# Capstone Project

## Team : Algorithm Architects

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## P3 - Entry Queue Manager

You need to build an entry queue manager for a stadium. There are N entry gates. As people keep coming in, they can line up in any of the queues or switch queues anytime if they think that will get them a quicker entry. The entry queue manager helps them in making that decision by suggesting:

(i) the waiting time for the last person in the queue to enter through any gate (assume that it takes p mins for a single attendee to enter any gate),

(ii) the particular queue number(s) where one should be switching.
The queue manager must be designed to minimise the time for M people to enter the stadium. Each gate has an initial random assignment of M/2 people (a gate may not have anyone assigned).

Comments:
● Please look at the changes.
● “Initial random assignment of M/2 people”: Half of the total number of attendees (i.e., the capacity of the stadium) are already assigned to each of the gates randomly (may not be equally distributed).

**Link to GitHub Repository :**
**https://github.com/akshadamodak06/CapstoneP3.git**
**Brief Overview of our Project**

1. **We have created a GUI based Application**

    - This application is an entry queue manager which helps users in making decisions by suggesting the waiting of the last person in the queue to and the particular queue number where one should be switching . It suggests to the user how to  reach the stadium in a minimum amount of time.

2. **The Application has the following features:**

    - **Vip Feature** - The application asks whether the user is a Vip Attendee and accordingly gives a faster entry.
    - **Group/Family Feature** -The application asks whether the user is attending the match with group/family and accordingly offers them the option to stay together throughout the process i.e, shift and insert in the same line.
    - **Insert Newcomers** - The application suggests the newcomers (user and its group(if any)) to stand at the gate that has the most optimised queue hence offering them the least waiting time.
    - **Shifting** - The application suggests the people standing in the queue, a better position at one of the other gates if it offers them lesser waiting time than their current gate.
    - **Multiple Authority Usage** - This application can be used by both the stadium authority and stadium attendee.

- **Generalised** - The application is generalised as it is applicable to every stadium . The application caters the needs of the Group and Vip users .

3. **The Application also provides the time after which all the people standing in the queue go inside the stadium by minimising it for every person.**

4. **The Application also deals with the situation where people do not attend the match.**

## Pseudocode

### 1. Insert New function

```
Function InsertNew(people, group_t):
    index_of_min = 0
    counter = 0
    min = arr_of_gates[0]

   while (people != 0)
       min = arr_of_gates[0]

    for (counter = 0 to Gates - 1)
           if arr_of_gates[counter] <= min:
              min = arr_of_gates[counter]
              index_of_min = counter
           End if

    if group_t == 0:
           arr_of_gates[index_of_min] += 1
           people -= 1
     End if
```

```
    else:
        arr_of_gates[index_of_min] += group_t
        people -= 1
End while

 return index_of_min + 1
```

**Space Complexity - O(1)**
**Time Complexity - O(people *gates)**
**- O(n^2)**

## 2. InsertNewVip function

```
Function InsertNewVip(peopleVip, groupVip_t):
   index_of_min = 0
   counter = 0
   min = arr_of_vip[0]

   while peopleVip != 0:
      min = arr_of_vip[0]

      for counter = 0 to VipGates - 1:
         if arr_of_vip[counter] <= min:
            min = arr_of_vip[counter]
            index_of_min = counter
          End if
      if groupVip_t == 0:
         arr_of_vip[index_of_min] += 1
         peopleVip -= 1
      else:
         arr_of_vip[index_of_min] += groupVip_t
         peopleVip -= 1
        End if
    End while
    return index_of_min + 1
```

**Space Complexity - O(1)**
**Time Complexity - O(PeopleVip *Vip Gates)**
**- O(n^2)**

## 3. shiftVip1 function

```
Function shiftVip1(queue_person, standing, poptime, groupVip_t):
   size = arr_of_vip[queue_person]
```

```
    if size > standing:
        if groupVip_t != 0:
            Print "Your last group member is not the last member in the queue. You cannot Shift."
            Print "It will take", poptime * standing, "mins from your current position for all members
    of the group to reach the stadium."
        else:
            Print "You are not the last member in the queue. You cannot Shift."
            Print "It will take", poptime * standing, "mins from your current position to reach the
    stadium.”
    End if
        else if size == standing:
            min = arr_of_vip[0]
            a = -1

            for( j = 0 to VipGates - 1)
                if min >= arr_of_vip[j]:
                    a = j
                    min = arr_of_vip[j]
                 End if
            if a != -1 and (min + groupVip_t) < arr_of_vip[queue_person]:
                Print "It will take", poptime * standing, "mins from your current position to reach the
    stadium."
                Print "You have to move to queue", a + 1
                if groupVip_t != 0:
                    arr_of_vip[a] += groupVip_t
                    arr_of_vip[queue_person] -= groupVip_t
                else:
                    arr_of_vip[a]++
                    Arr_of_vip[queue_person]--
                 End if
                Print "It will take", poptime * arr_of_vip[a], "mins from your new position to reach the
    stadium."
            else:
                if groupVip_t != 0:
                    Print "You and your group members are at the most optimised place."
                    Print "It will take", poptime * standing, "mins from your current position to reach the
    stadium."
                else:
                    Print "You are at the most optimised place."
                    Print "It will take", poptime * standing, "mins from your current position to reach the
    stadium."
                End if
        else:
            Print "Enter your accurate standing in your queue"
        End if
    End function
```

**Space Complexity - O(1)**
**Time Complexity - O(VipGates)**

**-O(n)**

# 4. Shift1 function

```
Function shift1(queue_person, standing, poptime, group_t):
   size = arr_of_gates[queue_person]

   if size > standing:
      if group_t != 0:
         Print "Your last group member is not the last member in the queue. You cannot Shift."
         Print "It will take", poptime * standing, "mins from your current position for all members
of the group to reach the stadium."
      else:
         Print "You are not the last member in the queue. You cannot Shift."
         Print "It will take", poptime * standing, "mins from your current position to reach the
stadium."
End if
   else if (size == standing)
      min = arr_of_gates[0]
      a = -1

      for (j = 0 to Gates - 1)
         if min >= arr_of_gates[j]:
            a = j
            min = arr_of_gates[j]

      if a != -1 and (min + group_t) < arr_of_gates[queue_person]:
         Print "It will take", poptime * standing, "mins from your current position to reach the
stadium."
         Print "You have to move to queue", a + 1
         if group_t != 0:
            arr_of_gates[a] += group_t
            arr_of_gates[queue_person] -= group_t
         else:
            arr_of_gates[a]++
            arr_of_gates[queue_person]--
         Print "It will take", poptime * arr_of_gates[a], "mins from your new position to reach the
stadium."
         End if
      else:
         if group_t != 0:
            Print "You and your group members are at the most optimized place."
            Print "It will take", poptime * standing, "mins from your current position to reach the
stadium."

         else:
            Print "You are at the most optimized place."
```

```
            Print "It will take", poptime * standing, "mins from your current position to reach the
stadium."
         End if
    else:
       Print "Enter your accurate standing in your queue"
   End if
 End function
```

**Space Complexity - O(1)**
**Time Complexity - O(Gates)**
**-O(n)**

## 5. Shift function

```
Function shift():
   For i = 0 to Gates - 1:
      min = arr_of_gates[0]
      a = -1
      For j = 0 to Gates - 1:
         If min >= arr_of_gates[j]:
            a = j
            min = arr_of_gates[j]
         End If
      End For
      If a != -1 and min < arr_of_gates[i]:
         Increment arr_of_gates[a] by 1
         Decrement arr_of_gates[i] by 1
      End If
   End For
End Function
```

