TRIBHUVAN UNIVERSITY

INSTITUTE OF SCIENCE AND TECHNOLOGY

AMRIT SCIENCE CAMPUS

Simulation and Modeling
Lab Report

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External Teacher's Signature

Internal 's Signature

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PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
 *  Executing task: /bin/bash -c ./build/Debug/outDebug

Sasank Lama
Enter number of samples: 3
Estimated pi: 2.666667
 *  Terminal will be reused by tasks, press any key to close it.
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
 *  Executing task: /bin/bash -c ./build/Debug/outDebug

Sasank Lama
Enter arrival rate (λ): 2
Enter service rate (μ): 1
System is unstable
 *  Terminal will be reused by tasks, press any key to close it.
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
 *  Executing task: /bin/bash -c ./build/Debug/outDebug

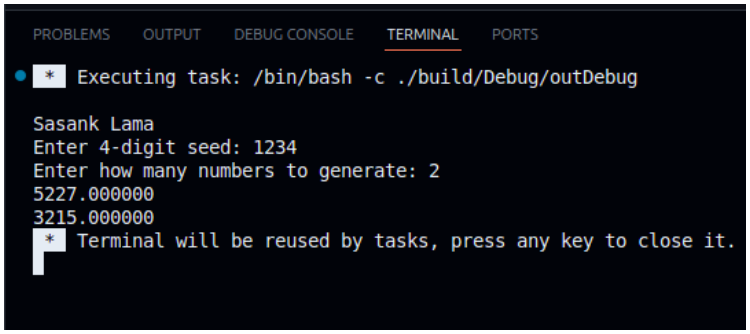
Enter transition matrix (2x2):
3 2 1 5 6 0
Enter initial state (2 values): Enter number of steps: 1 2
Sasank Lama
Final state after 1 steps: 18.0000, 12.0000
 *  Terminal will be reused by tasks, press any key to close it.
```

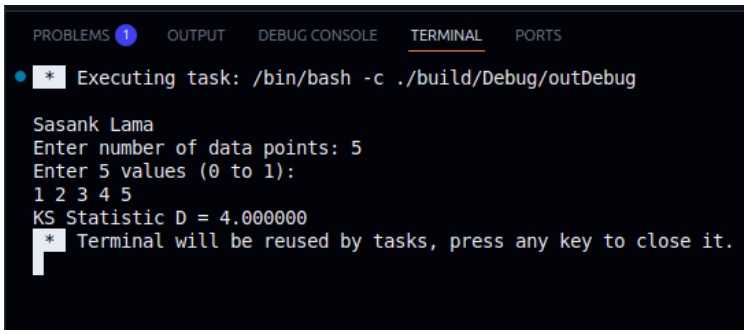
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
 *  Executing task: /bin/bash -c ./build/Debug/outDebug

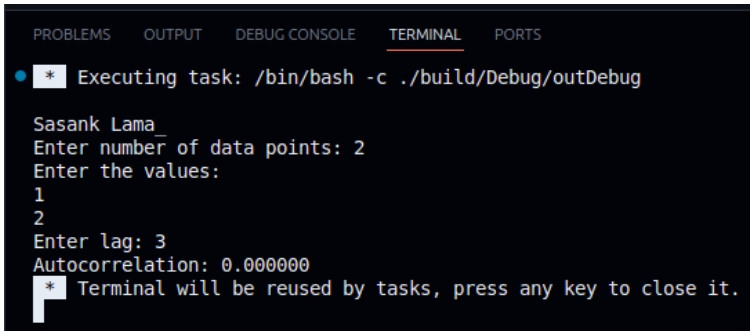
Sasank Lama
Enter seed: 2
Enter value of a,c,and m: 1 2 3
Enter how many numbers to generate: 3
1.000000
0.000000
2.000000
 *  Terminal will be reused by tasks, press any key to close it.
```

