**ST. XAVIER’S COLLEGE**

**(Affiliated to Tribhuvan University)**

**Maitighar, Kathmandu**

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**SIMULATION AND MODELING LAB REPORT #07**

**SUBMITTED BY:**

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017BSCIT029

3rd year/ 5th Sem

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|  | Signature |
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**SUBMITTED TO:**

**STATEMENT:** A machine tool in a manufacturing shop is turning out parts at the rate of one every 5 minutes. As they are finished, the parts go to an inspector, who takes 4 +- 3 minutes to examine each one and rejects about 10% of the parts. Each part will be represented by one transaction and the time unit selected for the problem will be 1 minute.

Now, represent the system in block diagram using GPSS.

**THEORY**

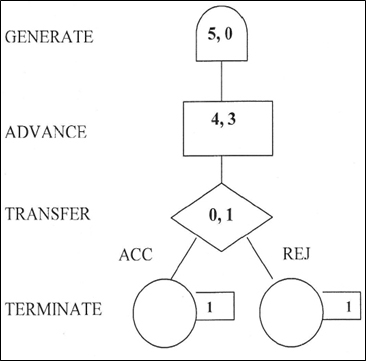
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Figure 1 Model-1

**GENERATE BLOCK**

This block will produce a flow of transactions with inter-arrival times determined by the attribute values. The label is optional. The distribution of inter-arrival times follows a uniform probability distribution.

**SYNTAX:**

line number label GENERATE A,B,C,D,E

**ATTRIBUTES:**

A = average value of uniform distribution

B = half-width of uniform distribution

C = time delay before first transaction is generated

D = maximum number of transactions generated

E = priority allocated to transactions

**ADVANCE BLOCK**

This block represents the servicing of a transaction. The servicing times follow a uniform probability distribution. The label is optional.

**SYNTAX:**

line number label ADVANCE A,B

**ATTRIBUTES:**

A = average value of uniform distribution

B = half-width of uniform distribution

\* A transaction entering this block will be delayed by a time interval chosen at random from the specified probability distribution.

**TRANSFER BLOCK**

This block will take transactions entering it and transfer them to each of two different destinations according to laid down proportions. For example:

200 TRANSFER 0.95, EXIT, REPAIR

In this case 95% of all transactions entering the TRANSFER block will go to the program line labelled REPAIR and 5% will go to the program line labelled EXIT. If the second attribute "EXIT" is replaced by a "comma", then the 5% will go to the next block in the program.

**SYNTAX:**

line number label TRANSFER A,B,C

**ATTRIBUTES:**

A = probability value (0 to 1)

B = proportion of (1-A) transactions transferred to this labelled location

C = proportion A transactions transferred to this labelled location

**TERMINATE BLOCK**

This block destroys any transaction entering it and removes it from computer memory. Each time a transaction enters this block it decrements a counter by an amount equal to its attribute value. The counter is set by the user upon starting the simulation.

**SYNTAX:**

line number label TERMINATE A

**ATTRIBUTES:**

A = decrements simulation counter by this amount

\* When the counter, set at the beginning of the simulation, reaches zero then the simulation is complete and a statistical report is produced on the outcome of the simulation

**CODING**

GENERATE 5,0 ; Create Parts

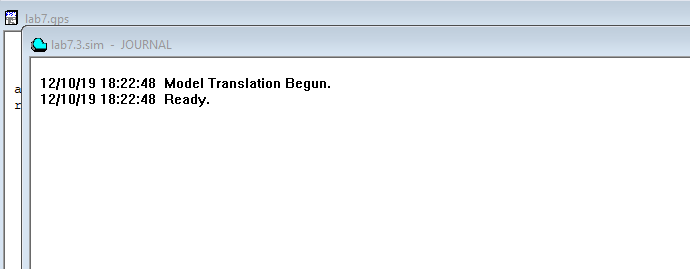
ADVANCE 4,3 ; Inspect the parts

TRANSFER 0.1,accept,reject ; Change the state of transaction

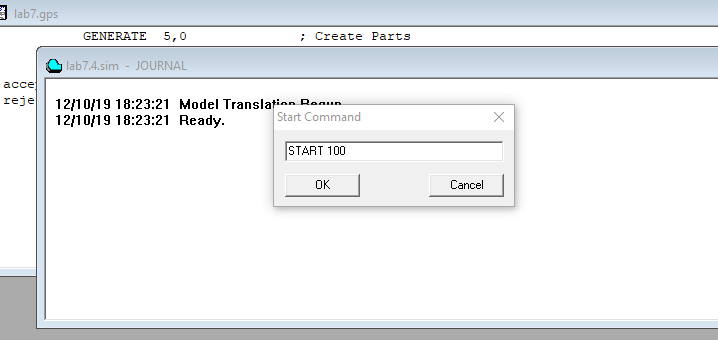
accept TERMINATE 1

reject TERMINATE 1

**RESULT**

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**Figure 2 Create Simulation**

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**Figure 3 Start the simulation**

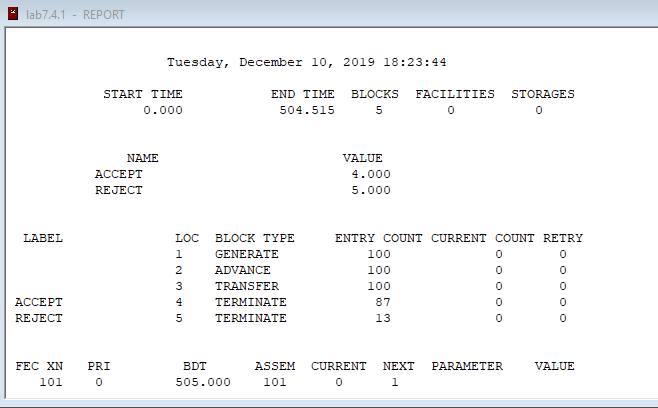
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Figure 4 Generate Report

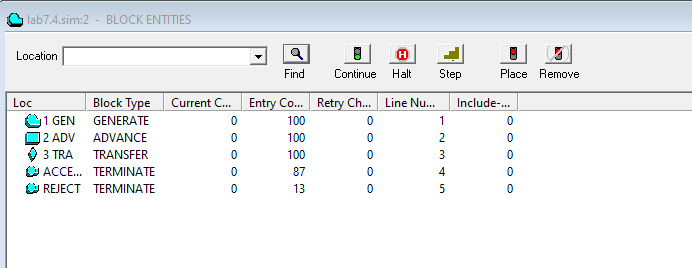
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Figure 5 Simulate Block Windows

**CONCLUSION**

Hence, the Manufacturing Shop Model-1 was simulated using GPSS.