**Space Complexity -O(1)**
**Time Complexity - O(Gates^2)**
**-O(n^2)**

## 6. ShiftV function

```
Function shiftV():
   For i = 0 to VipGates - 1:
      min = arr_of_vip[0]
      a = -1
      For j = 0 to VipGates - 1:
         If min >= arr_of_vip[j]:
            a = j
            min = arr_of_vip[j]
         End If
      End For
```

```
        If a != -1 and min < arr_of_vip[i]:
            Increment arr_of_vip[a] by 1
            Decrement arr_of_vip[i] by 1
        End If
    End For
End Function
```

**Space Complexity -O(1)**
**Time Complexity - O(VipGates^2)**
**-O(n^2)**

# 7. Function main():

```
    Declare capacity, gates, poptime, time_of_entry, VG, capacity_vip as integers

    Print "Enter the capacity of your stadium: "
    Read capacity from user

    Print "Enter the capacity of VIP people in your stadium: "
    Read capacity_vip from user

    Print "Enter the number of gates to be used for entering the people in the stadium: "
    Read gates from user

    Print "Enter the number of VIP gates used for entering the people in the stadium: "
    Read VG from user

    Print "Enter the time required for the population in minutes: "
    Read poptime from user

    Print "Enter the amount of time (in minutes) for which the entry gates should be open: "
    Read time_of_entry from user

    Set max_time to time_of_entry / poptime
    Set capacity to capacity - capacity_vip
    Set gates to gates - VG

    Create an EntryQueueManager object e with parameters (capacity, gates, VG,
capacity_vip)
    e.RandomAssignment_initial()
    e.RandomAssignmentVip_initial()
    e.display()

    Set remaining_total_V to capacity_vip / 2
    Set remaining_total to capacity / 2

    Print "Do you have a VIP pass?"
    Print "Enter 0 if Yes and 1 if No: "
```

```
Read vip_checker from user

If vip_checker == 0:
   Set remaining to capacity / 2
   Set remainingV to capacity_vip / 2 - 1
Else if vip_checker == 1:
   Set remaining to capacity / 2 - 1
   Set remainingV to capacity_vip / 2
Else:
   Print "Enter correct value"
   Return 0

Set time_total to 0
Set checker to 0
Set group_checker to 0

While (remaining_total != 0 or remaining_total_V != 0) and checker != max_time:
   Read num from user

   Switch num:
      Case 0:
         Read num1 from user
         If num1 == 0:
            Read group from user
            Increment group
            If vip_checker == 0:
               If group == 1:
                  Set moving_queue to e.InsertNewVip(1, group_checker)
                  Decrement remaining_total_V
                  Print "You have to move to queue", moving_queue
               Else:
                  Set group_checker to group
                  Set moving_queue to e.InsertNewVip(1, group_checker)
                  Decrement remaining_total_V by group_checker
                  Set remainingV to remainingV - group_checker + 1
                  Print "You all have to move to VIP queue", moving_queue
            Else:
               If group == 1:
                  Set moving_queue to e.InsertNew(1, group_checker)
                  Decrement remaining_total
                  Print "You have to move to queue", moving_queue
               Else:
                  Set group_checker to group
                  Set moving_queue to e.InsertNew(1, group_checker)
                  Decrement remaining_total by group_checker
                  Set remaining to remaining - group_checker + 1
                  Print "You all have to move to queue", moving_queue
         Else if num1 == 1:
            Read group from user
```

```
                Increment group
                If vip_checker == 0:
                    If group == 1:
                        Read queue_person from user
                        Read standing from user
                        Decrement queue_person by 1
                        Call e.shiftVip1(queue_person, standing, poptime, group_checker)
                    Else:
                        Set group_checker to group
                        Read queue_person from user
                        Read standing from user
                        Decrement queue_person by 1
                        Call e.shiftVip1(queue_person, standing, poptime, group_checker)
                Else:
                    If group == 1:
                        Read queue_person from user
                        Read standing from user
                        Decrement queue_person by 1
                        Call e.shift1(queue_person, standing, poptime, group_checker)
                    Else:
                        Set group_checker to group
                        Read queue_person from user
                        Read standing from user
                        Decrement queue_person by 1
                        Call e.shift1(queue_person, standing, poptime, group_checker)
            Else:
                Read peopleV from e.RandomAssignmentVip(remainingV)
                Call e.InsertNewVip(peopleV, group_checker)
                Decrement remainingV by peopleV
                Decrement remaining_total_V by peopleV
                Read people from e.RandomAssignment(remaining)
                Call e.InsertNew(people, group_checker)
                Decrement remaining by people
                Decrement remaining_total by people
            Set group_checker to 0
        Default:
            Call e.shift()
            Call e.shiftV()
            Call e.pop()
            Call e.popV()
            Increment checker
            Call e.display()

Set time_total to checker * poptime
Print time_total
Print "No new Entry allowed now for entering the line"
Set checker to 0
Set remaining to e.people_in_queue()
Print remaining
```

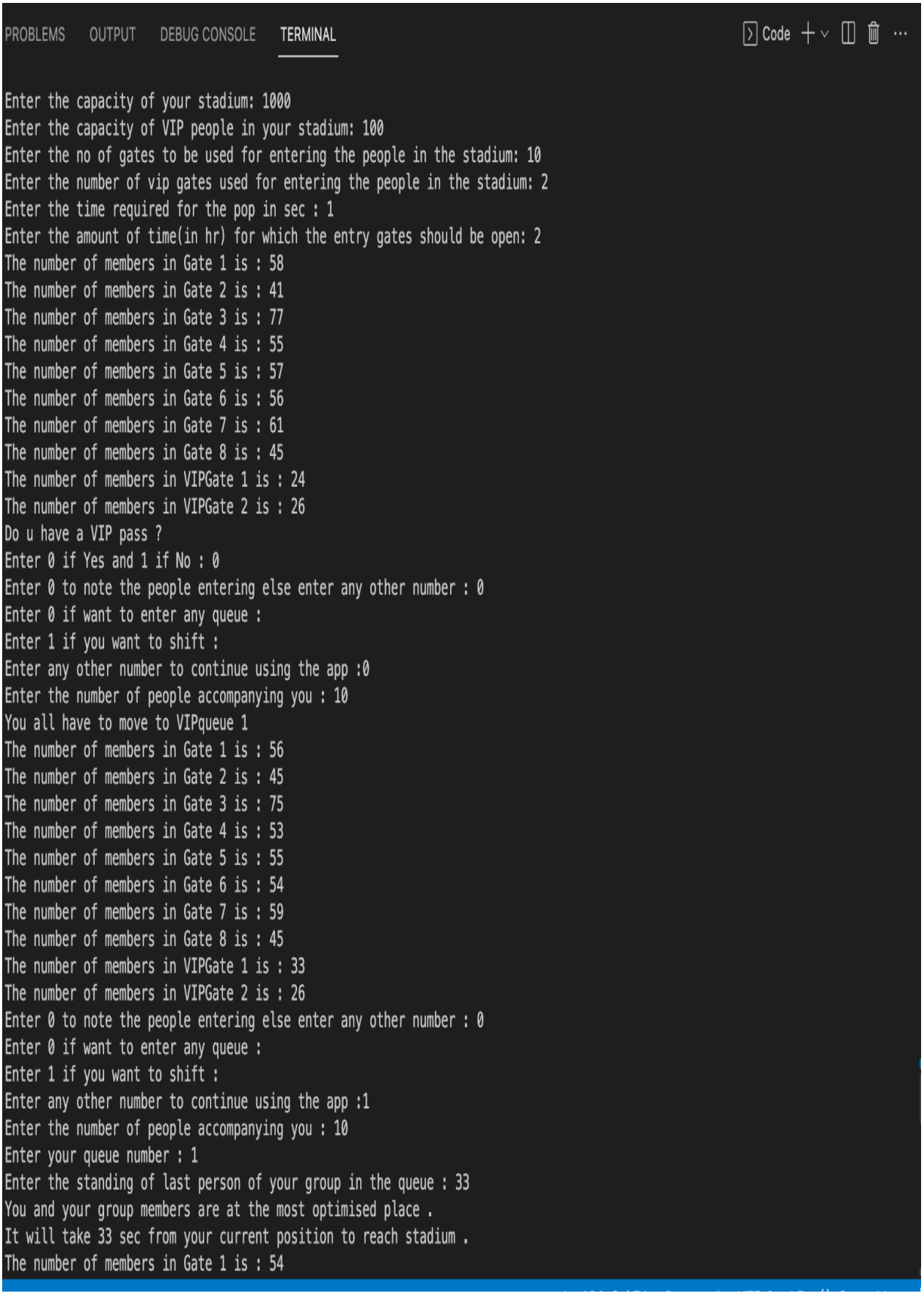
```
    If remaining != 0:
        While remaining != 0:
            Call e.shift()
            Call e.pop()
            Increment checker
            Set remaining to e.people_in_queue()

    Increment time_total by checker * poptime
    Print "Total time required for the people to enter is:", time_total

End main
```