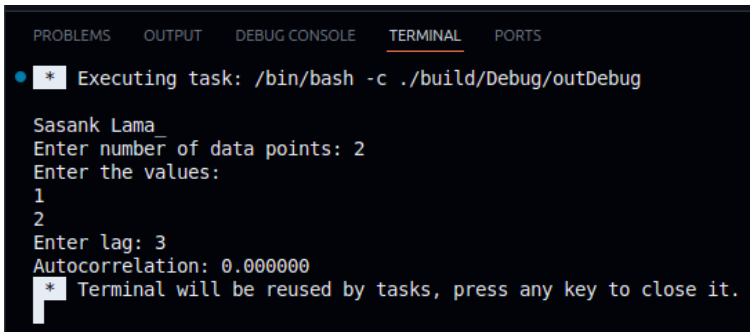
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
 *  Executing task: /bin/bash -c ./build/Debug/outDebug

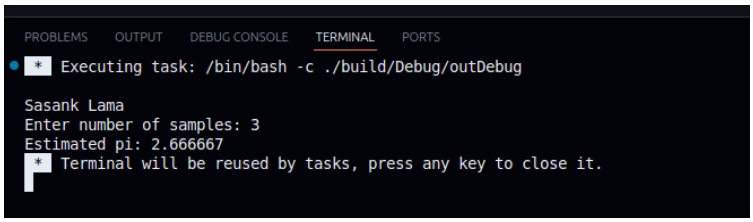
Sasank Lama
Enter seed: 2
Enter value of a and m: 1 2
Enter how many numbers to generate: 3
0.000000
0.000000
0.000000
 *  Terminal will be reused by tasks, press any key to close it.
```


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
* Executing task: /bin/bash -c ./build/Debug/outDebug
Sasank Lama
Enter 4-digit seed: 1234
Enter how many numbers to generate: 2
5227.000000
3215.000000
* Terminal will be reused by tasks, press any key to close it.

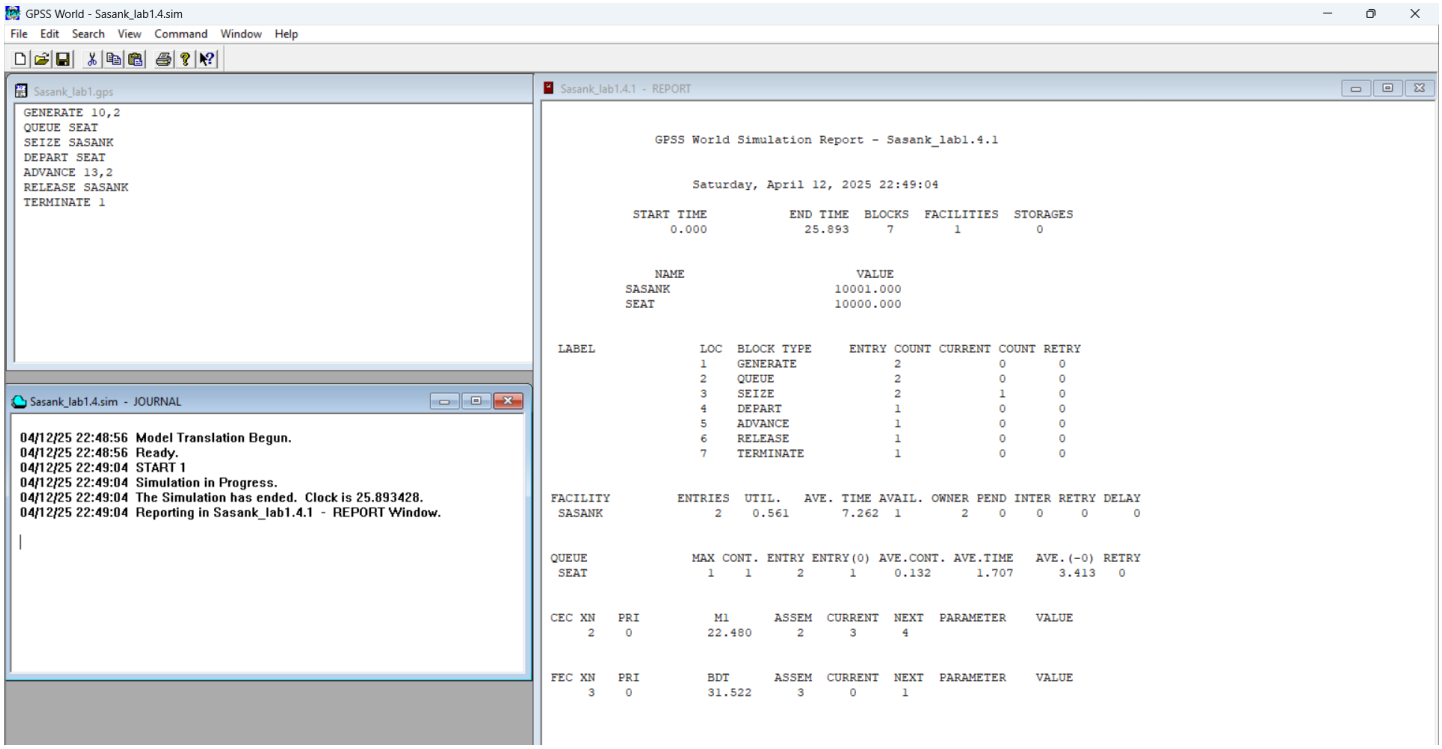

PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
* Executing task: /bin/bash -c ./build/Debug/outDebug
Sasank Lama
Enter number of data points: 5
Enter 5 values (0 to 1):
1 2 3 4 5
KS Statistic D = 4.000000
* Terminal will be reused by tasks, press any key to close it.


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
