Objectives

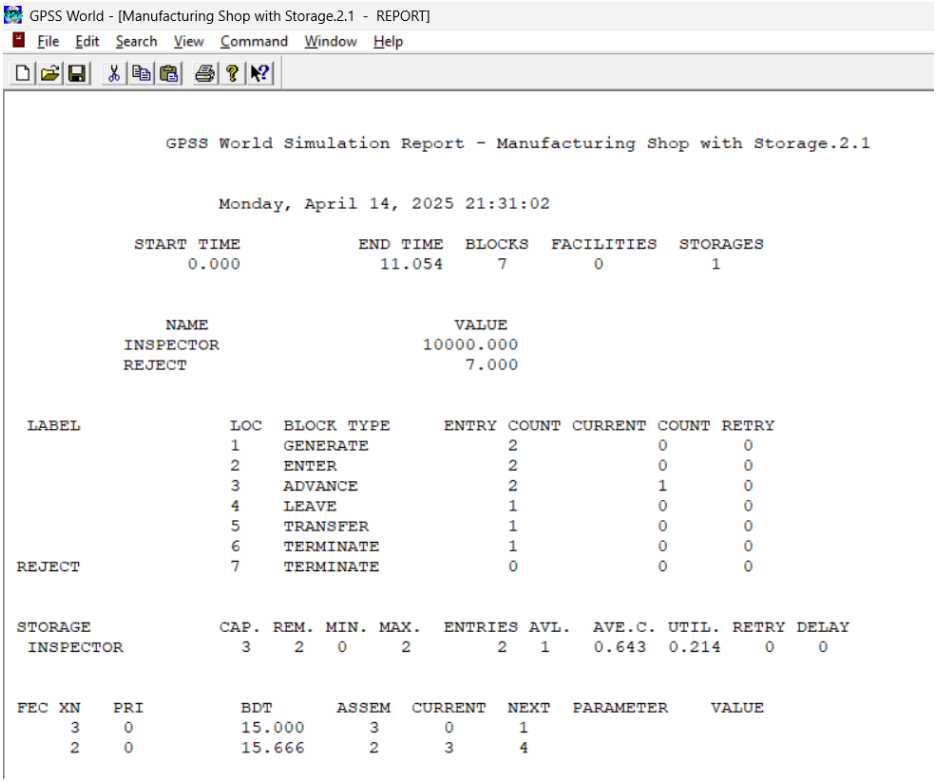
1. To understand and implement the **Storage concept** in GPSS.
2. To simulate **multi-server systems** (e.g., 3 inspectors or 2 fuel nozzles).
3. To model real-world systems like **inspection units** and **fuel stations**.
4. To observe how **limited resources** (e.g., servers/nozzles) affect flow and service.

Q.no.1. A machine tool in a manufacturing shop is turning out parts at the rate of every 5 minutes. When they are finished, the parts are sent to an inspector, who takes 4 ± 3 minutes to examine each one and rejects 15% of the parts. Write a GPSS program to simulate using the concept of storage. *(Here, storage has 3 servers and timing parameters are changed.)*

Source Code

```
GENERATE 5,,,1000
ENTER INSPECTOR,1
ADVANCE 4,3
LEAVE INSPECTOR,1
TRANSFER .15, REJECT
TERMINATE 1
REJECT TERMINATE 1
INSPECTOR STORAGE 3
```

Output



GPSS World - [Manufacturing Shop with Storage.2.1 - REPORT]

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GPSS World Simulation Report - Manufacturing Shop with Storage.2.1

Monday, April 14, 2025 21:31:02

START TIME	END TIME	BLOCKS	FACILITIES	STORAGES
0.000	11.054	7	0	1

NAME	VALUE
INSPECTOR	10000.000
REJECT	7.000

LABEL	LOC	BLOCK TYPE	ENTRY COUNT	CURRENT COUNT	RETRY
	1	GENERATE	2	0	0
	2	ENTER	2	0	0
	3	ADVANCE	2	1	0
	4	LEAVE	1	0	0
	5	TRANSFER	1	0	0
	6	TERMINATE	1	0	0
REJECT	7	TERMINATE	0	0	0