## Data Structure for the application - One Dimensional Array

- The application uses a one dimensional array that stores the number of people on every gate .
- The size of the array is equal to the number of gates in the stadium .
- The initial choice for data structure was vector deque or a queue using stl .
- Vector deque was chosen as the application required pop from the front(at the gate entrance) .It required pop and push from the back for allowing shift and insertion of newcomers.
- However the vector deque increased space complexity .
- We realised that for the application to run we only required information of the number of people in every queue and this did not require a two dimensional vector deque.
- The pop function in the gates could be easily done by subtracting one from the value(people at a gate) at each index. The push and pop from the queue could be done similarly .
- The operations for shift and insert became relatively much easier, the space complexities reduced by far.
- The implementation of the VIP feature and Group/Family feature was easily done.

# Screenshots of OUTPUT :

For VIP ENTRY


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Enter the capacity of your stadium: 1000
Enter the capacity of VIP people in your stadium: 100
Enter the no of gates to be used for entering the people in the stadium: 10
Enter the number of vip gates used for entering the people in the stadium: 2
Enter the time required for the pop in sec : 1
Enter the amount of time(in hr) for which the entry gates should be open: 2
The number of members in Gate 1 is : 58
The number of members in Gate 2 is : 41
The number of members in Gate 3 is : 77
The number of members in Gate 4 is : 55
The number of members in Gate 5 is : 57
The number of members in Gate 6 is : 56
The number of members in Gate 7 is : 61
The number of members in Gate 8 is : 45
The number of members in VIPGate 1 is : 24
The number of members in VIPGate 2 is : 26
Do u have a VIP pass ?
Enter 0 if Yes and 1 if No : 0
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :0
Enter the number of people accompanying you : 10
You all have to move to VIPqueue 1
The number of members in Gate 1 is : 56
The number of members in Gate 2 is : 45
The number of members in Gate 3 is : 75
The number of members in Gate 4 is : 53
The number of members in Gate 5 is : 55
The number of members in Gate 6 is : 54
The number of members in Gate 7 is : 59
The number of members in Gate 8 is : 45
The number of members in VIPGate 1 is : 33
The number of members in VIPGate 2 is : 26
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :1
Enter the number of people accompanying you : 10
Enter your queue number : 1
Enter the standing of last person of your group in the queue : 33
You and your group members are at the most optimised place .
It will take 33 sec from your current position to reach stadium .
The number of members in Gate 1 is : 54