* Executing task: /bin/bash -c ./build/Debug/outDebug
Sasank Lama
Enter number of data points: 2
Enter the values:
1
2
Enter lag: 3
Autocorrelation: 0.000000
* Terminal will be reused by tasks, press any key to close it.

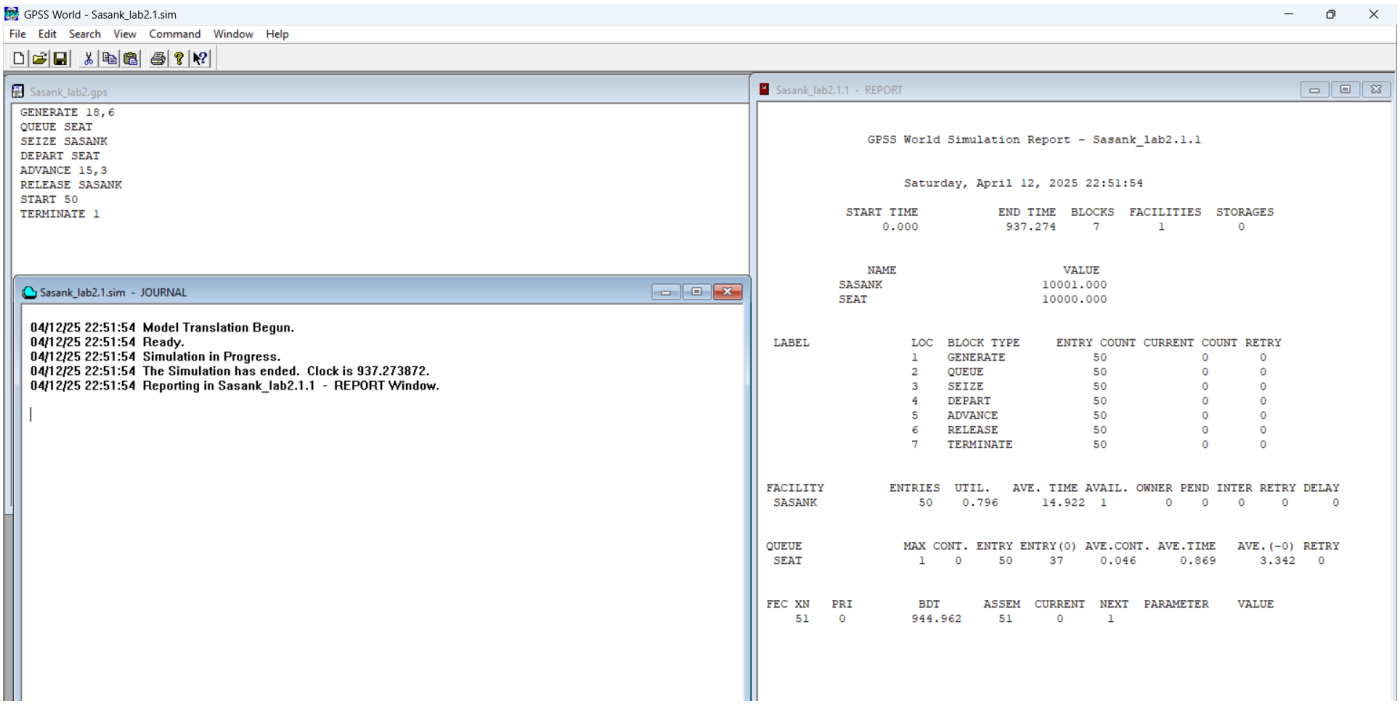

PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
* Executing task: /bin/bash -c ./build/Debug/outDebug
Sasank Lama
Enter number of data points: 2
Enter the values:
1
2
Enter lag: 3
Autocorrelation: 0.000000
* Terminal will be reused by tasks, press any key to close it.


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
* Executing task: /bin/bash -c ./build/Debug/outDebug
Sasank Lama
Enter number of samples: 3
Estimated pi: 2.666667
* Terminal will be reused by tasks, press any key to close it.

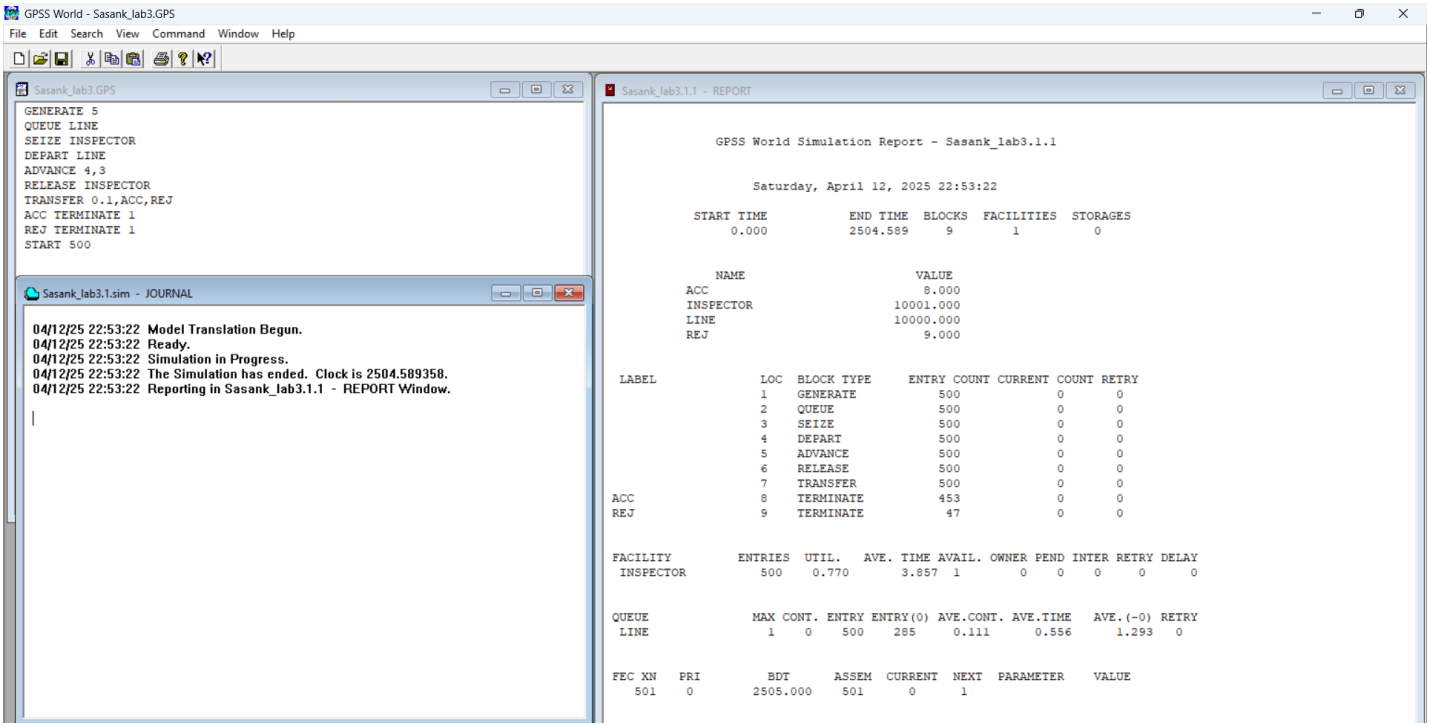
LAB 11 . a)


GPSS World - Sasank_lab1.4.sim
File Edit Search View Command Window Help
Sasank_lab1.gps
GENERATE 10,2
QUEUE SEAT
SEIZE SASANK
DEPART SEAT
ADVANCE 13,2
RELEASE SASANK
TERMINATE 1
Sasank_lab1.4.sim - JOURNAL
