* 1. The time-varying mean is the area under curve divided by time.

1. Since at time 20.0:,

 (*Note*: use “old” value, not “new” value)

Therefore, 

* 1. No. The system is not empty.
  2. a. 1; b. 4; c. 2; d. 5; e. 4
  3. **Parameters**
* {tA} = Interarrival times
* {tL} = Lead times
* Q = order quantity
* R = reorder point
* I0 = initial inventory position (assume > r)

**State Variables**

* I = inventory position (I0)
* OO = amount on order (0)

**Event Graph**





1. The Arrival event and the JoinQueue event have different signatures, so an adapter will not work.
2. Call the new component “EntityCreator”:



1. **State variable**: N = # customers completing service (initially 0). **Event Graph**:



* 1. Code (imports, package, and comments omitted):

public class FlipFlop extends SimEntityBase {

private RandomVariate flipTimes;

private RandomVariate flopTimes;

protected int numberFlips;

protected int numberFlops;

public FlipFlop() { }

public FlipFlop(RandomVariate flipTimes, RandomVariate flopTimes) {

this();

setFlipTimes(flipTimes);

setFlopTimes(flopTimes);

}

@Override

public void reset() {

super.reset();

this.numberFlips = 0;

this.numberFlops = 0;

}

public void doRun() {

firePropertyChange("numberFlips", getNumberFlips());

firePropertyChange("numberFlops", getNumberFlops());

waitDelay("Flip", flipTimes);

}

public void doFlip() {

numberFlips += 1;

firePropertyChange("numberFlips", getNumberFlips());

waitDelay("Flop", flopTimes);

}

public void doFlop() {

numberFlops += 1;

firePropertyChange("numberFlops", getNumberFlops());

waitDelay("Flip", flipTimes);

}

/\*\*

\* @return the flipTimes

\*/

public RandomVariate getFlipTimes() {

return flipTimes;

}

/\*\*

\* @param flipTimes the flipTimes to set

\*/

public void setFlipTimes(RandomVariate flipTimes) {

this.flipTimes = flipTimes;

}

/\*\*

\* @return the flopTimes

\*/

public RandomVariate getFlopTimes() {

return flopTimes;

}

/\*\*

\* @param flopTimes the flopTimes to set

\*/

public void setFlopTimes(RandomVariate flopTimes) {

this.flopTimes = flopTimes;

}

/\*\*

\* @return the numberFlips

\*/

public int getNumberFlips() {

return numberFlips;

}

/\*\*

\* @return the numberFlops

\*/

public int getNumberFlops() {

return numberFlops;

}

}