STORAGE	CAP.	REM.	MIN.	MAX.	ENTRIES	AVL.	AVE.C.	UTIL.	RETRY	DELAY
INSPECTOR	3	2	0	2	2	1	0.643	0.214	0	0

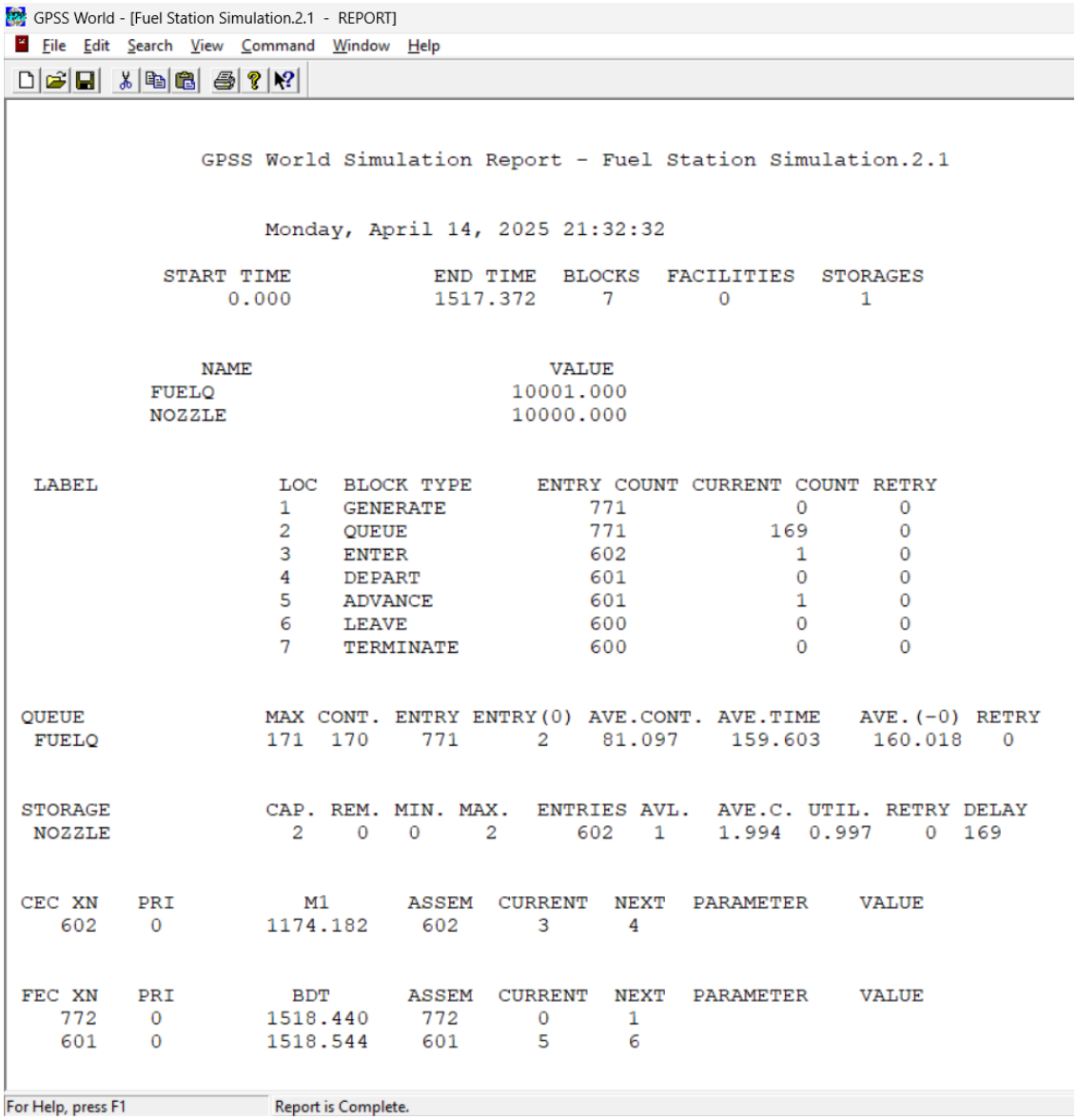
FEC XN	PRI	BDT	ASSEM	CURRENT	NEXT	PARAMETER	VALUE
3	0	15.000	3	0	1		
2	0	15.666	2	3	4		

Q.no.2. Fuel Station Simulation: One vehicle arrives every 2 ± 2 minutes. It takes 5 ± 2 minutes to fuel one vehicle. Number of nozzles = 2. Fuel station operates 10 hours a day. Write a GPSS program to simulate operation of the fuel station for the entire day.

Source Code

```
GENERATE 2,2
QUEUE FUELQ
ENTER NOZZLE,1
DEPART FUELQ
ADVANCE 5,2
LEAVE NOZZLE,1
TERMINATE 1
NOZZLE STORAGE 2
START 600
```

Output



Conclusion

In this lab, we successfully simulated real-life systems using the **storage block** in GPSS. We demonstrated how a limited number of resources (like inspectors or fuel nozzles) can be managed using the STORAGE, ENTER, and LEAVE blocks. The simulations provided insight into how queues form when the number of entities exceeds available servers. Despite simulator limitations (e.g., no rejection modeling), core resource handling was effectively implemented and observed.