04/12/25 22:48:56 Model Translation Begun.
04/12/25 22:48:56 Ready.
04/12/25 22:49:04 START 1
04/12/25 22:49:04 Simulation in Progress.
04/12/25 22:49:04 The Simulation has ended. Clock is 25.893428.
04/12/25 22:49:04 Reporting in Sasank_lab1.4.1 - REPORT Window.
Sasank_lab1.4.1 - REPORT
GPSS World Simulation Report - Sasank_lab1.4.1
Saturday, April 12, 2025 22:49:04
START TIME END TIME BLOCKS FACILITIES STORAGES
0.000 25.893 7 1 0
NAME VALUE
SASANK 10001.000
SEAT 10000.000
LABEL LOC BLOCK TYPE ENTRY COUNT CURRENT COUNT RETRY
1 GENERATE 2 0 0
2 QUEUE 2 0 0
3 SEIZE 2 1 0
4 DEPART 1 0 0
5 ADVANCE 1 0 0
6 RELEASE 1 0 0
7 TERMINATE 1 0 0
FACILITY ENTRIES UTIL. AVE. TIME AVAIL. OWNER PEND INTER RETRY DELAY
SASANK 2 0.561 7.262 1 2 0 0 0 0
QUEUE MAX CONT. ENTRY ENTRY(0) AVE.CONT. AVE.TIME AVE.(-0) RETRY
SEAT 1 1 2 1 0.132 1.707 3.413 0
CEC XN PRI M1 ASSEM CURRENT NEXT PARAMETER VALUE
2 0 22.480 2 3 4
FEC XN PRI BDT ASSEM CURRENT NEXT PARAMETER VALUE
3 0 31.522 3 0 1

b)


GPSS World - Sasank_lab2.1.sim
File Edit Search View Command Window Help
