11. Parts are being made at the rate of one every 10 minutes. They are of two types, A and B. And are mixed randomly with about 10% being type B. A separate inspector is assigned to examine each part. Inspection of part A takes 6±2 minutes while B takes 10±2 minutes. Both inspector rejects 10% of parts they inspect. Draw GPSS block diagram to simulate the the above problem for 100 parts.
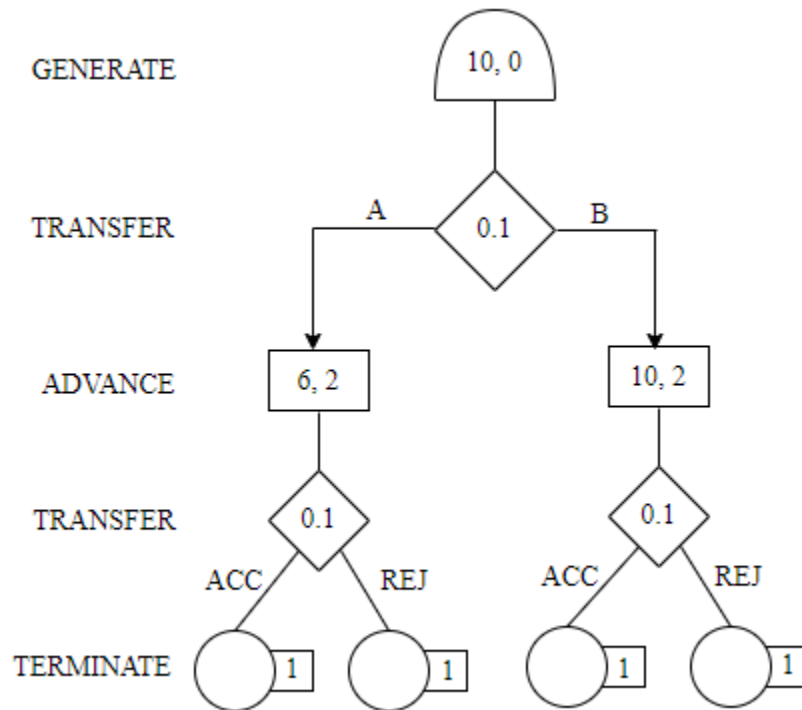
Code for simulating the given problem using GPSS:

```
    GENERATE  10, 0

      TRANSFER  0.1  A   B

  A   ADVANCE  6, 2

  B   ADVANCE  10, 2

  A   TRANSFER  0.1  ACC   REJ

  B   TRANSFER  0.1  ACC   REJ

  A   ACC TERMINATE   1

      REJ TERMINATE   1

  B    ACC TERMINATE   1

      REJ TERMINATE   1

  START 100
```
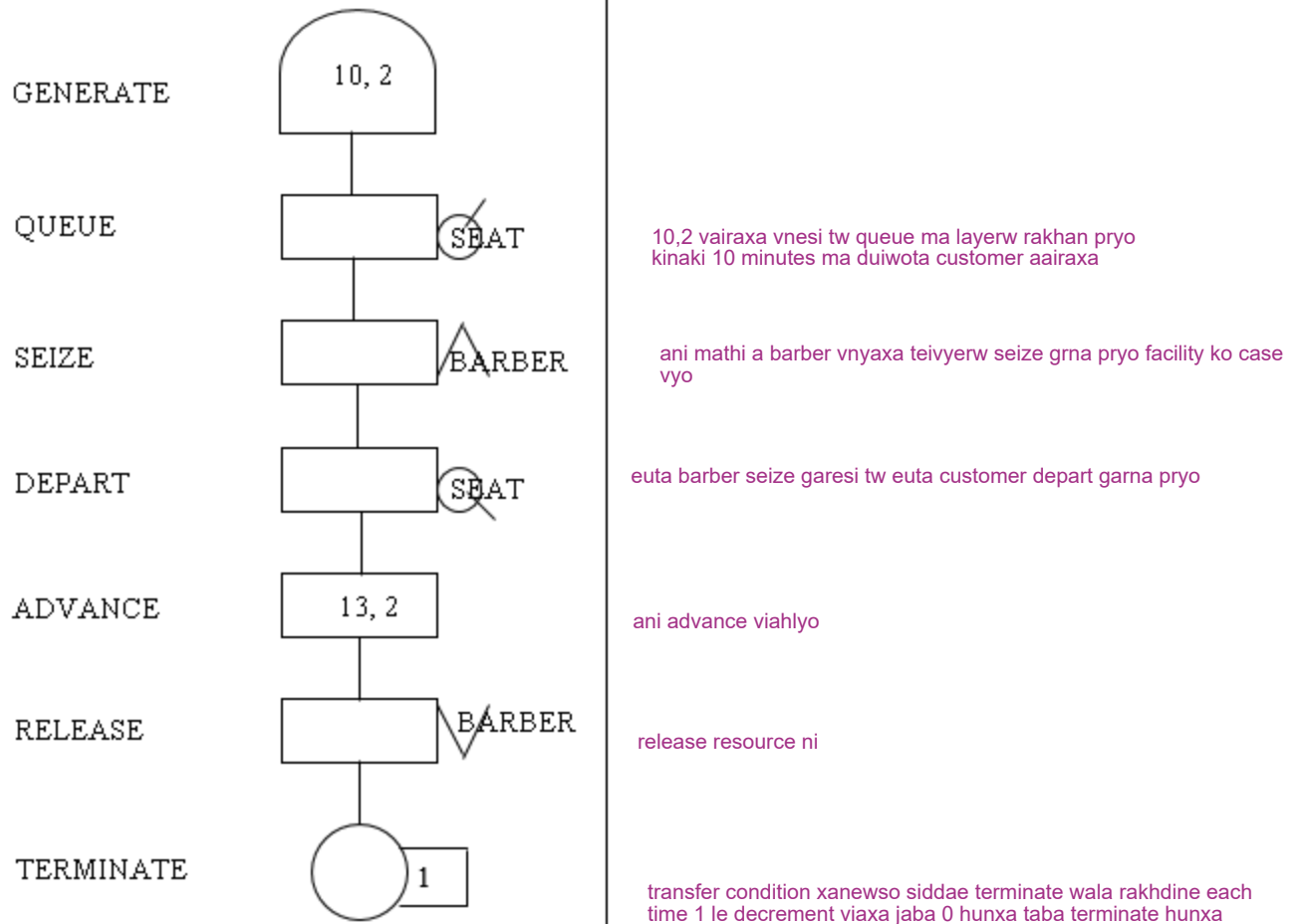
11. Create a GPSS model and program to simulate a barber shop for a day (9am to 4pm), where a costumer enters the Shop every 10 ± 2 minutes and a barber takes 13 ± 2 for a haircut.

