

**Informatics Institute of Technology**  
**Object Oriented Programming**  
**Coursework**

**Full Name- Kalahe Liyanage Sahan Rashmika**

**UoW ID-W2082016**

**IIT ID-20232860**

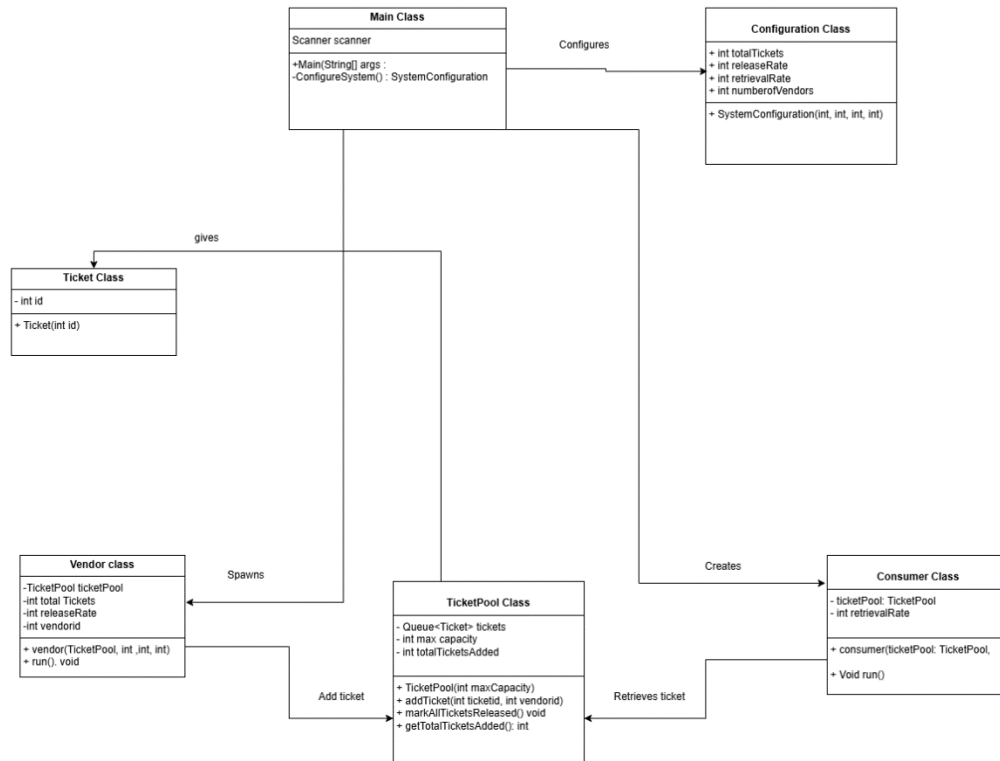
**Tutorial Group –SE Group 02**

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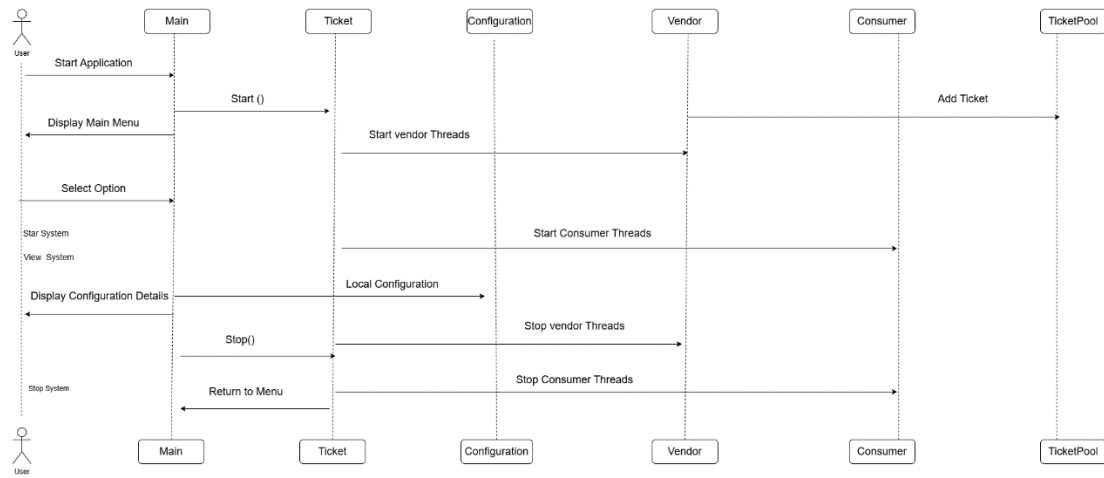
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# 1. Diagrams

