LECTURE NOTES

SWITCH STATEMENT

USING BREAK

```
import cs1.Keyboard;
public class myclass
{
  public static void main(String[]args)
  {
  char letterGrade;
  int aCount=0,bCount=0,cCount=0,dCount=0,fCount=0;

  System.out.println("enter a letter grade (A,B,C,D,F)");
  letterGrade=Keyboard.readChar();

  while(letterGrade!='X')
  {
     switch(letterGrade)
     {
      case 'A':
           aCount++;
           break;
      case 'B':
           bCount++;
           break;
      case 'C':
           cCount++;
           break;
      case 'D':
           dCount++;
           break;
      case 'F':
           fCount++;
           break;
      default :
           System.out.println("error:incorrect input");
           break;

    }//end of switch
     System.out.println("enter a letter grade (A,B,C,D,F)");
     letterGrade=Keyboard.readChar();
   }//end of while

  }

}
```

THE SAME WITH "IF-ELSE"

```
....
if(letterGrade=='A' ||  letterGrade=='a')
     aCount++;
else   if(letterGrade=='B'  ||  letterGrade=='b')
     bCount++;
else  if.....
|
|
|
else
  System.out.println("error");
....
```

*** A break statement is usually used at the end of each case alternative of a switch statement to jump to the end of the switch.***
*** A switch statement could be implemented as aseries of if –else statements, but the switch is often a more convenient and readable construct.***

THE SAME WITHOUT "BREAK"

```
....
switch (letterGrade)

{
case 'A': aCount++;
case 'B': bCount++;
case 'C': cCount++;
|
|
|
default:
   System.out.println("error")
```

THE SAME WITH "IF" (the equivalent of the no-break version)

```
....
if(letterGrade=='A' ||  letterGrade=='a')
     aCount++;
if(letterGrade=='B'  ||  letterGrade=='b')
     bCount++;
if.....
|
|
if(letterGrade=='F'  ||  letterGrade=='f')
     bCount++;
// in this version default: is executed no matter what
  System.out.println("error");
```

INVOKING METHODS

EXAMPLE - I

```
import cs1.Keyboard;
public class myclass
{
        public static void main(String[]args)
  {
   int inputNo,n;
   System.out.println("enter an integer:");
   inputNo=Keyboard.readInt();
   if(inputNo!=0)
    {
     n=absValue(inputNo);
     System.out.println("n:"+n);
    }
  }//end of main
//=====================================
public static int absValue(int i)
  {
   int result;
   result=i;
   if(result<0)
      result=-result;
      return(result);
   }
}
```

EXAMPLE -II

```
//sum=1+1/2!+1/3!+...while each>=0.0001
import cs1.Keyboard;
public class myclass
{
        public static void main(String[]args)
  {
   int n=1;
   double sum,nextValue;
   sum=0.0;
   nextValue=1.0;
   do
   {
    sum+=nextValue;
    n++;
    nextValue=elem(n);
   }
   while (nextValue>0.0001);
   System.out.println("sum:"+sum);
  }
//==----------
public static float elem(int n)
 {
```

```
  float val;
  int nfac=1;
  for(int i=1;i<=n;i++)
     nfac=nfac*i;
     val=1/nfac;
     return(val);
 }
}// end of class...
```

EXAMPLE -III

```
public class  myclass
{
          public static void main(String[]args)
   {
     int a=5,b=10;
     int maxValue;
       maxValue=max(a,b);
     System.out.println("max value:"+maxValue);
    }
//=-----
public static int max(int m, int n)
{
   int r;
      if(m>n)
        r=m;
      else
        r=n;
      return(r);
}
}
```

SOME PROBLEMS

I-

Q=write a program showing the number of letter grades of students in a class.

```
 import cs1.Keyboard;
public class myclass
{
  public static void main(String[]args)
  {
    int grade,category,n,A=0,B=0,C=0,D=0,F=0;

     System.out.println("enter the number of students in the class:");
     n=Keyboard.readInt();
      for(int i=1;i<=n;i++)
      {
         System.out.print("enter a numeric grade(0 to 100):");
         grade=Keyboard.readInt();
         category=grade/10;
```

```
      switch (category)
      {
       case 10:
          A++;
          break;
       case 9:
          A++;
          break;
       case 8:
          B++;
          break;
       case 7:
          C++;
          break;
       case 6:
          D++;
          break;
       default:
          F++;
      }
    }
      System.out.println("A:"+A);
      System.out.println("B:"+B);
      System.out.println("C:"+C);
      System.out.println("D:"+D);
      System.out.println("F:"+F);
  }
}
```