GPSS model to simulate a barber shop

GENERATE — 10, 2

QUEUE — SEAT

10,2 vairaxa vnesi tw queue ma layerw rakhan pryo kinaki 10 minutes ma duiwota customer aairaxa

SEIZE — BARBER

ani mathi a barber vnyaxa teivyerw seize grna pryo facility ko case vyo

DEPART — SEAT

euta barber seize garesi tw euta customer depart garna pryo

ADVANCE — 13, 2

ani advance viahlyo

RELEASE — BARBER

release resource ni

TERMINATE — 1

transfer condition xanewso siddae terminate wala rakhdine each time 1 le decrement viaxa jaba 0 hunxa taba terminate hunxa

Program

```
        GENERATE    10,2

        QUEUE        SEAT

        SEIZE        BARBER

        DEPART       SEAT

        ADVANCE      15,3

        RELEASE      BARBER

        TERMINATE

TIMER GENERATE    420

        TERMINATE 1
```

3. Why is GPSS called transaction flow oriented language? 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.

GENERATE   5, 0

QUEUE   1

SEIZE   1

DEPART   1

ADVANCE   4, 3

RELEASE   1

TRANSFER   0.2

ACC   REJ
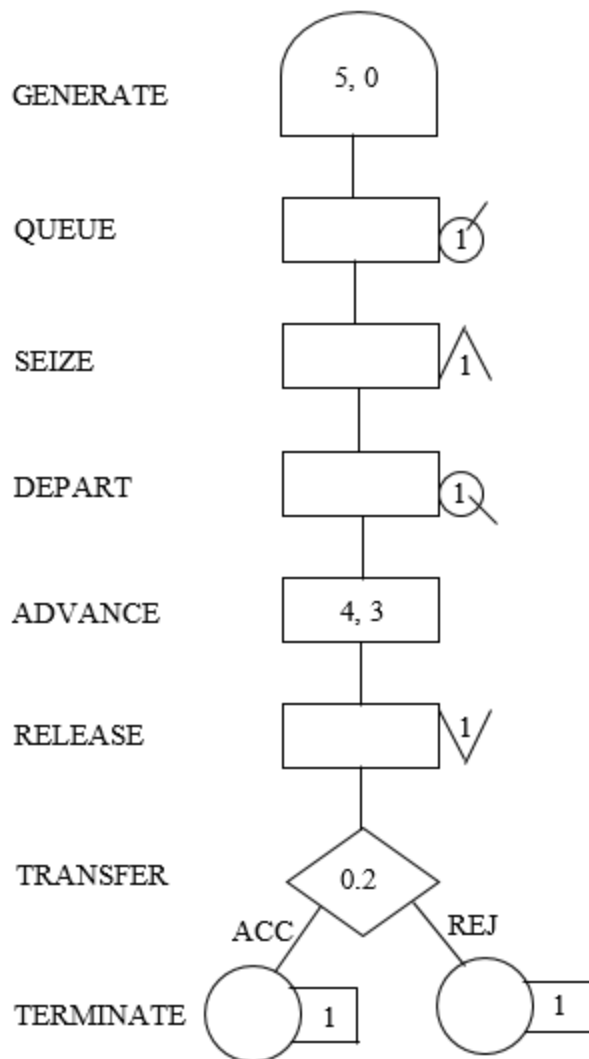
TERMINATE   1   1

Code for simulating the given problem using GPSS:

```
    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
```

10. What do you understand by queueing and queueing discipline? An office works for 5 days, 8 hours per day, and receives 1200 telephone call in the week. Calculate the mean arrival rate and mean inter-arrival time of the calls.

Mean arrival rate $= \lambda$

Mean inter-arrival time $= T_a$

Total working hours $= 5 * 8 = 40$ hrs per week

Total calls in the week $= 1200$

$T_a = (40*60*60 \text{ sec})/1200 = 144,000 \text{ sec}/1200 = 120 \text{ sec} = 2 \text{ min}$

$\lambda = 1/T_a = 1/2 = 0.5$ call per min