Sasank_lab2.gps
GENERATE 18,6
QUEUE SEAT
SEIZE SASANK
DEPART SEAT
ADVANCE 15,3
RELEASE SASANK
START 50
TERMINATE 1
Sasank_lab2.1.sim - JOURNAL
04/12/25 22:51:54 Model Translation Begun.
04/12/25 22:51:54 Ready.
04/12/25 22:51:54 Simulation in Progress.
04/12/25 22:51:54 The Simulation has ended. Clock is 937.273872.
04/12/25 22:51:54 Reporting in Sasank_lab2.1.1 - REPORT Window.
Sasank_lab2.1.1 - REPORT
GPSS World Simulation Report - Sasank_lab2.1.1
Saturday, April 12, 2025 22:51:54
START TIME END TIME BLOCKS FACILITIES STORAGES
0.000 937.274 7 1 0
NAME VALUE
SASANK 10001.000
SEAT 10000.000
LABEL LOC BLOCK TYPE ENTRY COUNT CURRENT COUNT RETRY
1 GENERATE 50 0 0
2 QUEUE 50 0 0
3 SEIZE 50 0 0
4 DEPART 50 0 0
5 ADVANCE 50 0 0
6 RELEASE 50 0 0
7 TERMINATE 50 0 0
FACILITY ENTRIES UTIL. AVE. TIME AVAIL. OWNER PEND INTER RETRY DELAY
SASANK 50 0.796 14.922 1 0 0 0 0 0
QUEUE MAX CONT. ENTRY ENTRY(0) AVE.CONT. AVE.TIME AVE.(-0) RETRY
SEAT 1 0 50 37 0.046 0.869 3.342 0
FEC XN PRI BDT ASSEM CURRENT NEXT PARAMETER VALUE
51 0 944.962 51 0 1

c)