## 1.1 Class Diagram



## 1.2 Sequence Diagram



## 2. Test Cases

### 2.1 CLI-

Test Case ID	Test Scenario	Test Description	Steps	Output	Status
TC-01	System Configuration Input	Validate total number of tickets input	Enter positive integer for total tickets	System accepts input and displays configuration	Pass
TC-02	System Configuration Validation	Handle zero or negative ticket input	Enter 0 or negative number for total tickets	System prompts "Invalid input. Please enter a positive integer."	Pass
TC-03	Ticket Release Rate Configuration	Validate ticket release rate input	Enter positive integer for ticket release rate	System accepts input and shows configuration	Pass
TC-04	Consumer Retrieval Rate Configuration	Validate customer retrieval rate input	Enter positive integer for consumer retrieval rate	System accepts input and shows configuration	Pass
TC-05	Maximum Ticket Capacity Configuration	Validate maximum ticket capacity	Enter positive integer for maximum ticket capacity	System accepts input and displays full configuration	Pass
TC-06	Configuration Validation	Prevent total tickets exceeding maximum capacity	Enter total tickets > maximum ticket capacity	System shows error and requests reconfiguration	Pass

TC-07	Main Menu Navigation	Verify main menu options	Select different menu options (1-4)	Correct menu functionality and system responses	Pass
TC-08	Ticketing System Start	Start the ticketing system	Select option 1 to start system	Vendor and Consumer threads start, tickets generated	Pass
TC-09	System Status Check	View system status	Select option 2 to view status	Displays tickets released, in pool, and retrieved	Pass
TC-10	System Stop Functionality	Stop the ticketing system	Select option 3 to stop system	Stops ticket generation, displays "Ticketing system stopped"	Pass
TC-11	System Exit	Exit the current configuration	Select option 4 to exit	Returns to initial configuration screen	Pass

## Screenshots CLI-

```
Welcome to the Real-Time Ticketing System
Please configure the system:
1. Enter the Total Number of Tickets:
```

```
Welcome to the Real-Time Ticketing System
Please configure the system:
1. Enter the Total Number of Tickets: ad
Invalid input. Please enter a positive integer.
Try again: |
```

```
Welcome to the Real-Time Ticketing System
Please configure the system:
1. Enter the Total Number of Tickets: ab
Invalid input. Please enter a positive integer.
Try again: 10
2. Enter the Ticket Release Rate (in seconds):
```

```
Welcome to the Real-Time Ticketing System
Please configure the system:
1. Enter the Total Number of Tickets: 10
2. Enter the Ticket Release Rate (in seconds): 1
3. Enter the Customer Retrieval Rate (in seconds): 2
4. Enter the Maximum Ticket Capacity: 9
Error: Total tickets cannot exceed maximum ticket capacity.
1. Enter the Total Number of Tickets:
```

Welcome to the Real-Time Ticketing System

Please configure the system:

1. Enter the Total Number of Tickets: *ab*

Invalid input. Please enter a positive integer.

Try again: *10*

2. Enter the Ticket Release Rate (in seconds): *1*

3. Enter the Customer Retrieval Rate (in seconds): *2*

4. Enter the Maximum Ticket Capacity: *20*

System Configuration:

Total Tickets: 10

Ticket Release Rate: 1 sec

Customer Retrieval Rate: 2 sec

Maximum Ticket Capacity: 20

Main Menu:

1. Start the Ticketing System

2. View System Status

3. Stop the Ticketing System

4. Exit

Choose an option: |



Main Menu:

1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit

Choose an option: 1

Ticketing system started.

