enter Quantity: 2

DO YOU WANT TO ORDER MORE(Y|N)? : n

C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

- 1) Small Rs.50
- 2) Regular Rs.80
- 3) Large Rs.100
- 4) Go back to Previous Menu

Choose Size Please:

**OUTPUT**

```
C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

||      DIGITAL FOOD ORDERING SYSTEM OF A CAFETERIA
-----
                                     Hope you are having a smile on your face!

1.) Are you a Customer?
2.) Are you an Administrator?
3.) Read me
4.) EXIT
Please Enter this(1/2/3/4):
```

**START**

**END**

```
C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

Give your Name and password to log in ....
Give your name : SristiM
Give your password : ****
```

```
C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

1.) See individual customer order
2.) Total order list
3.) Delete order
4.) Go back to previous menu
Enter your choice (1/2):
```

**For Administration Side**

```
C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

Find out who placed order :
-----
Input the filename to be opened : 1.txt

sristi389- 8764673
GINGER TEA - 1 - 2
```

```
C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe

Volume in drive C is OS
Volume Serial Number is 00DD-AC95

Directory of C:\Users\sristi\Desktop\oop2

11/12/2020  08:17 PM    <DIR>          .
11/12/2020  08:17 PM    <DIR>          ..
11/12/2020  08:17 PM                30 1.txt
11/12/2020  08:17 PM                33 2.txt
11/12/2020  08:17 PM                36 3.txt
```

```
Select C:\Users\sristi\Desktop\oop2\cafeteria oop project.exe
Input the filename to be deleted : 1.txt

Order deleted
```

# CONCLUSION



The visualization of customer and counters utilization combined with statistical data can be used by expert to redefine digital cafeteria. Possible transformations of the schedule are also visible.

This model provides “what if” analysis for further improvement of the schedule generated with heuristic algorithms. The system constructed by us will be server friendly. It is also useful for cafeteria schedule adjustment for unexpected changes of input data and parameters, when heuristics are excessive for regeneration of a new schedule. By the respective project, we are showing a fully digitalized cafeteria which will be efficient and beneficial for both the customer and our system.



# THANKING YOU

Does anyone have any questions ?

[zishnendusarker\\_2k19co450@dtu.ac.in](mailto:zishnendusarker_2k19co450@dtu.ac.in)

[sristimitra\\_2k19co389@dtu.ac.in](mailto:sristimitra_2k19co389@dtu.ac.in)