

# The GPS Simulator Pseudocode

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## 1 GPS Simulator

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**Algorithm 1** Handling the Interrupt Triggered by a Packet Arrival

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```
1: procedure GPSSIM::HANDLENEWPACKETARRIVAL(PACKET *pPKT)
2:   double nowRTime, nowVTime;
3:   FLOW *pFlow;
4:   BOOL b;
5:   PACKET *pCurPacket;
6:   nowRTime = current real time;
7:   if (mIdling) then
8:     nowVTime = 0;
9:     mIdling = FALSE;
10:  else
11:    nowVTime = mThenVTime + (nowRTime - mThenRTime) / mSumWeight;
12:    pFlow = pPKT→mpFlow;
13:    b = flow→IsBackloggedUnderGPS();
14:    if (!b) then
15:      mSumWeight = mSumWeight + pFlow→mWeight;
16:    pPKT→GPS_VFTime = nowVTime + pPKT→mLength/pFlow→mWeight;
17:    pFlow→AppendPacket(pPKT);
18:    if (!b) then
19:      mpPQ_HOL→Enqueue(pPKT);
20:      pCurPacket = mpPQ_HOL→Peek_Min();
21:      if (pCurPacket != mpCurPacket) then
22:        mpCurPacket = pCurPacket;
23:      ResetTimer(nowVTime, mpCurPacket→mGPS_VFTime);
24:    mThenVTime = nowVTime;
25:    mThenRTime = nowRTime;
26:  end procedure
```

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**Algorithm 2** Reset the Timer

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```
1: procedure GPSSIM::RESETTIMER(double nowVTime, double newWakeupVTime)
2:   double newInterval;
3:   newInterval = (newWakeupVTime - nowVTime) * mSumWeight;
4:   StopTimer();
5:   StartTimer(newInterval, WakeupProcessing());
6: end procedure
```

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**Algorithm 3** When a Packet Finishes Service Under GPS

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```
1: procedure GPS::WAKEUPPROCESSING()
2:   double nowVTime;
3:   FLOW *pFlow;
4:   PACKET *pPKT;
5:   nowVTime = mpCurPacket→mGPS_VFTime;
6:   mpPQ_HOL→PopMin();
7:   pFlow = mpCurPacket→mpFlow;
8:   pFlow→PopHOL();
9:   if (pFlow→IsBackloggedUnderGPS()) then
10:     pPKT = pFlow→PeekHOL();
11:     mpPQ_HOL.Enqueue(pPKT);
12:   else
13:     mSumWeight = mSumWeight - pFlow→mWeight;
14:     mpCurPacket = mpPQ_HOL→PeekMin();
15:     if (mpCurPacket == NULL) then
16:       CleanUpAfterBusyPeriod();
17:     else
18:       ResetTimer(nowVTime, mpCurPacket→GPS_VFTime);
19: end procedure
```

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