Main Menu:

1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit

Choose an option: Ticket retrieved: 2a1bc3dc-7f0a-4484-a2e6-f67fde71549e

Vendor added Ticket ID: 2a1bc3dc-7f0a-4484-a2e6-f67fde71549e

Consumer processed Ticket ID: 2a1bc3dc-7f0a-4484-a2e6-f67fde71549e

Ticket retrieved: 27b8e578-79cf-4fa1-bad8-db892d06925f

Consumer processed Ticket ID: 27b8e578-79cf-4fa1-bad8-db892d06925f

Vendor added Ticket ID: 27b8e578-79cf-4fa1-bad8-db892d06925f

Ticket retrieved: 85bee900-a1fc-412e-94b8-0c53a4c4c828

Vendor added Ticket ID: 85bee900-a1fc-412e-94b8-0c53a4c4c828

Consumer processed Ticket ID: 85bee900-a1fc-412e-94b8-0c53a4c4c828

Vendor added Ticket ID: 1d6855b8-b6af-45c6-86e6-a09b24f7afcf

```
Vendor added Ticket ID: d35e33ed-cab0-4c77-9dad-eebb56fdd461
Vendor added Ticket ID: f477e99d-6bef-4cd7-92ba-2925077d4d58
Ticket retrieved: f477e99d-6bef-4cd7-92ba-2925077d4d58
Consumer processed Ticket ID: f477e99d-6bef-4cd7-92ba-2925077d4d58
Vendor added Ticket ID: 48282dbc-74e3-4011-803c-93bc7bfba452
Ticket retrieved: 48282dbc-74e3-4011-803c-93bc7bfba452
Consumer processed Ticket ID: 48282dbc-74e3-4011-803c-93bc7bfba452
Vendor added Ticket ID: 421d1eaf-1781-404f-b2dc-f9bb19cd2f9d
Ticket retrieved: 421d1eaf-1781-404f-b2dc-f9bb19cd2f9d
Consumer processed Ticket ID: 421d1eaf-1781-404f-b2dc-f9bb19cd2f9d
Vendor has completed adding tickets.
```

2

```
--- System Status ---
```

```
Tickets Released: 10
```

```
Tickets in Pool: 0
```

```
Tickets Retrieved: 10
```

```
Main Menu:
```

1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit

```
Choose an option:
```

```
--- System Status ---
Tickets Released: 10
Tickets in Pool: 0
Tickets Retrieved: 10

Main Menu:
1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit
Choose an option: 3
TicketPool has stopped.
Ticketing system stopped.

Main Menu:
1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit
Choose an option: |
```

Tickets Released: 10

Tickets in Pool: 0

Tickets Retrieved: 10

Main Menu:

1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit

Choose an option: 3

TicketPool has stopped.

Ticketing system stopped.

Main Menu:

1. Start the Ticketing System
2. View System Status
3. Stop the Ticketing System
4. Exit

Choose an option: 4

TicketPool has stopped.

Exiting the menu. Returning to the initial configuration...