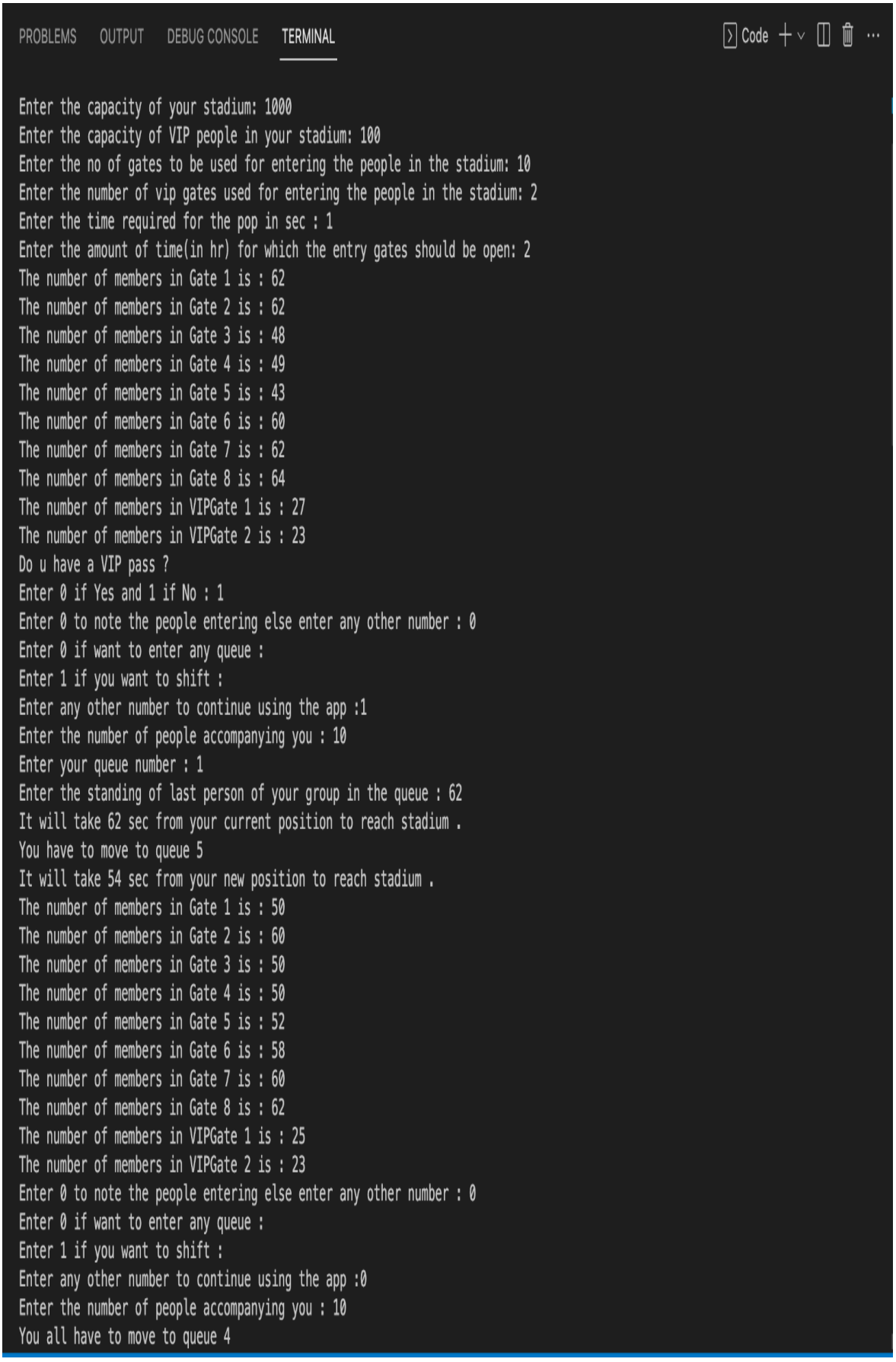

PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Enter your accurate standing in your queue
The number of members in Gate 1 is : 50
The number of members in Gate 2 is : 49
The number of members in Gate 3 is : 69
The number of members in Gate 4 is : 49
The number of members in Gate 5 is : 49
The number of members in Gate 6 is : 50
The number of members in Gate 7 is : 53
The number of members in Gate 8 is : 49
The number of members in VIPGate 1 is : 27
The number of members in VIPGate 2 is : 26
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 63
The number of members in Gate 2 is : 63
The number of members in Gate 3 is : 67
The number of members in Gate 4 is : 63
The number of members in Gate 5 is : 63
The number of members in Gate 6 is : 64
The number of members in Gate 7 is : 64
The number of members in Gate 8 is : 63
The number of members in VIPGate 1 is : 32
The number of members in VIPGate 2 is : 31
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 78
The number of members in Gate 2 is : 78
The number of members in Gate 3 is : 78
The number of members in Gate 4 is : 78
The number of members in Gate 5 is : 78
The number of members in Gate 6 is : 78
The number of members in Gate 7 is : 78
The number of members in Gate 8 is : 77
The number of members in VIPGate 1 is : 32
The number of members in VIPGate 2 is : 31
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 95

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 95
The number of members in Gate 2 is : 96
The number of members in Gate 3 is : 96
The number of members in Gate 4 is : 96
The number of members in Gate 5 is : 96
The number of members in Gate 6 is : 96
The number of members in Gate 7 is : 96
The number of members in Gate 8 is : 95
The number of members in VIPGate 1 is : 34
The number of members in VIPGate 2 is : 34
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 104
The number of members in Gate 3 is : 104
The number of members in Gate 4 is : 104
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 39
The number of members in VIPGate 2 is : 39
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 103
The number of members in Gate 3 is : 103
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 39
The number of members in VIPGate 2 is : 38
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
```


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 104
The number of members in Gate 3 is : 104
The number of members in Gate 4 is : 104
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 39
The number of members in VIPGate 2 is : 39
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 103
The number of members in Gate 3 is : 103
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 39
The number of members in VIPGate 2 is : 38
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :9
The number of members in Gate 1 is : 102
The number of members in Gate 2 is : 102
The number of members in Gate 3 is : 102
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 103
The number of members in Gate 6 is : 103
The number of members in Gate 7 is : 103
The number of members in Gate 8 is : 102
The number of members in VIPGate 1 is : 40
The number of members in VIPGate 2 is : 40
10
No new Entry allowed now for entering the line
Total time required for the people to enter is : 113in secs
maanavchandreshgurubaxani@Maanavs-MacBook-Air GITDEMO %

For Non VIP Entry


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code
Enter the capacity of your stadium: 1000
Enter the capacity of VIP people in your stadium: 100
Enter the no of gates to be used for entering the people in the stadium: 10
Enter the number of vip gates used for entering the people in the stadium: 2
Enter the time required for the pop in sec : 1
Enter the amount of time(in hr) for which the entry gates should be open: 2
The number of members in Gate 1 is : 62
The number of members in Gate 2 is : 62
The number of members in Gate 3 is : 48
The number of members in Gate 4 is : 49
The number of members in Gate 5 is : 43
The number of members in Gate 6 is : 60
The number of members in Gate 7 is : 62
The number of members in Gate 8 is : 64
The number of members in VIPGate 1 is : 27
The number of members in VIPGate 2 is : 23
Do u have a VIP pass ?
Enter 0 if Yes and 1 if No : 1
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :1
Enter the number of people accompanying you : 10
Enter your queue number : 1
Enter the standing of last person of your group in the queue : 62
It will take 62 sec from your current position to reach stadium .
You have to move to queue 5
It will take 54 sec from your new position to reach stadium .
The number of members in Gate 1 is : 50
The number of members in Gate 2 is : 60
The number of members in Gate 3 is : 50
The number of members in Gate 4 is : 50
The number of members in Gate 5 is : 52
The number of members in Gate 6 is : 58
The number of members in Gate 7 is : 60
The number of members in Gate 8 is : 62
The number of members in VIPGate 1 is : 25
The number of members in VIPGate 2 is : 23
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :0
Enter the number of people accompanying you : 10
You all have to move to queue 4

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
Enter the number of people accompanying you : 10
You all have to move to queue 4
The number of members in Gate 1 is : 51
The number of members in Gate 2 is : 58
The number of members in Gate 3 is : 51
The number of members in Gate 4 is : 59
The number of members in Gate 5 is : 52
The number of members in Gate 6 is : 56
The number of members in Gate 7 is : 58
The number of members in Gate 8 is : 60
The number of members in VIPGate 1 is : 23
The number of members in VIPGate 2 is : 23
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :1
Enter the number of people accompanying you : 1
Enter your queue number : 8
Enter the standing of last person of your group in the queue : 60
It will take 60 sec from your current position to reach stadium .
You have to move to queue 3
It will take 53 sec from your new position to reach stadium .
The number of members in Gate 1 is : 52
The number of members in Gate 2 is : 56
The number of members in Gate 3 is : 53
The number of members in Gate 4 is : 57
The number of members in Gate 5 is : 53
The number of members in Gate 6 is : 54
The number of members in Gate 7 is : 56
The number of members in Gate 8 is : 56
The number of members in VIPGate 1 is : 22
The number of members in VIPGate 2 is : 22
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :3
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 103
The number of members in Gate 3 is : 103
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 103
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Code

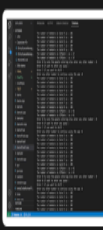
```
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 103
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 37
The number of members in VIPGate 2 is : 37
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :4
The number of members in Gate 1 is : 104
The number of members in Gate 2 is : 104
The number of members in Gate 3 is : 105
The number of members in Gate 4 is : 105
The number of members in Gate 5 is : 105
The number of members in Gate 6 is : 105
The number of members in Gate 7 is : 105
The number of members in Gate 8 is : 104
The number of members in VIPGate 1 is : 42
The number of members in VIPGate 2 is : 41
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :5
The number of members in Gate 1 is : 106
The number of members in Gate 2 is : 106
The number of members in Gate 3 is : 106
The number of members in Gate 4 is : 106
The number of members in Gate 5 is : 106
The number of members in Gate 6 is : 106
The number of members in Gate 7 is : 106
The number of members in Gate 8 is : 106
The number of members in VIPGate 1 is : 42
The number of members in VIPGate 2 is : 41
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :5
The number of members in Gate 1 is : 105
The number of members in Gate 2 is : 105
The number of members in Gate 3 is : 105
The number of members in Gate 4 is : 105
The number of members in Gate 5 is : 105
```

Ln 194, Col 71 Spaces: 4 UTF-8 LF {} C++ Mac

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

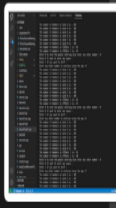
Code