```
GPSS World - Sasank_lab3.GPS
File  Edit  Search  View  Command  Window  Help

Sasank_lab3.GPS
GENERATE 5
QUEUE LINE
SEIZE INSPECTOR
DEPART LINE
ADVANCE 4,3
RELEASE INSPECTOR
TRANSFER 0.1,ACC,REJ
ACC TERMINATE 1
REJ TERMINATE 1
START 500

Sasank_lab3.1.sim - JOURNAL
04/12/25 22:53:22  Model Translation Begun.
04/12/25 22:53:22  Ready.
04/12/25 22:53:22  Simulation in Progress.
04/12/25 22:53:22  The Simulation has ended.  Clock is 2504.589358.
04/12/25 22:53:22  Reporting in Sasank_lab3.1.1  -  REPORT Window.

Sasank_lab3.1.1 - REPORT

                GPSS World Simulation Report - Sasank_lab3.1.1


                    Saturday, April 12, 2025 22:53:22

          START TIME           END TIME  BLOCKS  FACILITIES  STORAGES
               0.000           2504.589     9        1          0


             NAME                      VALUE
          ACC                           8.000
          INSPECTOR                 10001.000
          LINE                      10000.000
          REJ                           9.000

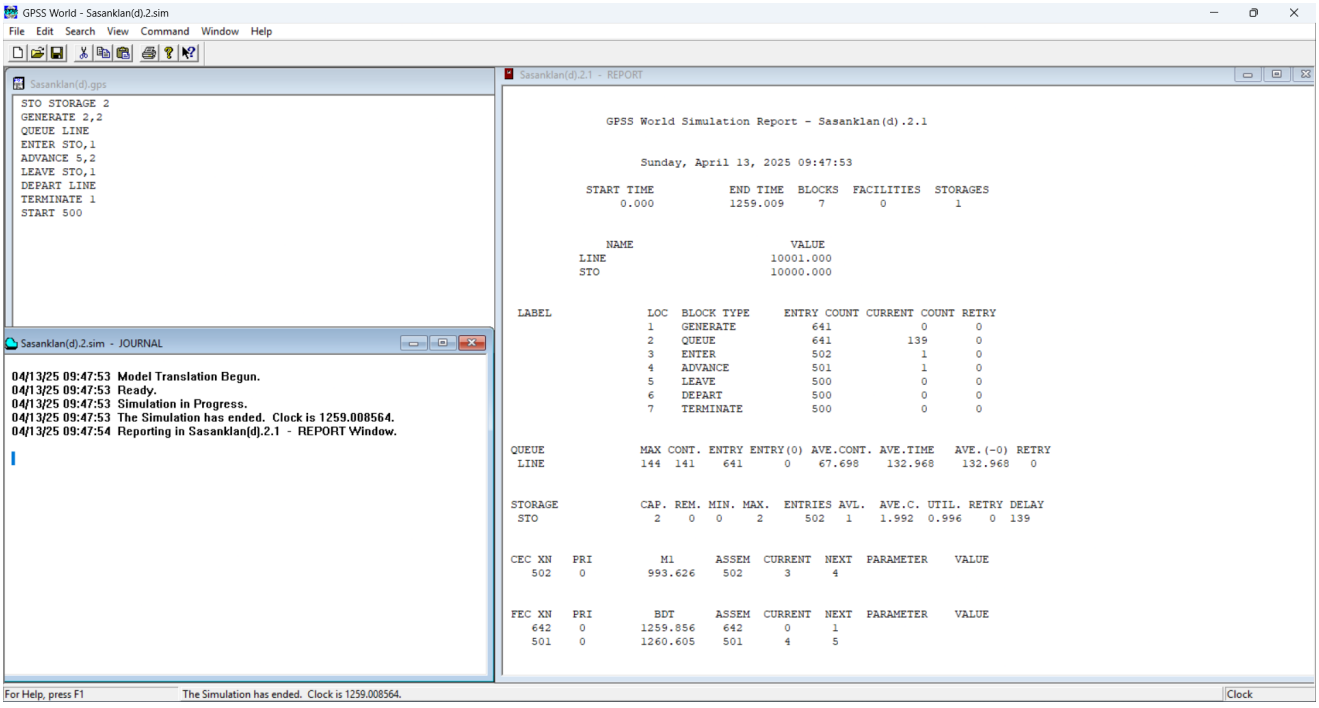

 LABEL              LOC  BLOCK TYPE     ENTRY COUNT CURRENT COUNT RETRY
                    1    GENERATE            500             0       0
                    2    QUEUE               500             0       0
                    3    SEIZE               500             0       0
                    4    DEPART              500             0       0
                    5    ADVANCE             500             0       0
                    6    RELEASE             500             0       0
                    7    TRANSFER            500             0       0
ACC                 8    TERMINATE           453             0       0
REJ                 9    TERMINATE            47             0       0


FACILITY         ENTRIES  UTIL.   AVE. TIME AVAIL. OWNER PEND INTER RETRY DELAY
 INSPECTOR          500    0.770       3.857  1        0    0    0     0       0


QUEUE              MAX CONT. ENTRY ENTRY(0) AVE.CONT. AVE.TIME   AVE.(-0) RETRY
 LINE                1    0    500    285     0.111      0.556      1.293   0


FEC XN    PRI         BDT      ASSEM  CURRENT  NEXT  PARAMETER    VALUE
   501    0        2505.000    501      0      1
```

d)



```