Welcome to the Real-Time Ticketing System

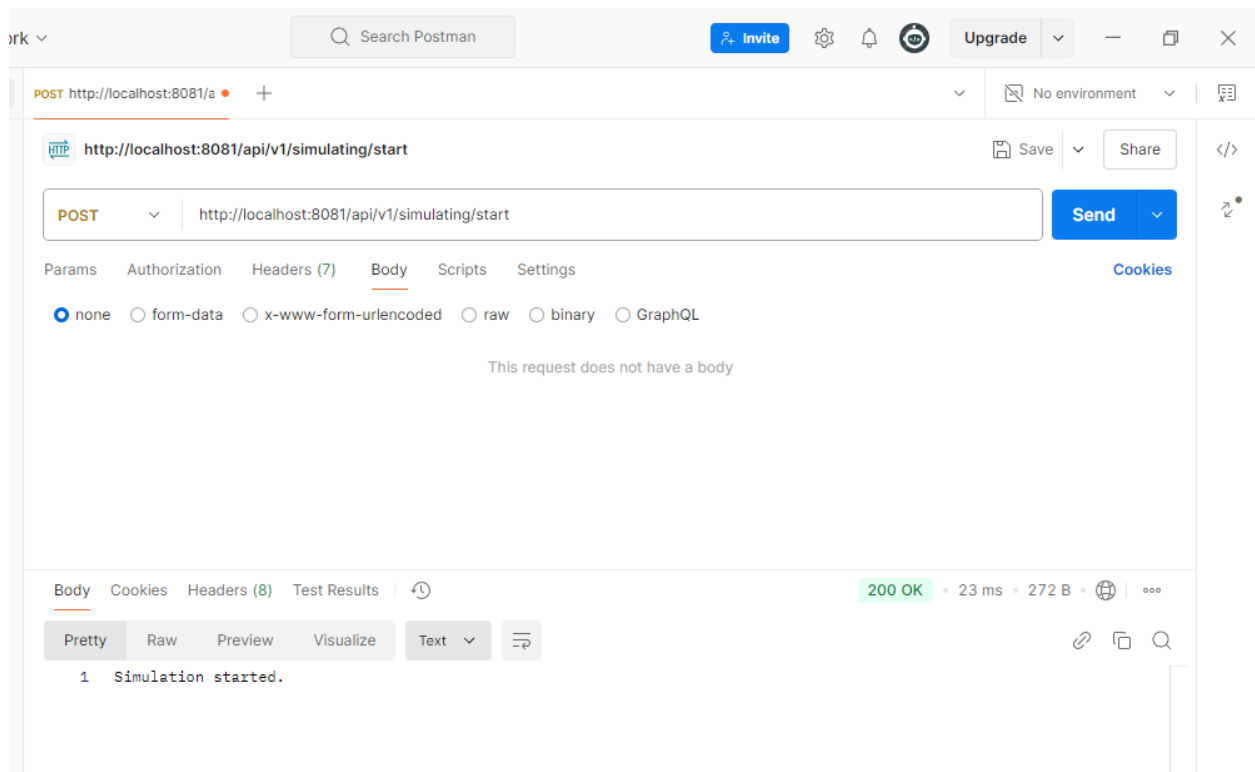
Please configure the system:

1. Enter the Total Number of Tickets: |

## 2.2 Backend-

Test Case ID	Test Scenario	Test Description	Steps	Output	Status
TC-01	Start System - Success	Starts the ticketing system after a successful configuration.	The system. Send a POST request to /start system.	Simulation started.	Pass
TC-02	Current Status System - Success	Checking Current Status System	The system send a GET request to / status system	"systemStatus": "RUNNING"/ "systemStatus": "STOPPED"	Pass
TC-03	Stop System - Success	Stops the running ticketing system.	The system. Send a POST request to /stop system	Simulation stopped.	Pass
TC-04	Update Configuration System - Success	Configures the system with valid parameters	Send a PUT request to /configureupdate System with valid JSON payload.	Configuration updated.	Pass

## Screenshots Backend-



rk ▾ Search Postman Invite Upgrade ▾

PUT http://localhost:8081/api/v1/simulating/updateConfig

PUT http://localhost:8081/api/v1/simulating/updateConfig Send ▾

Params Authorization Headers (8) Body • Scripts Settings Cookies Beautify

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary ☐ GraphQL JSON ▾

```
1 {
2   "totalTickets": 100,
3   "ticketReleaseRate": 5,
4   "consumerRetrievalRate": 5,
5   "maxTicketCapacity": 200
6 }
7
```

Body Cookies Headers (8) Test Results ↻ 200 OK • 661 ms • 275 B • 🌐 • ⋮

Pretty Raw Preview Visualize Text ▾ ≡

```
1 Configuration updated.
```

rk ▾ Search Postman Invite Upgrade ▾

GET http://localhost:8081/api/v1/simulating/status

GET http://localhost:8081/api/v1/simulating/status Send ▾

Params Authorization Headers (6) Body Scripts Settings Cookies

☒ none ☐ form-data ☐ x-www-form-urlencoded ☐ raw ☐ binary ☐ GraphQL

This request does not have a body

Body Cookies Headers (8) Test Results ↻ 200 OK • 37 ms • 302 B • 🌐 • ⋮

Pretty Raw Preview Visualize JSON ▾ ≡

```
1 {
2   "systemStatus": "RUNNING",
3   "ticketsAvailable": 100
4 }
```

