# Lecture 27

Java Applets Animation

With the start of last week of semester before final exams, teachers & students both are tired. Students feeling more tiredness despite of their age, the main factors are lack of interest in studies and excessive interest in recreational activities. It really tired you a lot if you are doing something as a burden, without thinking that you are learning something new & valuable. Learning which will support you InshaAllah throughout your life. Anyhow thinking that your receptors are almost discharging, we are not going to read any more. Just discussing a bit more examples on animations using applets:

Most of you have seen screen saver in Windows that are pipes moving randomly. We are hereby just going through an initial phase of creating an applet having such pipes. It may not be same but somehow a start. The idea is drawing lines either in horizontal or vertical direction. We take start where we have hard coded 4 points of line i.e. start & end of like. After drawing first line, we will make end of first line as start of second line and calculating new ending points randomly. The simple idea is to generate a random number 0, 1, 2, 3 to decide one of the 4 possible directions. Next generate a number say distance randomly in range 5-20. Now check if direction is 0 subtract distance from x2 (left), if direction is 1 add distance in x2 (right), if direction is 2 subtract distance from y2 (up), else add distance to y2 (down). So let see the code first:

```java
public void paint(Graphics g){
  int x1=190, x2=210, y1=200, y2=200;
  int i, dir, distance;
  for (i=1;i<=200;i++){
    g.drawLine(x1,y1,x2,y2);
    dir=(int)(Math.random()*4);
    distance=(int)(Math.random()*15+5);
    x1=x2;
    y1=y2;
    if (dir==0)        x2=x2-distance;
    else if (dir==1)   x2=x2+distance;
    else if (dir==2)   y2=y2-distance;
    else               y2=y2+distance;
    try{
      Thread.sleep(20);
    }catch(Exception e){}
  }
}
```
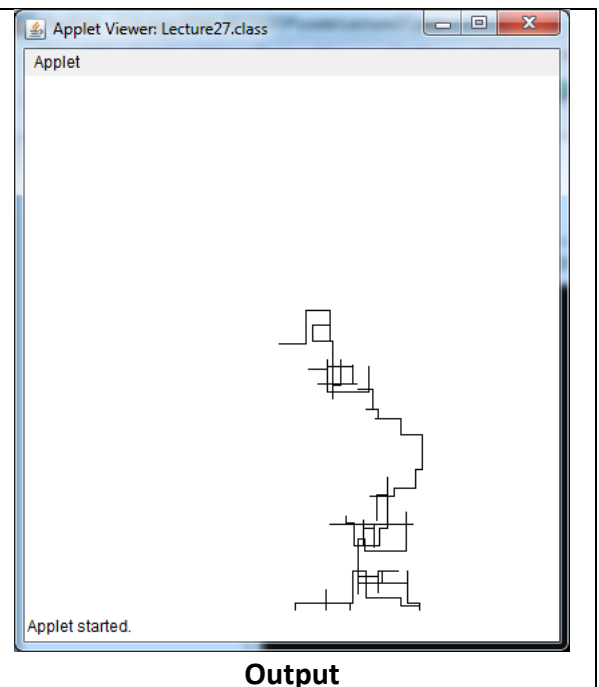

Output

You may run this code for any number of times. If you see output you may notice that drawing stopped at bottom whereas it is not, actually it goes out of boundary and because there is no boundary check, therefore, it is drawing lines outside boundary. A second issue is that there might be lines overwritten, we should have horizontal line followed by vertical line and vice versa. This is left as exercise for students to handle both things. One is boundary check and second is direction control.

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in progress