Lab3 Project

Xin Tan

National University

CSC615

Professor Geoge H. Tanabe

Overview:

IDE:	vim, eclipse
Date:	May 12th 2009
Compiler:	SUN JDK 6.0 Linux 64bit (1.6)
Ant Makefile:	build.xml
Project URL:	http://github.com/tanxin/xin_csc615

Get SourceCode:

From Git (newest version):

```
tanxin@laptop ~/.workspace-java/csc615 $ git clone git://github.com/tanxin/xin_overlay.git
```

Compile:

```
tanxin@laptop ~/.workspace-java/csc615 $ ant lab3
Buildfile: build.xml

init:
    [mkdir] Created dir: /home/tanxin/documents/school/nu/CSC615/project/build

compile:
    [javac] Compiling 7 source files to /home/tanxin/documents/school/nu/CSC615/project/build

BUILD SUCCESSFUL
Total time: 1 second
```

Run:

```
tanxin@laptop ~/.workspace-java/csc615 $ ant runl3
Buildfile: build.xml

init:

compile:

runl3:
     [java] Generated num:
     [java]
67,57,120,50,128,137,17,165,21,165,64,194,67,125,133,53,127,174,69,49,41,179,65,150,127,108,160,158,49,182,108,92
,86,151,194,105,76,124,35,52,196,33,144,5,35,75,186,175,180,6,127,168,36,87,153,182,62,53,72,79,20,104,112,189,17
5,165,37,20,101,182,178,1,34,107,177,178,74,47,125,148,42,9,116,28,54,132,80,30,21,110,76,83,169,90,156,19,130,90
,181,175,98,100,107,73,131,23,74,43,93,155,28,56,107,75,48,99,181,128,132,138,65,115,49,166,42,166,189,50,99,143,
70,86,141,18,90,159,67,170,92,116,87,12,185,15,189,169,48,6,53,158,167,118,102,121,114,99,70,33,15,94,102,2,157,9
2,74,60,131,142,46,176,149,178,116,23,152,86,187,46,87,132,97,137,182,198,152,43,108,103,103,135,14,12,39,151,45,
166,174,166,9,164,97,60,160,177,105,198,151,111,144,38,121,63,86,110,173,135,84,13,153,30,89,20,69,79,42,120,123,
199,28,68,58,20,142,146,145,93,106,166,184,96,90,54,98,20,135,74,160,76,140,116,159,99,137,36,193,186,60,187,153,
196,33,66,16,163,34,87,76,105,154,130,48,196,148,90,119,46,9,135,122,48,37,92,65,83,115,131,78,179,31,76,5,105,10
```

```
5,132,96,51,138,190,94,82,78,80,75,143,114,117,59,18,95,106,168,81,116,167,140,34,170,69,112,86,168,70,130,25,111
,77,45,90,40,19,58,171,98,11,45,101,183,27,42,76,6,71,134,10,99,4,147,11,74,5,131,85,187,165,197,49,24,107,4,170,
122,139,173,73,88,166,185,99,89,56,49,24,169,146,16,24,160,180,18,171,152,185,50,13,29,190,56,85,175,16,26,65,18,
89,41,192,71,87,165,131,59,57,147,185,189,15,18,29,45,173,165,94,48,91,170,179,72,76,65,65,152,33,33,194,30,194,1
00,83,73,88,91,147,25,58,116,99,93,194,47,127,8,194,80,55,85,169,143,178,122,28,156,64,41,67,29,65,72,65,34,192,1
8,159,167,62,87,70,160,12,54,94,132,32,107,120,80,19,140,53,165,150,13,49,3,78,43,176,76,195,174,75,157,112,87,15
0,15,200,9,25,140,198,.
             [java] average = 99
             [java] sum = 49598
             [java] largest = 200
             [java] smallest = 1
             [java] number above the average = 233
             [java] number below the average = 260
             [java] After sorting
             [java]
1,2,3,4,4,5,5,5,6,6,6,8,9,9,9,9,10,11,11,12,12,12,13,13,13,14,15,15,15,15,16,16,16,17,18,18,18,18,18,18,19,19,19,
20,20,20,20,20,21,21,23,23,24,24,24,25,25,25,26,27,28,28,28,28,29,29,29,30,30,30,31,32,33,33,33,33,33,34,34,34,34
,35,35,36,36,37,37,38,39,40,41,41,41,42,42,42,42,43,43,43,45,45,45,45,46,46,46,47,47,48,48,48,48,48,49,49,49,49,4
9,49,50,50,50,51,52,53,53,53,53,54,54,54,55,56,56,56,57,57,58,58,58,59,59,60,60,60,62,62,63,64,64,65,65,65,65,65,
65,65,65,66,67,67,67,67,68,69,69,69,70,70,70,70,71,71,72,72,72,73,73,73,74,74,74,74,74,75,75,75,75,76,76,76,76,76
,76,76,76,77,78,78,78,79,79,80,80,80,80,81,82,83,83,83,84,85,85,85,86,86,86,86,86,87,87,87,87,87,87,87,88,88,89,8
9,89,90,90,90,90,90,90,91,91,92,92,92,92,93,93,93,94,94,94,94,95,96,96,97,97,98,98,98,99,99,99,99,99,99,99,100,10
0,101,101,102,102,103,103,104,105,105,105,105,105,106,106,107,107,107,107,107,108,108,108,110,110,111,111,112,112
,112,114,114,115,115,116,116,116,116,116,116,117,118,119,120,120,120,121,121,122,122,122,123,124,125,125,127,127,
127,127,128,128,130,130,130,131,131,131,131,131,132,132,132,132,132,133,134,135,135,135,135,137,137,137,138,138,1
39,140,140,140,140,141,142,142,143,143,143,144,144,145,146,146,147,147,147,148,148,149,150,150,150,151,151,151,15
2,152,152,152,153,153,153,153,154,155,156,156,157,157,158,158,159,159,159,160,160,160,160,160,160,163,164,165,165,165,165
,165,165,165,166,166,166,166,166,166,167,167,167,168,168,168,169,169,169,169,170,170,170,170,171,171,173,173,173,
174,174,174,175,175,175,175,176,176,177,177,178,178,178,178,179,179,179,180,180,181,181,182,182,182,182,183,184,1
85,185,185,185,186,186,187,187,187,189,189,189,189,190,190,192,192,193,194,194,194,194,194,194,195,196,196,196,19
7,198,198,198,199,200,.

        BUILD SUCCESSFUL
        Total time: 0 seconds
```