GET http://localhost:8081/ap

HTTP http://localhost:8081/api/v1/simulating/status

GET http://localhost:8081/api/v1/simulating/status

Params Authorization Headers (8) Body Scripts Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "totalTickets": 100,
3   "ticketReleaseRate": 5,
4   "consumerRetrievalRate": 5,
5   "maxTicketCapacity": 200
6 }
7
```

Body Cookies Headers (8) Test Results

200 OK • 5 ms • 302 B

Pretty Raw Preview Visualize JSON

```
1 {
2   "systemStatus": "STOPPED",
3   "ticketsAvailable": 100
4 }
```

work

POST http://localhost:8081/a

HTTP http://localhost:8081/api/v1/simulating/stop

POST http://localhost:8081/api/v1/simulating/stop

Params Authorization Headers (7) Body Scripts Settings

none form-data x-www-form-urlencoded raw binary GraphQL

This request does not have a body

Body Cookies Headers (8) Test Results

200 OK • 22 ms • 272 B

Pretty Raw Preview Visualize Text

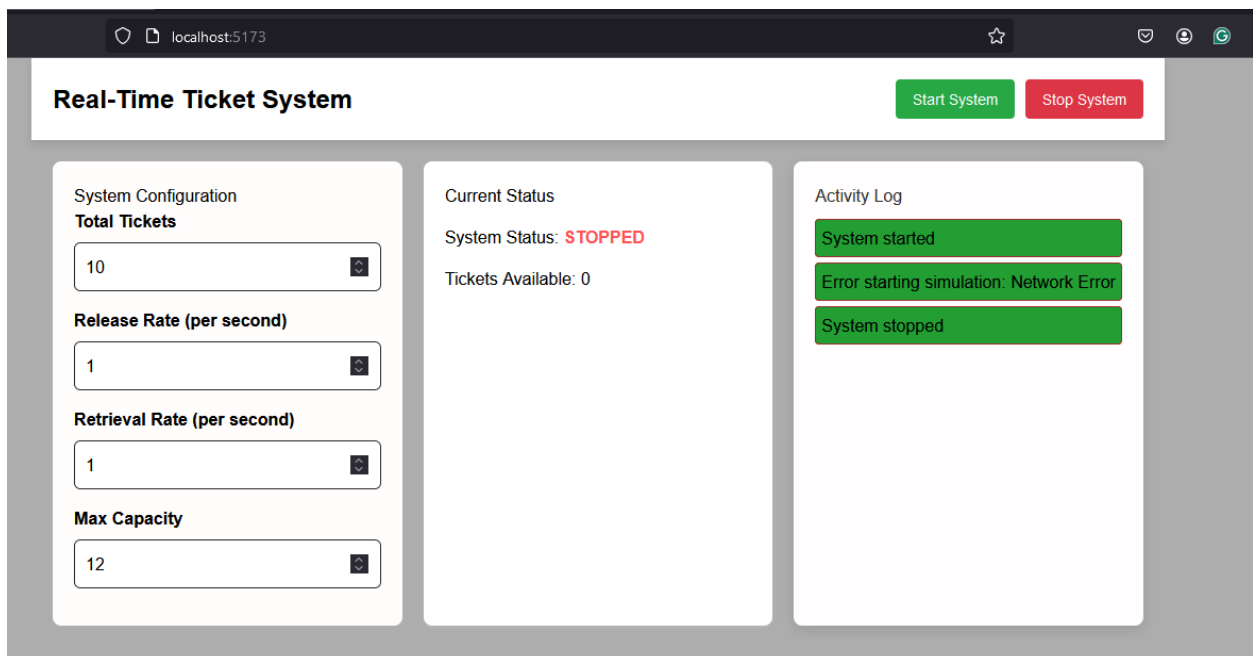
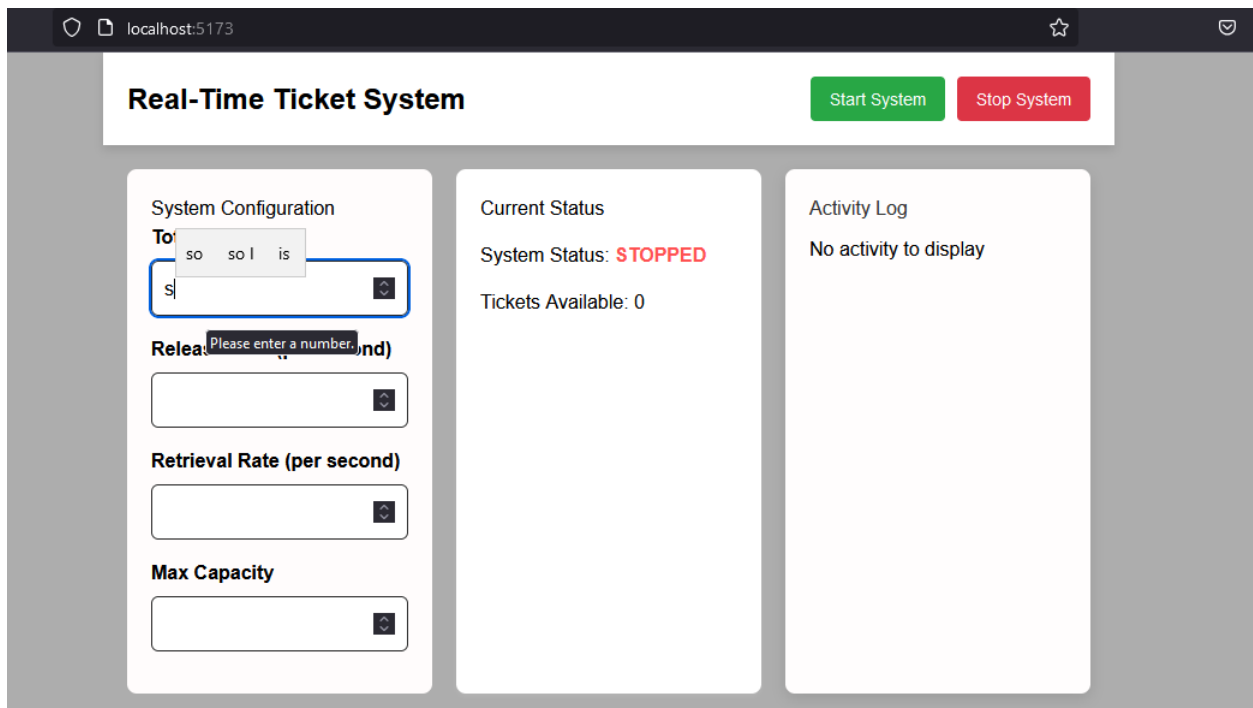
```
1 Simulation stopped.
```



## 2.3 Frontend-

Test Case ID	Test Scenario	Test Description	Steps	Output	Status
TC-01	System Start Functionality	Verify the system starts successfully with valid configurations.	1. Fill all configuration fields with valid values 2. Click "Start System"	System status changes to "RUNNING" Tickets start incrementing	Pass
TC-02	System Stop Functionality	Verify the system can be stopped	1. Start the system. 2. Click "Stop System"	System status changes to "STOPPED" Tickets count resets to 0	Pass
TC-03	Error Handling	Verify error handling when simulating a backend error during system start	1. Start the system with valid configurations. 2. Simulate a backend error	Error message is displayed in the Activity Log	Pass

## Screenshots Frontend-



← → ↻

localhost:5173

☆

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Real-Time Ticket System

Start SystemStop System

System Configuration

Total Tickets

10

Release Rate (per second)

1

Retrieval Rate (per second)

1

Max Capacity

20

Current Status

System Status: **RUNNING**

Tickets Available: 4

Activity Log

System started

Simulation started successfully. Simulation already running.

← → ↻

localhost:5173

☆

🔒 👤 🌐 📄 ☰

Real-Time Ticket System

Start SystemStop System

System Configuration

Total Tickets

10

Release Rate (per second)

1

Retrieval Rate (per second)

1

Max Capacity

20

Current Status

System Status: **STOPPED**

Tickets Available: 0

Activity Log

System started

Simulation started successfully. Simulation already running.

System stopped