```
The number of members in Gate 3 is : 105
The number of members in Gate 4 is : 105
The number of members in Gate 5 is : 105
The number of members in Gate 6 is : 105
The number of members in Gate 7 is : 105
The number of members in Gate 8 is : 105
The number of members in VIPGate 1 is : 43
The number of members in VIPGate 2 is : 42
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :4
The number of members in Gate 1 is : 104
The number of members in Gate 2 is : 104
The number of members in Gate 3 is : 104
The number of members in Gate 4 is : 104
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 105
The number of members in Gate 7 is : 105
The number of members in Gate 8 is : 104
The number of members in VIPGate 1 is : 42
The number of members in VIPGate 2 is : 41
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :6
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 103
The number of members in Gate 3 is : 103
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 41
The number of members in VIPGate 2 is : 40
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :7
The number of members in Gate 1 is : 102
The number of members in Gate 2 is : 102
The number of members in Gate 3 is : 102
The number of members in Gate 4 is : 103
```



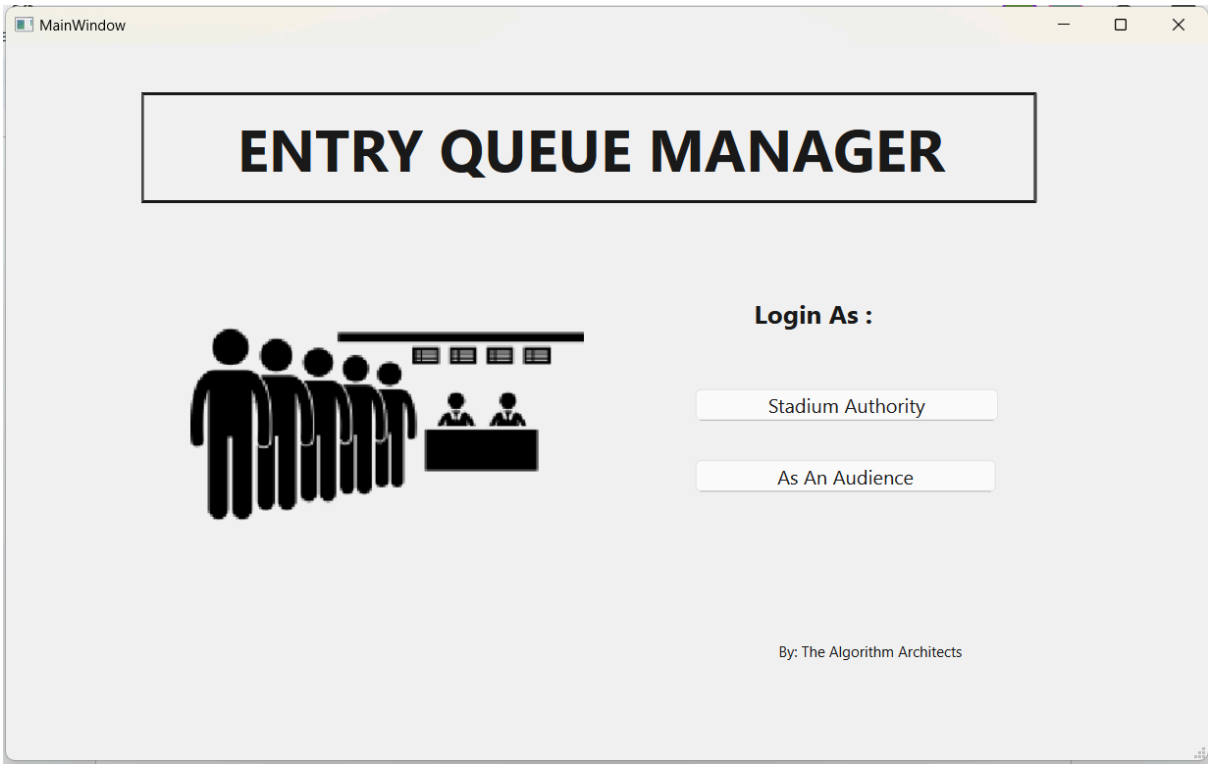
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
Enter 1 if you want to shift :
Enter any other number to continue using the app :4
The number of members in Gate 1 is : 104
The number of members in Gate 2 is : 104
The number of members in Gate 3 is : 104
The number of members in Gate 4 is : 104
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 105
The number of members in Gate 7 is : 105
The number of members in Gate 8 is : 104
The number of members in VIPGate 1 is : 42
The number of members in VIPGate 2 is : 41
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :6
The number of members in Gate 1 is : 103
The number of members in Gate 2 is : 103
The number of members in Gate 3 is : 103
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 104
The number of members in Gate 6 is : 104
The number of members in Gate 7 is : 104
The number of members in Gate 8 is : 103
The number of members in VIPGate 1 is : 41
The number of members in VIPGate 2 is : 40
Enter 0 to note the people entering else enter any other number : 0
Enter 0 if want to enter any queue :
Enter 1 if you want to shift :
Enter any other number to continue using the app :7
The number of members in Gate 1 is : 102
The number of members in Gate 2 is : 102
The number of members in Gate 3 is : 102
The number of members in Gate 4 is : 103
The number of members in Gate 5 is : 103
The number of members in Gate 6 is : 103
The number of members in Gate 7 is : 103
The number of members in Gate 8 is : 102
The number of members in VIPGate 1 is : 40
The number of members in VIPGate 2 is : 40
10
No new Entry allowed now for entering the line
Total time required for the people to enter is : 113in secs
maanavchandreshgurubaxani@Maanavs-MacBook-Air GITDEMO %
```

