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/*
*  Sender ----------------> Router --------------------------->Network
*                          BUCKETSIZE        PACKETRATE
*/

#include<stdio.h>

#define DURATION 60     //Duration of simulation
#define BUCKETSIZE 30   // Leaky bucket size
#define PACKETRATE 20   //Outging packet rate from router

#define SS_THRESHOLD 16 //Slow start threshold

//#define CWND
//#define DETAIL

int sender();
int router();

int time=0,for_send=0,sent=0,total_sent=0,dropped=0,total_dropped=0;

int main()
{

 while(time < DURATION)
 {
#if defined (DETAIL) && ! defined (CWND)
   printf("\n---- At Time = %d ------\n",time);
#endif
   sender();
   router();
   time++;
 }

#ifndef CWND
 printf("\n----------\nTotal Packet sent =%d\n",total_sent);
#endif
}

int sender()
{
  static int cwnd=1;
#if defined (DETAIL) && ! defined (CWND)
  printf("At Sender ->\n");
  printf("Receiver told - sent=%d dropped=%d\n",sent,dropped);
#endif
  if(sent > 0)
  {
    total_sent+=sent;
    sent=0;
    if(cwnd < SS_THRESHOLD)
      cwnd=cwnd*2;
    else
      cwnd=cwnd+1;
    if(dropped > 0)
    {
      total_dropped += dropped;
      dropped=0;
```

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      cwnd=1;
    }
  }
  for_send=cwnd;
#ifdef CWND
  printf("%d %d\n",time,cwnd);
#endif
#if defined (DETAIL) && ! defined (CWND)
  printf("cnwd=%d\n",cwnd);
#endif
}

int router()
{
  static int buffered=0;
   dropped=0;
#if defined (DETAIL) && ! defined (CWND)
  printf("At Router ->\n");
  printf("Remaining in buffer=%d   New from
sender=%d\n",buffered,for_send);
#endif
  buffered += for_send;
  if(buffered <= PACKETRATE)
  {
     sent=buffered;
     buffered=0;
  }
  else
  {
    sent = PACKETRATE;
    buffered -=sent;
    if( buffered > BUCKETSIZE)
    {
      dropped= buffered - BUCKETSIZE;
      buffered = BUCKETSIZE;
    }
  }
#if defined (DETAIL) && ! defined (CWND)
  printf("sent=%d dropped=%d\n",sent,dropped);
#endif
}
```