GPSS World - Sasanklan(d).2.sim
File  Edit  Search  View  Command  Window  Help

Sasanklan(d).gps
STO STORAGE 2
GENERATE 2,2
QUEUE LINE
ENTER STO,1
ADVANCE 5,2
LEAVE STO,1
DEPART LINE
TERMINATE 1
START 500

Sasanklan(d).2.sim - JOURNAL
04/13/25 09:47:53  Model Translation Begun.
04/13/25 09:47:53  Ready.
04/13/25 09:47:53  Simulation in Progress.
04/13/25 09:47:53  The Simulation has ended.  Clock is 1259.008564.
04/13/25 09:47:54  Reporting in Sasanklan(d).2.1  -  REPORT Window.

Sasanklan(d).2.1 - REPORT

            GPSS World Simulation Report - Sasanklan(d).2.1


                Sunday, April 13, 2025 09:47:53

          START TIME           END TIME  BLOCKS  FACILITIES  STORAGES
               0.000           1259.009     7        0          1


             NAME                      VALUE
          LINE                      10001.000
          STO                       10000.000


 LABEL              LOC  BLOCK TYPE     ENTRY COUNT CURRENT COUNT RETRY
                    1    GENERATE            641             0       0
                    2    QUEUE               641           139       0
                    3    ENTER               502             1       0
                    4    ADVANCE             501             1       0
                    5    LEAVE               500             0       0
                    6    DEPART              500             0       0
                    7    TERMINATE           500             0       0


QUEUE              MAX CONT. ENTRY ENTRY(0) AVE.CONT. AVE.TIME   AVE.(-0) RETRY
 LINE              144  141    641      0     67.698    132.968    132.968   0


STORAGE            CAP. REM. MIN. MAX.  ENTRIES AVL.  AVE.C. UTIL. RETRY DELAY
 STO                 2    0   0     2      502   1    1.992  0.996    0  139


CEC XN    PRI          M1      ASSEM  CURRENT  NEXT  PARAMETER    VALUE
   502    0         993.626    502      3      4


FEC XN    PRI         BDT      ASSEM  CURRENT  NEXT  PARAMETER    VALUE
   642    0        1259.856    642      0      1
   501    0        1260.605    501      4      5

For Help, press F1   The Simulation has ended.  Clock is 1259.008564.   Clock
```

e)

GPSS World - Sasank_lab5.GPS

File Edit Search View Command Window Help

Sasank_lab5.GPS

