CS101-02 CLASS NOTES

WHILE, FOR, DO-WHILE LOOP STRUCTURES

EX:Finding sum of input numbers between 1 and 100

Version 1-By using while loop:

```
import cs1.Keyboard;
public class class1
{
  public static void main(String[]args)
   {
    int inputNo,sum;
    sum=0;
    System.out.println("Enter an integer between 1 and 100:");
    inputNo=Keyboard.readInt();
    while (inputNo>=1 && inputNo<=100){
        sum+=inputNo;
        System.out.println("Enter an integer between 1 and 100:");
        inputNo=Keyboard.readInt();
    }
    System.out.println("sum="+sum);
   } //end of main
} //end of class
```

Version 2-By using a boolean variable:

```
import cs1.Keyboard;
public class class2
{    public static void main(String[]args)
   {
    boolean legalInput;
    int inputNo, sum;
    System.out.println("Enter an integer number between 1 and 100:");
    inputNo=Keyboard.readInt();
    legalInput=inputNo>=1 && inputNo<=100;
    sum=0;
    while(legalInput){
        sum+=inputNo;
        System.out.println("Enter an integer between 1 and 100:");
        inputNo=Keyboard.readInt();
        legalInput=inputNo>=1 && inputNo<=100;
    } //end of while
    System.out.println("sum="+sum);
   }  //end of main
}  //end of class
```

Version 3-By using for statement:

```
import cs1.Keyboard;
public class class3
{
    public static void main(String[]args)
   {
    boolean legalInput;
    int inputNo, sum;
    System.out.println("Enter an integer number between 1 and 100:");
    inputNo=Keyboard.readInt();
    legalInput=inputNo>=1 && inputNo<=100;
    sum=0;
    for (;legalInput;){
        sum+=inputNo;
        System.out.println("Enter an integer between 1 and 100:");
        inputNo=Keyboard.readInt();
        legalInput=inputNo>=1 && inputNo<=100;
    } //end of while
    System.out.println("sum="+sum);
   }  //end of main
}  //end of class
```

Version 4-By using do while structure:

```
import cs1.Keyboard;
public class class4
{
    public static void main(String[]args)
   {
    boolean legalInput;
    int inputNo, sum;
    sum=0;
    do {
        System.out.println("Enter an integer between 1 and 100:");
        inputNo=Keyboard.readInt();
        legalInput=inputNo>=1 && inputNo<=100;
        if(legalInput)
            sum+=inputNo;
       }
    while(legalInput);
    System.out.println("sum="+sum);
   }  //end of main
}  //end of class
```

Differences between for, while, do while:

I-
```
for(i=1;sum=0;i<=n,i++)
    sum+=i
```

II-
```
sum=0
i=1
while(i<=n) {
   sum+=i
   i++
   }
```

III-
```
sum=0
i=1
do{
  sum+=i
  i++
}
while(i<=n)
```

These three programs do the same work.

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Question: Draw a number diagram:

```
   1
  212
 32123
4321234
```

Solution:

```
import cs1.Keyboard;
public class Diagram
{
    public static void main(String[]args)
    {

        for(int k=1;k<=3;k++)
            System.out.print(" ");
        System.out.print("1");
        System.out.println();
        int row=2;
        int count=2;
        while(row<=4)
        {
            for(int s=1;s<=4-row;s++)
                  System.out.print(" ");
            for(int a=1;a<=row;a++)
            {     System.out.print(count);
                  count--;
            }
            int count2=2;
            for(int b=1;b<row;b++)
                  {     System.out.print(count2);
                        count2++;
                  }
            System.out.println();
            row++;
                  count+=row;
            }
      }
}
```

Question: Find the summation of 1+2*3+3*4+4*5……..+ 9*10

Solution:

```
public class Int
{
      public static void main (String[] args)
      {
            int x=2,y=3,sum=0;
            while(y<=10)
            {
                  sum=sum+(x*y);
                  x++;
                  y++;
            }
            System.out.println("The summation is "+(sum+1));
      }
}
```

Question: Design an implement to find average of grades

Solution:

```
import cs1.Keyboard;
public class GradeMaster
{
	public static void main (String[] args)
	{
		int x,sum=0,count=1;
		double avarage;
		System.out.println("Enter a grade (to quit press -1)");
		x=Keyboard.readInt();
		while(x!=-1)
		{
			sum=sum+x;
			avarage=(double)sum/count;
			count++;
			System.out.println("The avarage is "+avarage);
			System.out.println("Enter a grade (to quit press -1)");
			x=Keyboard.readInt();
		}
		System.out.println("You have quitted");

	}
}
```

Question: Draw a holiday tree

```
          *
         ***
        *****
       *******
      *********
     ***********
    *************
   ***************
         ***
         ***
```

Solution:

```
public class Tree
{
	public static void main (String[] args)
	{
		int row=1;
		while(row<=8)
		{
			for(int space=1;space<=(8-row);space++)
				System.out.print(" ");
			for(int star=1;star<=(2*row-1);star++)
				System.out.print("*");
			System.out.println();
			row++;
		}
		int r=1;
```

```
            while(r<=2)
            {
                  for(int k=1;k<=6;k++)
                        System.out.print(" ");
                  for(int s=1;s<=3;s++)
                        System.out.print("*");
                  System.out.println();
                  r++;}}}
```

Question: Design an implement as a guess game. (when the user enters the value, the computer must make a comment as low or high to reach the number)

Solution:

```
import cs1.Keyboard;
public class Game
{
      public static void main (String[] args)
      {
            int x,y;
            y=(int)(Math.random()*100)+1;// to select the numbers randomly
            System.out.println("Hey, guess the number that I am thinking. It is
between 1 and 100");
            x=Keyboard.readInt();
            while(x!=y)
            {
                  while(x<y)
                  {
                        System.out.println("No,make it bigger");
                        x=Keyboard.readInt();
            }
            while(y<x)
            {
                  System.out.println("No, make it lower");
                  x=Keyboard.readInt();
            }
         }
          System.out.println("Ok, you win");
     }
}
```

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