

```
1  // Jared Alves
2  // Stephen Felix
3  // Michael Benker
4
5
6  using System;
7  using System.Linq;
8  using System.Collections.Generic;
9
10 namespace DSPSrDesign
11 {
12     class Program
13     {
14         static void Main(string[] args)
15         {
16             double two_avg = 0;
17             double twenty_avg = 0;
18             //double std_20 = 0;
19             //double T1 = 0;
20             //double T2 = 0;
21             //double T3 = 0;
22
23             int time = 0;
24             int alltime = 0;
25
26             int A = 4;
27             double Threshold;
28             double sd = 0;
29
30             double[] inputdata_two = new double[200];
31             double[] inputdata_twenty = new double[10];
32
33             while (true) {
34
35
36
37                 Console.WriteLine("Time is {0} seconds", alltime);
38
39                 Console.WriteLine("Enter a minimum value (dB) between 30 and 90:");
40                 string Min = Console.ReadLine();
41                 Console.WriteLine("Enter maximum value (dB) between 30 and 90:");
42                 string Max = Console.ReadLine();
43
44                 int Min_int = Int32.Parse(Min);
45                 int Max_int = Int32.Parse(Max);
46
47
48                 Random randNum = new Random();
49                 for (int i = 0; i < inputdata_two.Length; i++)
50                 {
51                     inputdata_two[i] = randNum.Next(Min_int, Max_int);
```

```
52     }
53
54
55     two_avg = inputdata_two.Average(); //Get average of random data
56     Console.WriteLine("The two second average is {0}", two_avg);
57
58
59     inputdata_twenty[time/2] = two_avg;
60
61     foreach (double item in inputdata_twenty)
62     {
63         Console.WriteLine(item.ToString());
64     }
65     Threshold= A*sd + twenty_avg;
66
67     if (alltime > 20)
68     {
69         if (two_avg >= Threshold)
70         {
71             alltime = -2;
72
73             Console.WriteLine("Interrupt has occurred");
74         }
75     }
76
77     if (alltime >= 20)
78     {
79
80
81         twenty_avg = inputdata_twenty.Average();
82         Console.WriteLine("The twenty second average is {0}", twenty_avg);
83
84         double sumOfSquaresOfDifferences = inputdata_twenty.Select
85         (val => (val - twenty_avg) * (val - twenty_avg)).Sum();
86         sd = Math.Sqrt(sumOfSquaresOfDifferences /
87         inputdata_twenty.Length);
88         Console.WriteLine("The twenty second standard deviation is
89         {0}", sd);
90
91     }
92
93     Console.WriteLine("-----\n");
94     alltime = alltime + 2;
95     if (time < 18)
96     {
97         time = time + 2;
98     }
99     else
100     {
```

```
99         time = 0;
100     }
101
102
103     }
104 }
105 }
106 }
107
```