Test 1 Programming Component (50 pts)

Program 1 (20 pts):

Write a complete C++ program named "divisors.cpp". This program will ask the user for an integer number. It will then print out all the positive divisors of this number. A sample run would be as follows (user input is in green color to differentiate between output and input for the example):

```
Please enter an integer number:  300
The divisors for 125 are: 1, 2, 5, 10, 300
```

To submit your program, first create a log file and then use the handin command:

```
script test1Alog
pr -n -t -e4  divisors.cpp
c++ divisors.cpp
a.out
exit
```

```
handin test1A divisors.cpp test1Alog
```

Program 2 (30 pts):

Write a complete C++ program named "random.cpp" that generates 20 random numbers in the range [lowerbound, upperbound]. The program first prompts the user to enter the lower and upper bounds. Then it prints out the 10 random numbers, and for each number prints whether it is above, equal to, or below the mid point of the range. Mid point value is to be computed as the average of the lowerbound and upperbound values. At the end, it displays how many values are above, equal to, or below the mid point value; as well as the average of these values.

A sample run would be as follows (user input is in green color to differentiate between output and input for the example):

```
Please define a range in terms of the lower and upper bound values:  20 40
The 10 random values in the range (20, 40) are:
24 above
34 above
30 equal
29 below
20 below
28 below
32 above
```

```
27 below
21 below
35 above
24 above
34 above
30 equal
29 below
20 below
28 below
32 above
27 below
21 below
35 above

The mid point is 30.
8 numbers above the mid point.
2 numbers equal to the mid point.
10 numbers below the mid point.

The average of these 20 random values is 28.
```

Submit your program using the following command:

```
script test1Blog
pr -n -t -e4  random.cpp

c++ random.cpp

a.out

exit


handin test1B random.cpp test1Blog
```