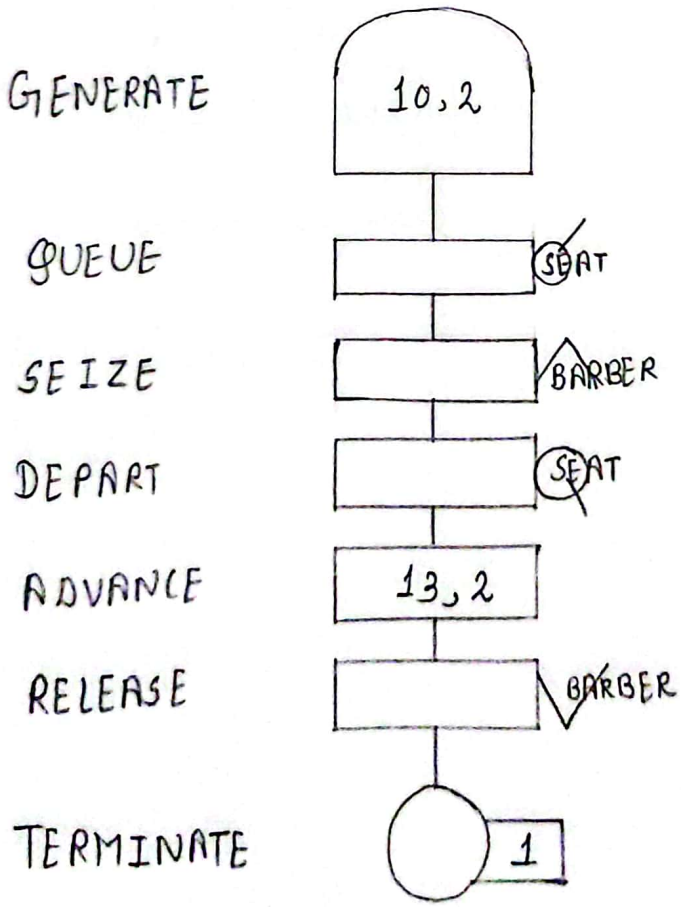
Lab work 15

1. Create a GPSS model and program to simulate a barber shop for a day (9am to 4pm), where a costumer enters the Shop every 10 ± 2 minute and a barber takes 13 ± 2 for a haircut.

⇨ Solution:

Program:

```
GENERATE 10,2
QUEUE SEAT
SEIZE BARBER
DEPART SEAT
ADVANCE 13,2
RELEASE BARBER
TERMINATE
TIMER GENERATE 420
TERMINATE 1
```



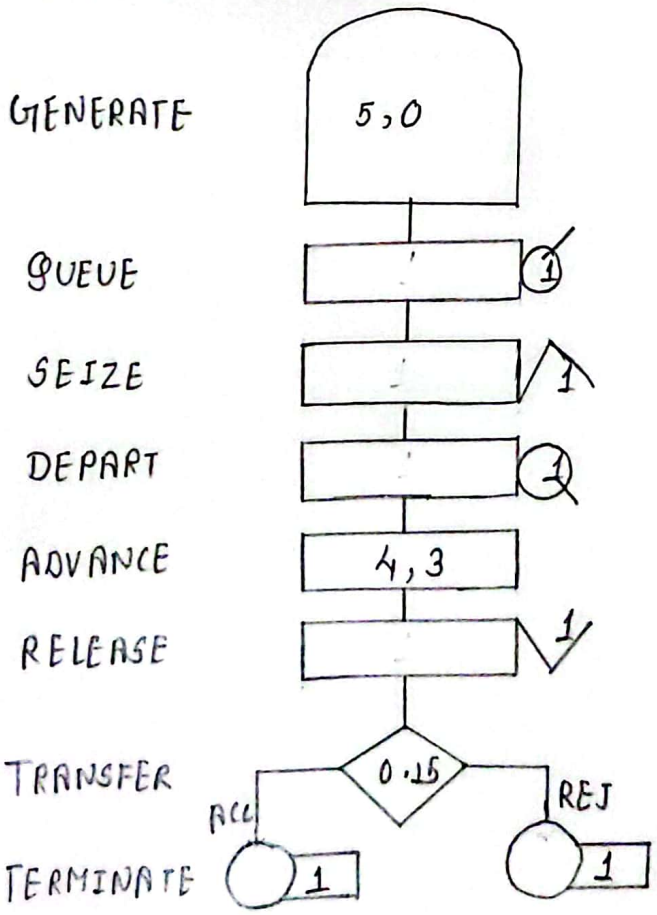
GPSS model to simulate a barber shop

2. 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. Draw and explain a block diagram and write a GPSS program to simulate using the concept of facility.

⇨ Solution:

Program:

```
GENERATE 5,0
QUEUE 1
SEIZE 1
DEPART 1
ADVANCE 4,3
RELEASE 1
TRANSFER 0.15 ACC REJ
ACC TERMINATE 1
REJ TERMINATE 1
```



GPSS model

3. 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 20% of the parts. Draw and explain a block diagram for it and write a GPSS program to simulate using the concept of FACILITY.

