Sýnislausnir á heimadæmum 7

1. Finna Pyþagórska þrennd:

```
public static boolean erPythagorsk(int a, int b, int c) {
    return (a*a + b*b) == c*c;
}
```

2. Fall sem skilar endurtekningum af streng:

```
public class StrEndurtaka {

   public static String endurtaka(String s, int n) {
      String t = "";
      for (int i=0; i<n; i++)
         t += s;
      return t;
   }

   public static void main(String[] args) {

       StdOut.println("*, 10 sinnum: " + endurtaka("*", 10));
       StdOut.println("abc, 3 sinnum: " + endurtaka("abc", 3));

    }
}
```

Keyrsla:

```
% java StrEndurtaka
*, 10 sinnum: **********
abc, 3 sinnum: abcabcabc
```

3. Fall sem velur eitt stak af handahófi úr einvíðu fylki:

```
public class VeljaStak {

    public static int veljaEitt(int[] a) {
        int k = (int)(Math.random()*a.length);
        return a[k];
    }

    public static void main(String[] args) {

        int[] a = new int[100];
        for (int i=0; i<100; i++)
            a[i] = i;

        StdOut.println("Eitt slembistak: " + veljaEitt(a));
        StdOut.println("Annað slembistak: " + veljaEitt(a));

    }
}
```

4. Kvarða fylki þannig að öll stök þess séu á milli 0 og 1:

```
public class Kvarda {

    public static double max(double[] a) {
        double max = Double.NEGATIVE_INFINITY;
        for (int i=0; i<a.length; i++)
            if (a[i] > max) max = a[i];
        return max;
    }

    public static double min(double[] a) {
        double min = Double.POSITIVE_INFINITY;
        for (int i=0; i<a.length; i++)
            if (a[i] < min) min = a[i];
        return min;
    }

    public static void scale(double[] a) {
        double mn = min(a);
        double mx = max(a);
        for (int i=0; i<a.length; i++)
            a[i] = (a[i] - mn) / (mx - mn);
    }

    public static void main(String[] args) {
        int N = 5;
        double[] a = new double[N];

        for (int i=0; i<N; i++)
            a[i] = 5.0 + Math.random()*5.0;

        StdOut.println("Before:");
        for (int i=0; i<N; i++)
            StdOut.println(a[i]);

        scale(a);

        StdOut.println("After:");
        for (int i=0; i<N; i++)
            StdOut.println(a[i]);

    }
}
```

5. Skrifa út einfalt tíðnirit fyrir stök í fylki:

```
public class Tidni {

    // búa til tíðnifylki
    public static int[] tidnirit(int[] a, int M) {
        int[] t = new int[M];
        for (int i=0; i<a.length; i++)
            t[a[i]]++;
        return t;
    }

    // teikna upp gróft tíðnirit
    public static void synatidni(int[] t) {
        for (int i=0; i<t.length; i++) {
            StdOut.printf("%3d: ", i);
            for (int j=0; j<t[i]; j++)
                StdOut.print("*");
            StdOut.println();
        }
    }

    public static void main(String[] args) {
        int N = 100;
        int M = 20;

        int[] a = new int[N];
        for (int i=0; i<N; i++)
            a[i] = (int)(Math.random()*M);

        int[] t = tidnirit(a, M);

        synatidni(t);
    }
}
```