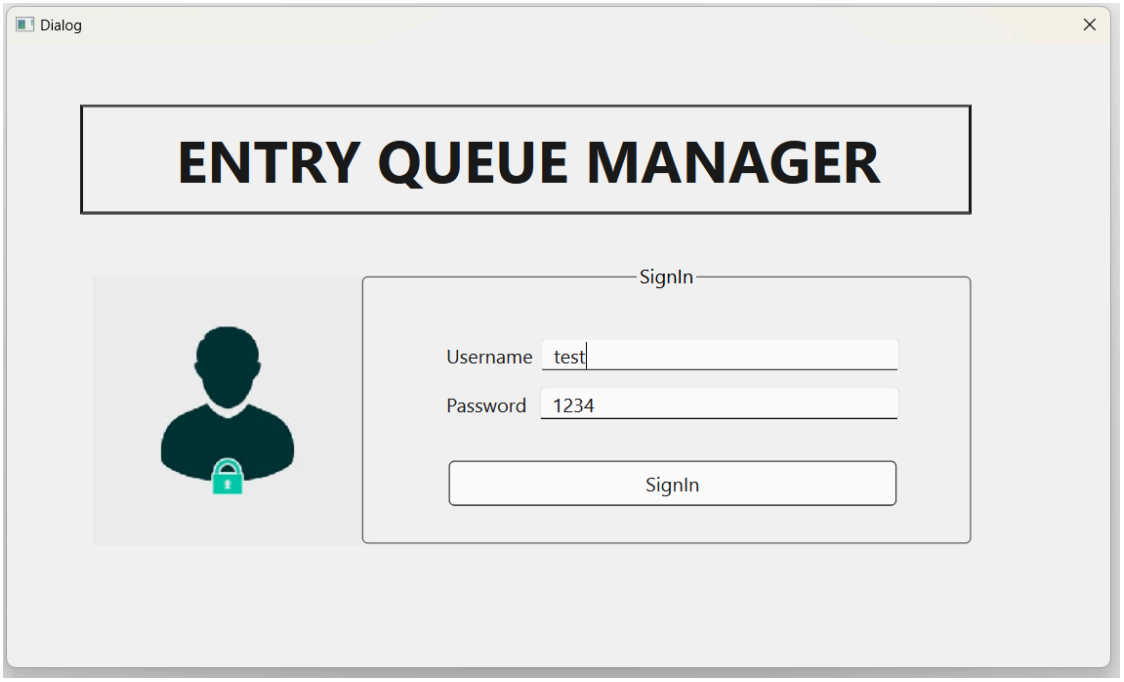


# SCREENSHOTS OF GUI BASED OUTPUT

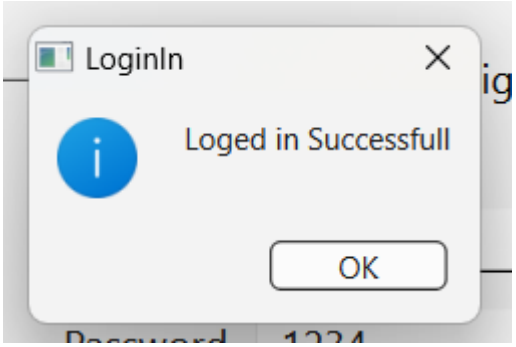
- Welcome Window



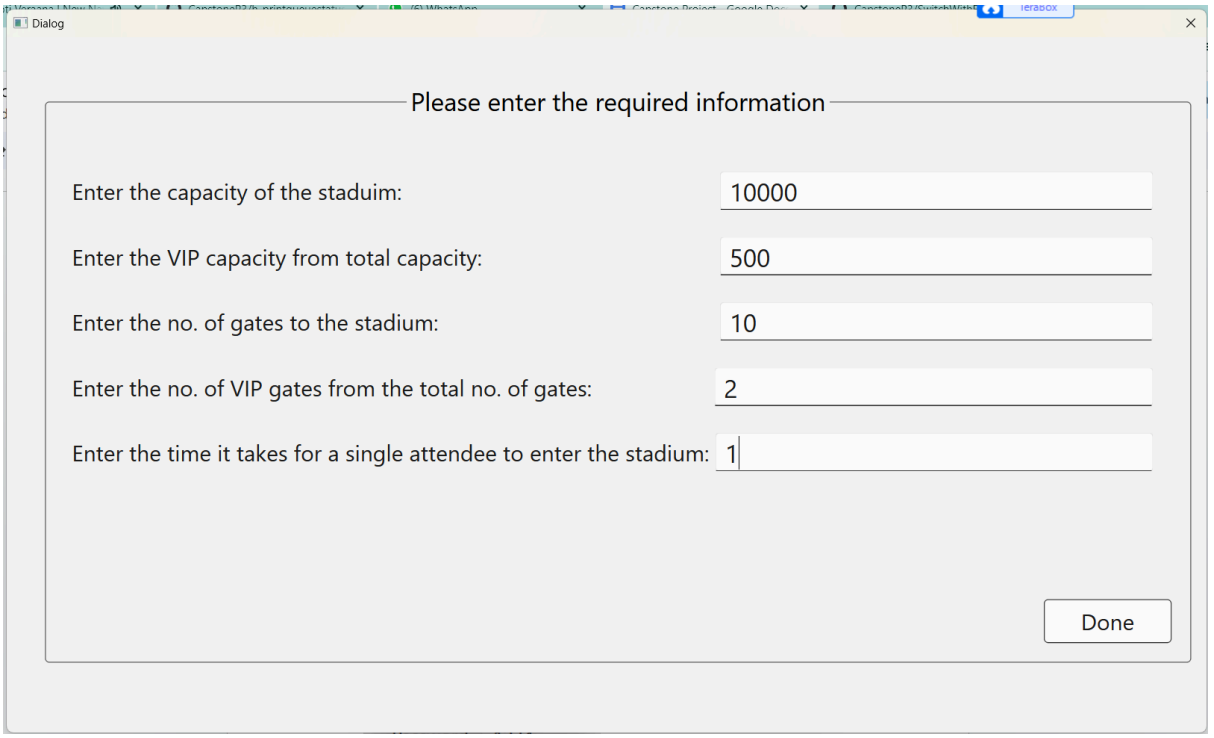

  - Login As Stadium Authority

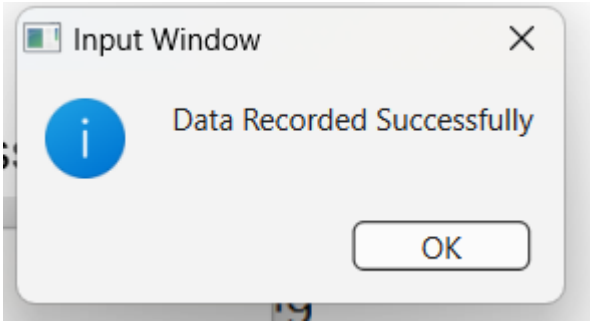


- Login Successful