```
ARRIVAL   GENERATE 2,2
          QUEUE line
          ENTER STO,1
          DEPART line
          ADVANCE 5,2
          LEAVE STO,1
          TERMINATE 0 ; Continue simulation

ENDGEN    GENERATE 600      ; End after 600 time units (10 hours)
          TERMINATE 1
STO STORAGE 2
START 1
```

Sasank_lab5.1.sim - JOURNAL

```
04/12/25 22:55:53  Model Translation Begun.
04/12/25 22:55:53  Ready.
04/12/25 22:55:53  Simulation in Progress.
04/12/25 22:55:53  The Simulation has ended.  Clock is 600.000000.
04/12/25 22:55:53  Reporting in Sasank_lab5.1.1  -  REPORT Window.
```

Sasank_lab5.1.1 - REPORT

```
                GPSS World Simulation Report - Sasank_lab5.1.1


                     Saturday, April 12, 2025 22:55:53

          START TIME           END TIME  BLOCKS  FACILITIES  STORAGES
               0.000           600.000     9        0          1


             NAME                     VALUE
          ARRIVAL                      1.000
          ENDGEN                       8.000
          LINE                     10001.000
          STO                      10000.000


 LABEL              LOC  BLOCK TYPE     ENTRY COUNT CURRENT COUNT RETRY
ARRIVAL               1    GENERATE          303             0       0
                      2    QUEUE             303            65       0
                      3    ENTER             238             0       0
                      4    DEPART            238             0       0
                      5    ADVANCE           238             2       0
                      6    LEAVE             236             0       0
                      7    TERMINATE         236             0       0
ENDGEN                8    GENERATE            1             0       0
                      9    TERMINATE           1             0       0


QUEUE              MAX CONT. ENTRY ENTRY(0) AVE.CONT. AVE.TIME   AVE.(-0) RETRY
 LINE               65   65    303       2    29.966     59.339     59.733   0


STORAGE            CAP. REM. MIN. MAX.  ENTRIES AVL.  AVE.C. UTIL. RETRY DELAY
 STO                 2    0    0    2      238   1    1.984  0.992    0   65
```

f)

GPSS World - Sasank_lab6.3.1 - REPORT

File Edit Search View Command Window Help

Sasank_lab6.GPS

```
          GENERATE 10
          TRANSFER 0.1,A,B

A         ADVANCE 6,2
          TRANSFER 0.1,ACC,REJ

B         ADVANCE 10,2
          TRANSFER 0.1,ACC,REJ

ACC       TERMINATE 1
REJ       TERMINATE 1
```

Sasank_lab6.3.sim - JOURNAL

```
04/12/25 22:57:57  Model Translation Begun.
04/12/25 22:57:57  Ready.
04/12/25 22:58:01  START 1
04/12/25 22:58:01  Simulation in Progress.
04/12/25 22:58:01  The Simulation has ended.  Clock is 17.659440.
04/12/25 22:58:01  Reporting in Sasank_lab6.3.1  -  REPORT Window.
```

Sasank_lab6.3.1 - REPORT

```
                GPSS World Simulation Report - Sasank_lab6.3.1


                     Saturday, April 12, 2025 22:58:01

          START TIME           END TIME  BLOCKS  FACILITIES  STORAGES
               0.000            17.659     8        0          0


             NAME                     VALUE
          A                            3.000
          ACC                          7.000
          B                            5.000
          REJ                          8.000


 LABEL              LOC  BLOCK TYPE     ENTRY COUNT CURRENT COUNT RETRY
                      1    GENERATE            1             0       0
                      2    TRANSFER            1             0       0
A                     3    ADVANCE             1             0       0
                      4    TRANSFER            1             0       0
B                     5    ADVANCE             0             0       0
                      6    TRANSFER            0             0       0
ACC                   7    TERMINATE           1             0       0
REJ                   8    TERMINATE           0             0       0


FEC XN    PRI        BDT      ASSEM   CURRENT   NEXT   PARAMETER    VALUE
     2    0         20.000      2       0       1
```