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I am confirming that I have completed this lab completely based on the requirements and it is working and fully functional.

Screenshots:

```
public static final int END = 70;

public static void main(String[] args) {
    // TODO code application logic here
    Random random = new Random();

    System.out.println("BANG !!!!! \n" +
                       "AND THEY'RE OFF !!!!!");

    int tortoiseDistance = 1;
    int hareDistance = 1;
    int time = 0;

    System.out.println( x: "HT");
```

```

while(true)
{
    try {
        tortoiseDistance += tortoiseNextAction(random);
        hareDistance += hareNextAction(random);

        if( tortoiseDistance < 1 ) tortoiseDistance = 1;
        if( hareDistance < 1 ) hareDistance = 1;

        if( tortoiseDistance > hareDistance )
        {
            System.out.println( x: moveDistance( distance: hareDistance).concat( str: "H").
                               concat( str: moveDistance(tortoiseDistance-hareDistance)).concat( str: "T"));
        }
        else if( hareDistance > tortoiseDistance )
        {
            System.out.println( x: moveDistance( distance: tortoiseDistance).concat( str: "T").
                               concat( str: moveDistance(hareDistance - tortoiseDistance)).concat( str: "H"));
        }
        else
        {
            System.out.println( x: moveDistance( distance: tortoiseDistance).concat( str: "TH"));
        }

        time++;
        Thread.sleep( millis: 0);

        if(hareDistance >= END && tortoiseDistance >= END)
        {
            System.out.println( x: "It's a tie.");
            System.out.printf( format: "TIME ELAPSED = %d seconds", args: time);
            break;
        }

        else if(hareDistance >= END)
        {
            System.out.println( x: "Hare Wins. Yuch.");
            System.out.printf( format: "TIME ELAPSED = %d seconds", args: time);
            break;
        }
        else if(tortoiseDistance >= END)
        {
            System.out.println( x: "TORTOISE WINS!!! YAY!!!");
            System.out.printf( format: "TIME ELAPSED = %d seconds\n", args: time);
            break;
        }
    } catch (InterruptedException e) {
        throw new RuntimeException( cause: e);
    }
}

```

```
// tortoise move rule
public static int tortoiseNextAction(Random random)
{
    int rd = random.nextInt( origin:1, bound:11);

    if( rd >= 1 && rd <= 5 ) // Fast plod
    {
        return 3;
    }
    else if( rd >= 6 && rd <= 7 ) // Slip
    {
        return -6;
    }
    else // Slow plod
    {
        return 1;
    }
}
```

```

// hare move rule
public static int hareNextAction(Random random)
{
    int rd = random.nextInt( origin:1, bound:11);

    if ( rd >= 1 && rd <= 2 ) // Sleep
    {
        return 0;
    }
    else if ( rd >= 3 && rd <= 4 ) // Big hop
    {
        return 9;
    }
    else if ( rd == 5 ) // Big slip
    {
        return -12;
    }
    else if ( rd >= 6 && rd <= 8 ) // Small hop
    {
        return 1;
    }
    else
    {
        return 2; // Small slip
    }
}

```

```
public static String moveDistance(int distance)
{
    String s = "";
    for(int i = 0 ; i < distance ; i++)
    {
        s = s.concat( str:" ");
    }
    return s;
}
```

Outputs:

run:

BANG !!!!!

AND THEY'RE OFF !!!!!

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Hare Wins. Yuch.

TIME ELAPSED = 28 secondsBUILD SUCCESSFUL (total time: 0 seconds)

TORTOISE WINS!!! YAY!!!
TIME ELAPSED = 49 seconds