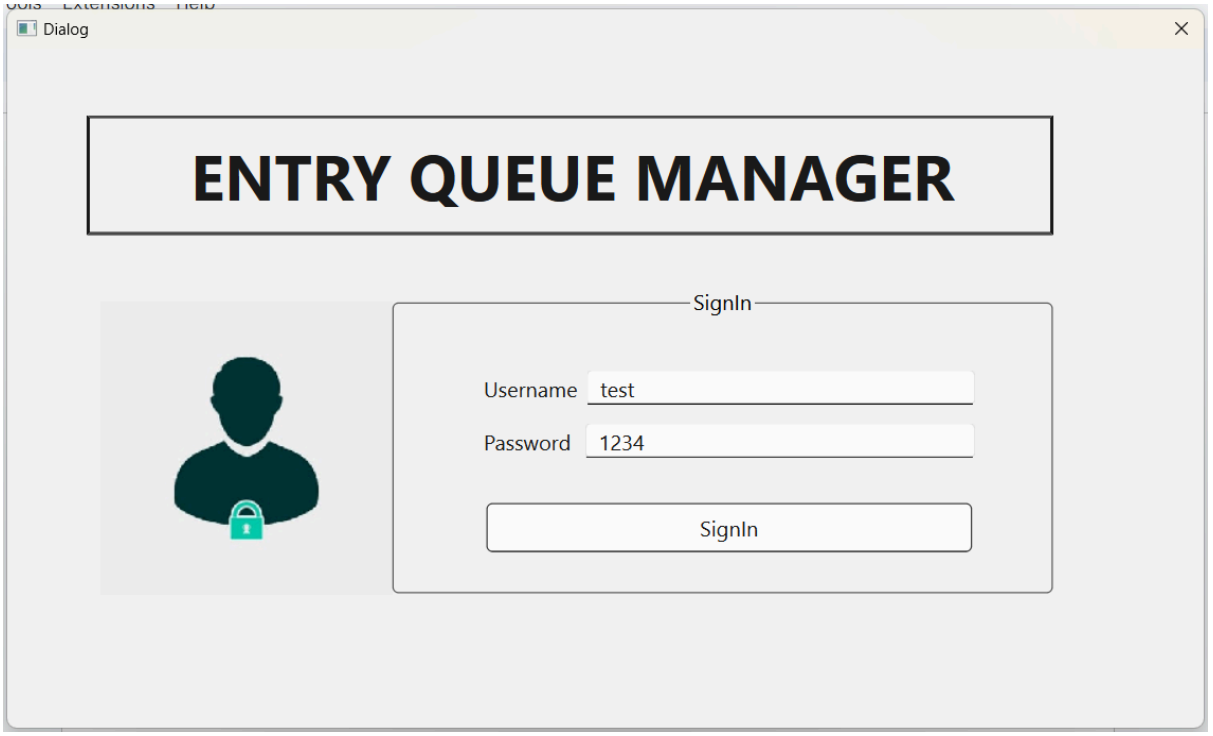



- Entering Stadium Details

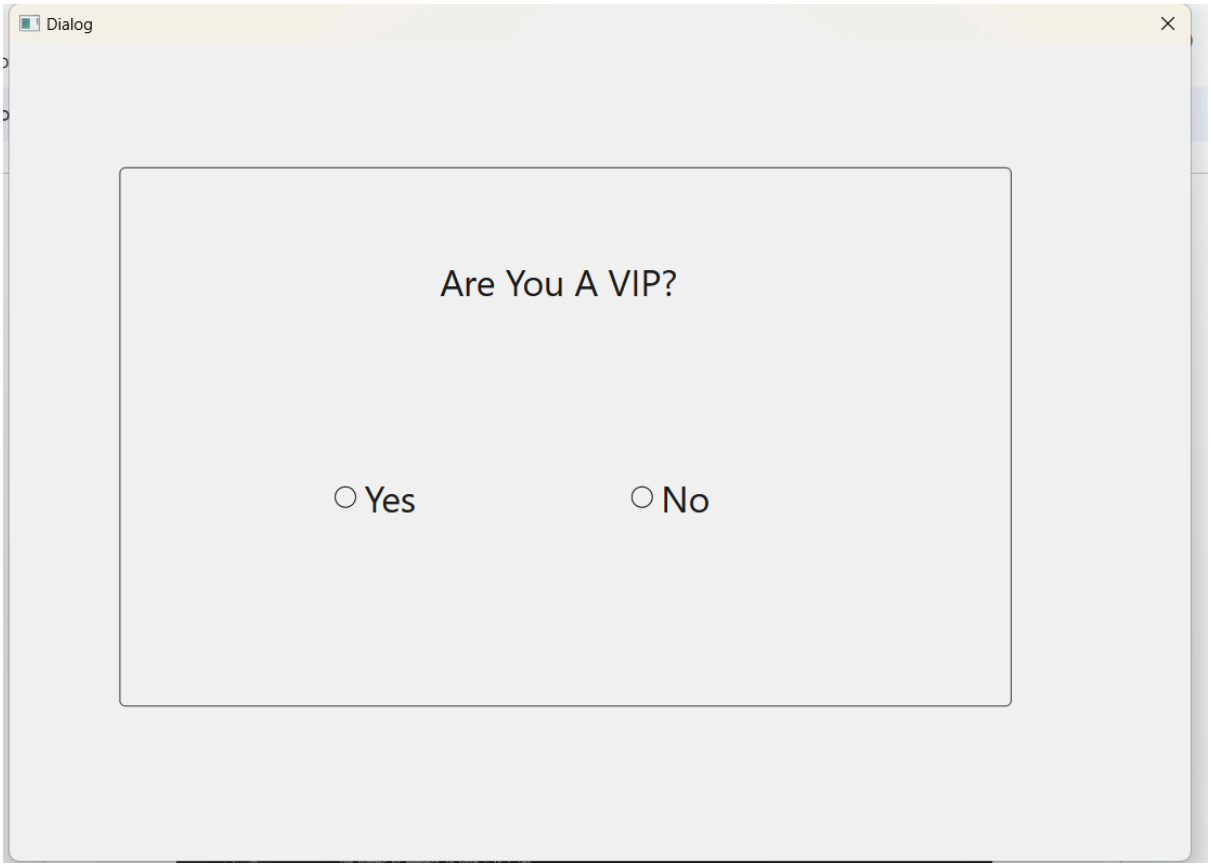


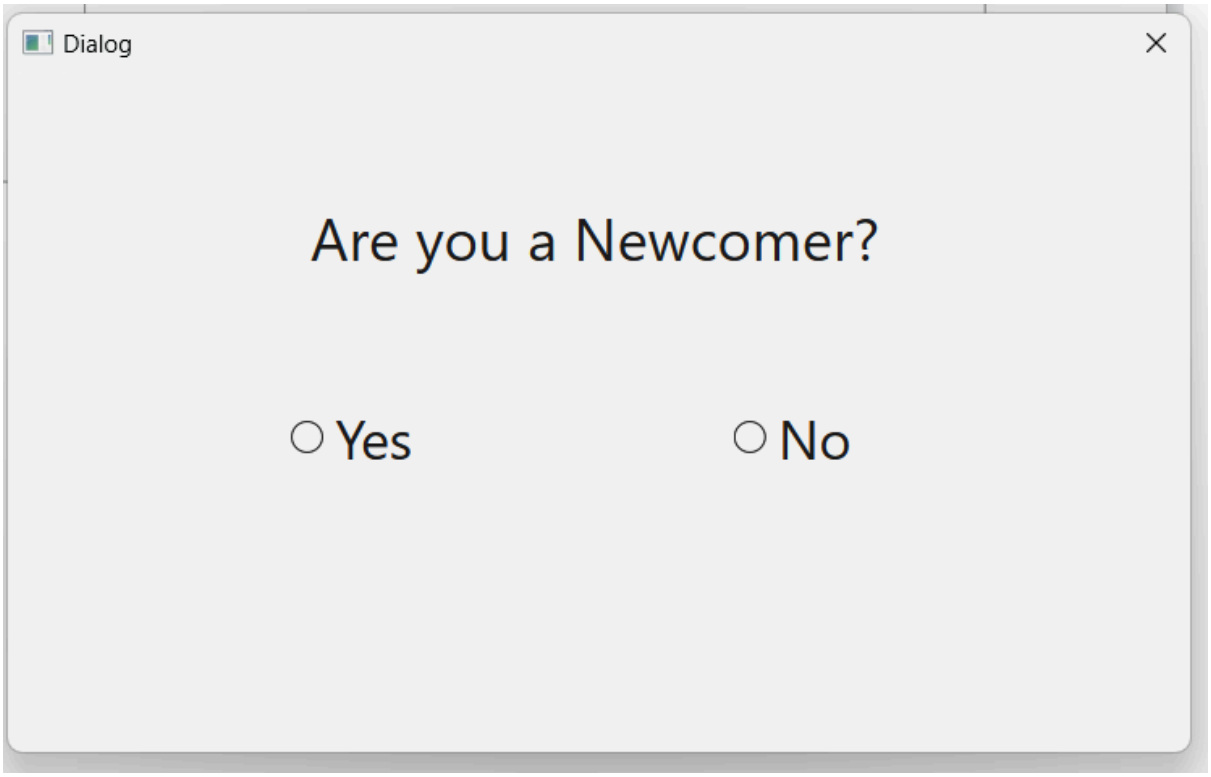
- Login As Audience



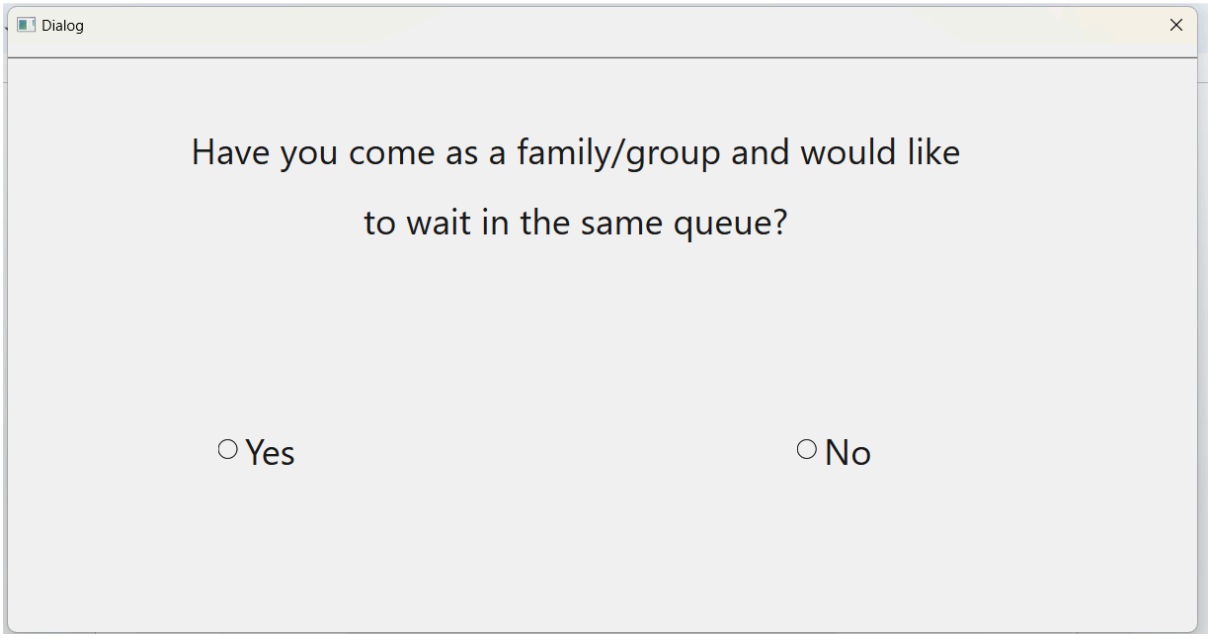

- Are you VIP ?



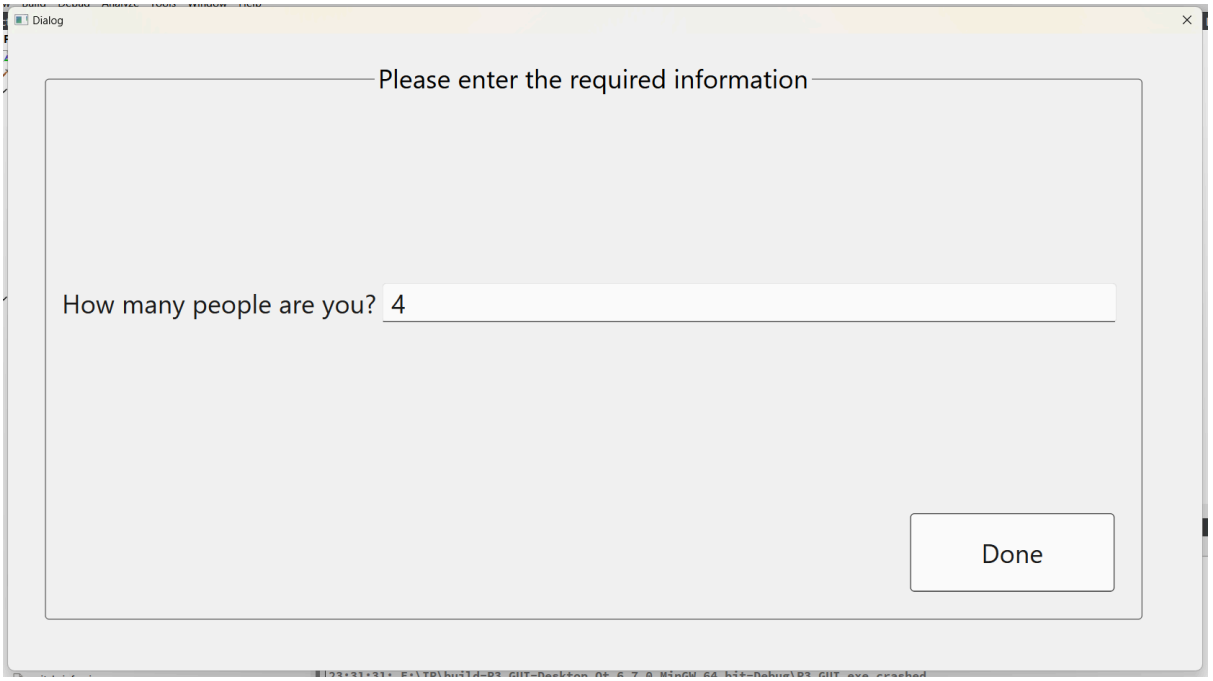

- Yes

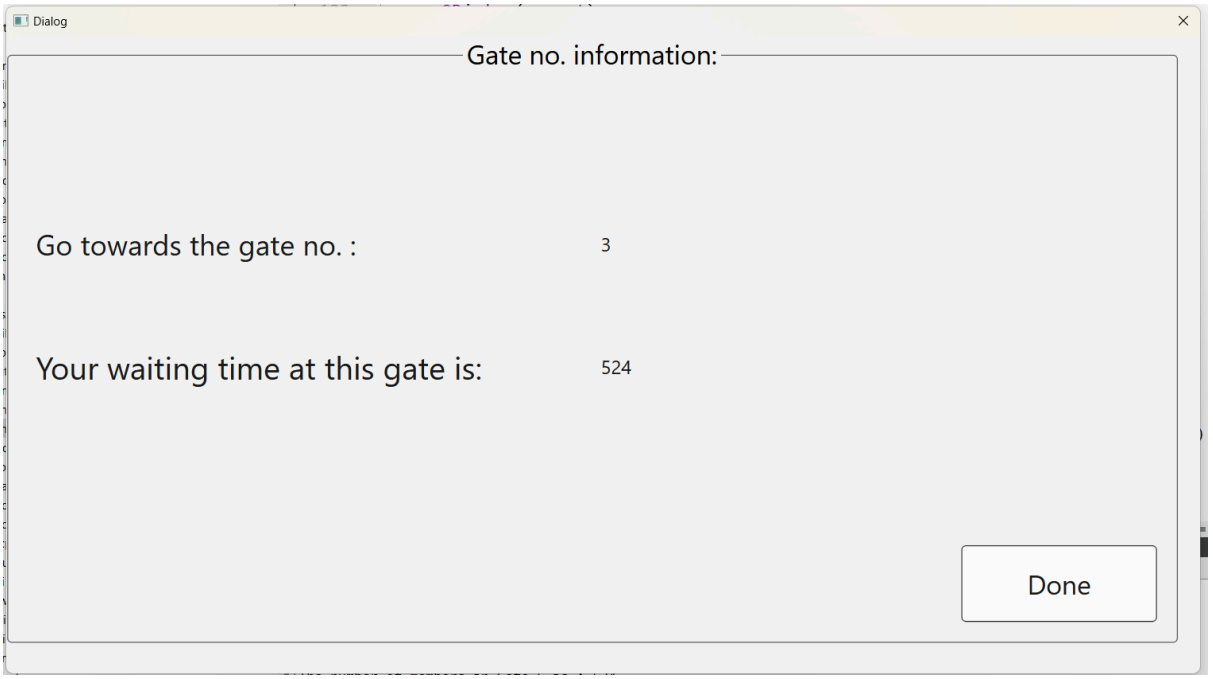


- Yes


Dialog
Have you come as a family/group and would like
to wait in the same queue?
Yes
No

- Yes


Dialog
Please enter the required information
How many people are you? 4
Done


Dialog
Gate no. information:
Go towards the gate no. :
3
Your waiting time at this gate is:
524
Done