Code List:

edu.nu.csc615.lab2.MainRunner.java

```
        /**
         * Lab3
         *
         * Copyright 2005-2009 Shin Tan <tanxincn@gmail.com>
         *
         *
         * This program is free software; you can redistribute it and/or
         * modify it under the terms of the GNU General Public License
         * as published by the Free Software Foundation; either version 2
         * of the License, or (at your option) any later version.
         *
         * This program is distributed in the hope that it will be useful,
         * but WITHOUT ANY WARRANTY; without even the implied warranty of
         * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
         * GNU General Public License for more details.
         *
         * You should have received a copy of the GNU General Public License
         * along with this program; if not, write to the Free Software
         * Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA  02110-1301, USA.
         */
        package edu.nu.csc615.lab3;

        import java.util.Random;

        public class Lab3 {

            /* define constant */
            public final static int ARRAY_SIZE = 500;

            public static void main(String[] args) {
```

```
            int average=0, sum=0, numAbove=0, numBelow=0, max=Integer.MIN_VALUE, min=Integer.MAX_VALUE;
            int[] intArray = new int[ARRAY_SIZE];

            generateRandomArray(intArray);

            /* calculate */
            for(int j=0;j<intArray.length;j++){
                sum += intArray[j];

                if(intArray[j] > max)
                    max = intArray[j];

                if(intArray[j] < min)
                    min = intArray[j];
            }
            average = sum / intArray.length;

            /* count the above/below average */
            for(int j=0;j<intArray.length;j++){
                if(intArray[j] > average)
                    numAbove++;
                if(intArray[j] < average)
                    numBelow++;
            }

            /* print out the generated num */
            System.out.println("Generated num:");
            printArray(intArray);

            System.out.println("average = " + average);
            System.out.println("sum = " + sum);
            System.out.println("largest = " + max);
            System.out.println("smallest = " + min);
            System.out.println("number above the average = " + numAbove);
            System.out.println("number below the average = " + numBelow);

            sort(intArray);

            /* print out the array again after sorting */
            System.out.println("After sorting");
            printArray(intArray);

        }

        private static void printArray(int[] intArray) {
            for(int j=0;j<intArray.length;j++){
                System.out.print(intArray[j] + ",");
            }
            System.out.println(".");
        }

        /* generate random array */
        private static void generateRandomArray(int[] intArray) {

            Random random = new Random();
            for(int j=0;j<intArray.length;j++){
                intArray[j] = random.nextInt(200) + 1;
            }
        }

        /* bubble sort */
        public static void sort(int[] intArray){
            int i,j,t;
            for(i=0;i<intArray.length-1;i++){
                for(j=i+1;j<intArray.length;j++){
                    if(intArray[i]>intArray[j]){
                        t=intArray[i];
                        intArray[i]=intArray[j];
                        intArray[j]=t;
                    }
                }
            }
        }
    }
```