/\*This is a simulation program written in Java. Each day the news boy must order the papers for the next day.   
 He buys the papers for 10 cents and sells them for 20 cents. The simulation runs for 100 days and generates the paper demand (from 10 to 15 per day)  
 randomly for an observed distribution. Over the 1000 day period, the simulation collects profit per day, average profit per day and the average papers   
 demanded per day.   
 \*/  
 import java.io.\*;  
 import java.io.IOException;  
 import javax.swing.\*;  
 import java.util.\*;  
 import java.io.File;  
 import java.io.FileNotFoundException;  
 import java.lang.\*;  
 import java.util.NoSuchElementException;  
 import java.math.\*;  
   
   
 public class NewsBoySim  
 {   
 public static void main(String[] args)throws Exception  
 {  
   
 PrintWriter outpt;  
 // now equate the internal name to an external file through the PrintWriter  
   
 outpt=new PrintWriter(new File("NewsBoyOut.txt"));  
 int i, day;  
 // Inventory pans=new Inventory(15.75, 10);  
   
 cstats statics=new cstats(); //Initiate statistics  
 newsboy joe=new newsboy(); // initiate Joe  
 dmdproc wantpaper=new dmdproc(); //initiate wantpaper process  
 int dmd;  
 double sales, money;  
 //now start a loop to test joe's behavior for 5 days. Have demand constant at 11  
 for (day=1;day<=1000;day++)  
 {// get the demand for today  
 dmd=wantpaper.dmdtoday();  
 //give Joe the demand for today  
 joe.setdemand(dmd);  
 // record the statistics for this day  
 statics.setprofit(joe.getprofit());  
 // order papers for tomorrow  
 joe.order();  
 if(day>=500&&day<=505)  
 { System.out.println("for day "+day+" demand "+dmd+" sold "+joe.getsold());  
 System.out.println(" profit "+joe.getprofit()+" ordered "+joe.getordered());  
 outpt.println("for day "+day+" demand "+dmd+" sold "+joe.getsold());  
 outpt.println(" profit "+joe.getprofit()+" ordered "+joe.getordered());  
 }  
   
 }; //end of timing loop  
 System.out.println("sold "+joe.getsold()+" ordered "+joe.getordered());  
 System.out.println("profit "+joe.getprofit());  
 System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*Statics for 1000 Days of Sales\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");  
   
 System.out.println("average profit "+statics.getaverage());  
 System.out.println("variance "+statics.getvar()+" st dev "+statics.getstdev());  
 System.out.println("count "+statics.getcount());  
 // a test of the Math.random function  
 int x;  
 for ( i=1;i<=30;i++)  
 {x=(int)(Math.random()\*100);  
   
 System.out.println( x);  
 }  
 }// end of main  
 }//end of newsboysim  
   
 class newsboy{  
 private int demand;// this is the demand for the day  
 private int ordered;// this is the amount ordered for today  
 private int bought;//this is the amount bought for today  
 private int sold;// this is the amount sold for today  
 private double profit;//  
 // now for the behaviors of the newsboy  
 public newsboy()  
 {// this is the constructor for the newsboy  
 // set all values to 0 and start him with 10 papers  
 demand=0;   
 ordered=10;  
 bought=0;  
 sold=0;  
 profit=0.0;  
 }//end of newsboy constructor  
 public int order()  
 {// this is a private policy function for how many the newsboy will order daily  
 int x;  
 x=12; // order 12 papers daily  
 ordered=x;  
 return x;  
 }  
 private void behavior()  
 {// this is the behavior of the newsboy.  
 // recieve the papers ordered yesterday  
 bought=ordered;  
 // System.out.println ("nboybehavior bought "+bought+" demand "+demand);  
 // calculate the papers sold  
 if(demand>=bought)sold=bought;  
 else  
 sold=demand;  
 // calculate profit  
 profit=0.20\*sold-0.10\*bought;  
 // order for tomorrow  
 ordered=order();  
 // System.out.println(" bought "+bought+" ordered "+ordered+" demand "+demand+" sold "+sold);  
 }// this is the end of the behavior of the newsboy  
 public void setdemand(int x)  
 {// we will give the newsboy a demand and then let him behave as appropriate  
 demand=x;  
 //given the demand for the day, activate the the behavior of the newsboy object  
 behavior();  
 }//end of setdemand  
   