⇨ Solution:

Program:

```
GENERATE 5,0
QUEUE 1
SEIZE 1
DEPART 1
ADVANCE 4,3
RELEASE 1
TRANSFER 0.2 ACC REJ
ACC TERMINATE 1
REJ TERMINATE 1
```

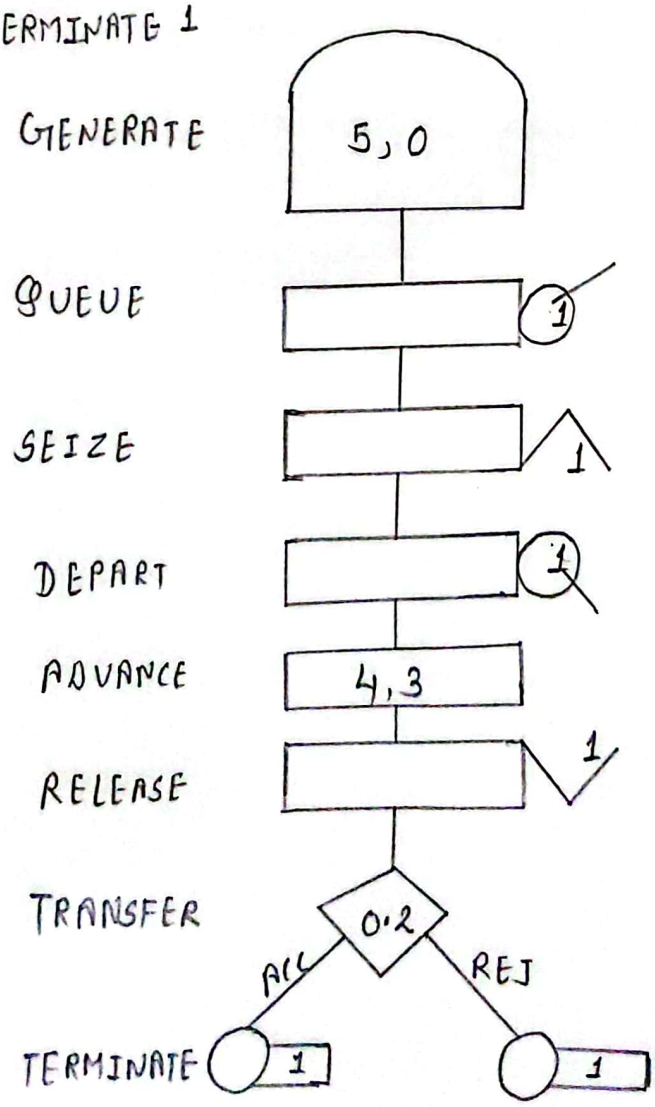


Fig:- GPSS model

4. We are modeling a barber shop with the following qualities:

- The shop contains one barber and one barber's chair, open for eight hours in a day.
- Customers arrive on average every 18 minutes, with the arrival time varying between 12 and 24 minutes.
- If the barber is busy, the customer will wait in a queue.
- Once the barber is free, the next customer will have a haircut.
- Each haircut takes between 12 and 18 minutes, with the average being 15 minutes.
- Once the haircut is done, the customer will leave the shop.

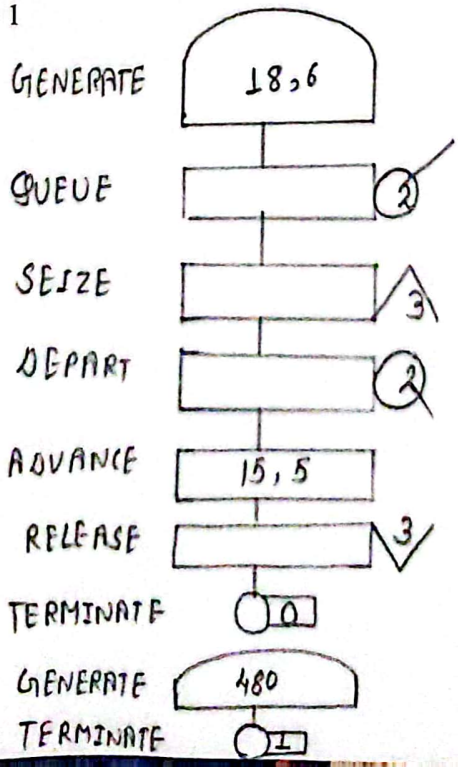
We want to answer these questions:

- How utilized is the barber through the day?
- How long does the queue get?
- On average, how long does a customer have to wait.

⇨ Solution:

Program:

```
GENERATE 18,6
QUEUE 2
SEIZE 3
DEPART 2
ADVANCE 15,5
RELEASE 3
TERMINATE 0
GENERATE 480
TERMINATE 1
```



5. Consider that 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 10% of the parts. Now, develop a block diagram and write the code for simulating the above problem using GPSS, and also explain the function of each block used in the block diagram in detail.

⇨ Solution:

Program:

```
GENERATE 5,0
QUEUE 1
SEIZE 1
DEPART 1
ADVANCE 4,3
RELEASE 1
TRANSFER 0.1 ACC REJ
ACC TERMINATE 1
REJ TERMINATE 1
```