II-

Q=write a program showing the highest and the lowest grades in a class.

```
import cs1.Keyboard;
public class myclass
{
   public static void main(String[]args)
   {
   int grade,count=0,sum=0,max,min;
   double average;
   System.out.print("enter the first grade(-1 to quit):");
   grade=Keyboard.readInt();

   max=min=grade;
   while(grade>=0 && grade<=100)
   {
     count++;
     sum+=grade;
     if(grade>max)
       max=grade;
     else
       min=grade;
     System.out.print("enter the next grade(enter -1 to quit):");
```

```
      grade=Keyboard.readInt();
    }
    if(count==0)
      System.out.println("error:no valid grades were entered.");
    else
    {
     average=(double)sum/count;
     System.out.println();
     System.out.println("total numbers of students:"+count);
     System.out.println("average grade:"+average);
     System.out.println("highest grade:"+max);
     System.out.println("lowest grade:"+min);
    }
   }
}
```

III-

Q=design and implement an application that plays the Rock-Scissors-Paper game against the computer...

```
import cs1.Keyboard;
public class random
{
        public static void main(String[]args)
   {
   String ans,cpu="";

   System.out.println("enter your guess:(paper,rock,scissors):");
   ans=Keyboard.readString();
   int k=(int)(Math.random()*3);

   if(k==0)
     cpu="rock";
   if(k==1)
     cpu="paper";
   if(k==2)
     cpu="scissors";


   System.out.println(cpu);
   if(cpu.equals(ans))
     System.out.println("tie");
   else
   {
     if(cpu=="rock" && ans=="paper" ||
        cpu=="paper"&& ans=="scissors" ||
        cpu=="scissors"&& ans=="rock")
        System.out.println("you won");
     else
         System.out.println("you lost");
```

```
  }
}
}
```

EXAMPLE –IV

Q=write a program to draw X with stars(*)...

```
import cs1.Keyboard;
public class star1
{
   public static void main(String[]args)
   {
     final int maxrow;
     System.out.print("enter maxrow:");
     maxrow=Keyboard.readInt();
     for(int row=1;row<maxrow;row++)
     {
          for(int a=1;a<=row-1;a++)
              System.out.print(" ");
          System.out.print("*");
          for(int b=1;b<=(2*(maxrow-1))-(2*row-1);b++)
              System.out.print(" ");
          System.out.print("*");
          System.out.println();
      }
     for(int c=1;c<=maxrow-1;c++)
     {
          System.out.print(" ");
     }
          System.out.print("*");
          System.out.println();

     for(int d=1;d<=maxrow-1;d++)
      {
          System.out.print(" ");
      }
       System.out.print("*");
       System.out.println();


      for(int nrow=2;nrow<=maxrow;nrow++)
      {
        for(int f=1;f<=maxrow-nrow;f++)
            System.out.print(" ");
        System.out.print("*");
        for(int g=1;g<2*nrow-1;g++)
            System.out.print(" ");
        System.out.print("*");
        System.out.println();
```

```
        }

}
}
```

EXAMPLE –V
Q= Implement a method that returns the reverse of a number using int arithmetic...

```
import cs1.Keyboard;
public class rev
{
            public static void main(String[]args)
    {
     int inputNo,n;
     System.out.println("Enter an integer:");
     inputNo=Keyboard.readInt();
     while(inputNo!=0){
     n=reverse(inputNo);
     System.out.println("reverse of input no:"+n);
     System.out.println("Enter an integer:");
     inputNo=Keyboard.readInt();
     }// end of while
   }// end of main()
   //=====================================================
    static public int reverse(int n)
    {
     int sum=0,nextDigit;

       do
   {
     nextDigit=n%10;
     sum=sum*10+nextDigit;
     n=n/10;
             }
    while(n>0);
   return (sum);
   }//end of metod
}//end of class
```

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