   
 //\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Now Create the Utility functions to Interrograte the News Boy Objecct  
 public double getprofit(){return profit;}  
 public int getsold(){return sold;}  
 public int getordered(){return ordered;}  
 }// end of newsboy class  
 //\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Now Setup the Calculator Class\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 class cstats {  
 private double profit;//profit for today  
 private double psum;//sum of profit for all days  
 private double psum2;//sum squaared of profit  
 private double average;//average profit  
 private double stdev;//standard deviation  
 private double variance;// variance  
 private int count;//   
 public cstats()  
 {//constructor for cstats  
 profit=psum=psum2=average=stdev=variance=0; count=0;  
 }  
 public void setprofit(double x)  
 {// this function sets profit and calculates the stats for the day  
 profit=x;  
 psum+=profit;  
 psum2+=profit\*profit;  
 count++;  
 average=psum/count;  
 variance=psum2/count-average\*average;  
 stdev=Math.sqrt(variance);  
 return;  
 }// end of setprofit  
 // Utility functions to return values from cstats  
 public double getprofit() {return profit;}  
 public double getaverage(){return average;}  
 public double getvar(){return variance;}  
 public double getstdev(){return stdev;}  
 public int getcount(){return count;}   
 }// end of class cstats  
 class dmdproc  
 {//this is the process generator for the demand  
 private int demand;  
 public dmdproc()  
 {// this is the conctructor for dmdproc  
 demand=0;  
 }  
 public int dmdtoday()  
 {//this is the process generator for the demand today  
 //the demand for papers considered with percents on a daily basis is  
 // 10-10%, 11-20%,12-30%, 13-10%, 14-10%, 15-20%  
 int x; // this is the random variante U(0-100)  
   
 x=(int)(Math.random()\*100);  
 if (x<=20)demand=10;  
 else   
 if(x<=30)demand=11;  
 else  
 if(x<=60)demand=12;  
 else  
 if(x<=70)demand=13;  
 else  
 if(x<=80)demand=14;  
 else  
 demand=15;  
 // System.out.println(" x and demand"+x+" "+demand);  
 return demand;  
 }// end of dmdtoday  
 }//end of class dmdproc

System.out.println

M ----jGRASP exec: java NewsBoySim  
MM§Mfor day 500 demand 12 sold 12  
MM§M profit 1.2000000000000002 ordered 12  
MM§Mfor day 501 demand 14 sold 12  
MM§M profit 1.2000000000000002 ordered 12  
MM§Mfor day 502 demand 10 sold 10  
MM§M profit 0.7999999999999998 ordered 12  
MM§Mfor day 503 demand 12 sold 12  
MM§M profit 1.2000000000000002 ordered 12  
MM§Mfor day 504 demand 12 sold 12  
MM§M profit 1.2000000000000002 ordered 12  
MM§Mfor day 505 demand 11 sold 11  
MM§M profit 1.0 ordered 12  
MM§Msold 12 ordered 12  
MM§Mprofit 1.2000000000000002  
MM§M\*\*\*\*\*\*\*\*\*\*\*\*\*\*Statics for 1000 Days of Sales\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
MM§Maverage profit 1.094400000000009  
MM§Mvariance 0.027168640000003963 st dev 0.16482912364022312  
MM§Mcount 1000  
MM§M84  
MM§M69  
MM§M76  
MM§M99  
MM§M85  
MM§M40  
MM§M20  
MM§M72  
MM§M45  
MM§M55  
MM§M82  
MM§M60  
MM§M95  
MM§M82  
MM§M66  
MM§M92  
MM§M75  
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MM§M58  
MM§M46  
MM§M33  
MM§M51  
MM§M61  
MM§M55  
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MM§M10  
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MM©M ----jGRASP: operation complete.  
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