

**ECU178 Computer Science:
210CT - Programming, Algorithms and Data
Structures Portfolio**

Due on Monday, December 15th, 2014

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Item 1: Week 3 - Linear Search and Duplicate Finder

Pre-Homework 1: Write a Program that displays your name 10 times

Listing 1: NameRepeat class JAVA code

```
/**
 * Created by Rob on 23/10/2014.
 */
public class NameRepeat {

    public static void main(String[] args){

        NameRepeat myObject = new NameRepeat(); /*Create Object*/
        myObject.PrintName("Rob"); /*Use object to call PrintName() method*/

    }

    public void PrintName(String _name){


        for (int i = 0; i<10;i++){ /* Loop 10 times*/
            System.out.println((i+1) + " " + _name);
            /*, print the number && _name parameter each time.*/

        }

    }

}
```

Evidence



The screenshot shows a terminal window with the following content:

```
bash - "riglerr-univer x" +
riglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/con.Pre-Homework/src (master) $ java NameRepeat
1 Rob
2 Rob
3 Rob
4 Rob
5 Rob
6 Rob
7 Rob
8 Rob
9 Rob
10 Rob
riglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/con.Pre-Homework/src (master) $
```

The terminal output shows the program successfully executed, printing the name "Rob" 10 times, each preceded by a line number from 1 to 10. The terminal window title is "bash - 'riglerr-univer x' +". The bottom status bar shows "riglerr@university-work" and the time "17:23 24-Nov-14".

Pre-Homework 2: Write a function that draws a square of stars given as a parameter

Listing 2: StarSquare class JAVA code

```
/**
 * Created by Rob on 23/10/2014.
 */
public class StarSquare {
5
    public char ast = '*'; //Create variable to hold asterisk character.
    public static void main(String[] args){

        StarSquare sSquare = new StarSquare(); /*Create Object*/
10        sSquare.writeSquare(10); /*Use object to call writeSquare() method*/

    }

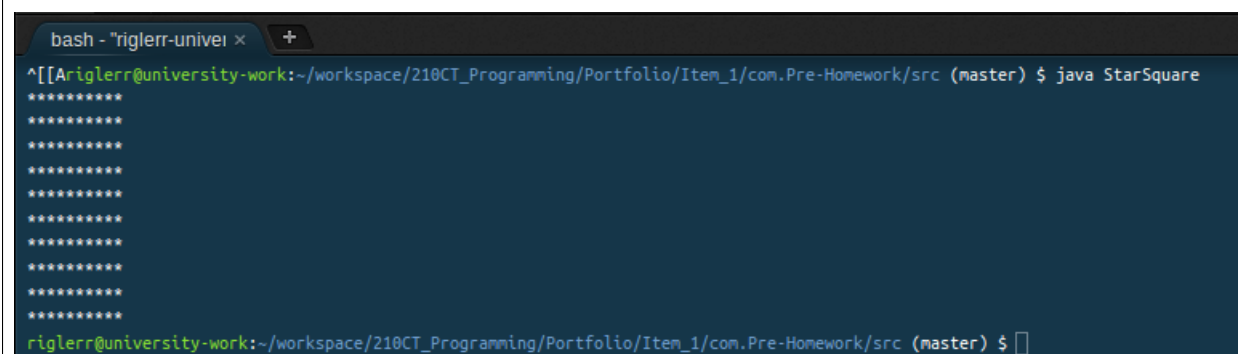
    public void writeSquare(int size){

        for(int i =0; i<size;i++){ /*OuterLoop 'size' times*/
            for(int j = 0;j<size;j++){ /*InnerLoop 'size' times*/

20                System.out.print(ast); /*Print line of asterisks*/

            }
            System.out.println(); /* Start new line when inner loop finishes*/

        }
25    }
}
```

Evidence

```
bash - "riglerr-univer x +
^[[Ariglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/com.Pre-Homework/src (master) $ java StarSquare
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
riglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/com.Pre-Homework/src (master) $
```

Pre-Homework 3: Write a program to open a file and display it's contents in capitals

Listing 3: RtoCaps class JAVA code

```
/**
 * Created by Rob on 23/10/2014.
 */
import java.io.File;
5 import java.io.FileNotFoundException;
import java.util.Scanner;

public class RtoCaps {

10     public static void main(String[] args) throws FileNotFoundException {
        File inFile = new File("input.txt");
        /*Create a file object */
        RtoCaps obj = new RtoCaps(); /*Create class object*/
        obj.rInput(inFile); /*Use Class object to call rInput() method*/
15     }

    public void rInput(File inFile) throws FileNotFoundException{

        /*Create a new scanner to read from the file*/
20         Scanner in = new Scanner(inFile);

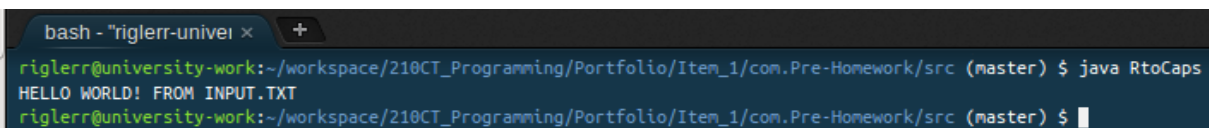
        /*Loop While there is still lines left in the document*/
        while(in.hasNextLine())
        {
25             /* Place the next line in a strin varibale*/
            String line = in.nextLine();

            /* Print the line in uppercase*/
            System.out.println(line.toUpperCase());
30         }

    }

35 }
```

Evidence



```
bash - "riglerr-univer x"
riglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/com.Pre-Homework/src (master) $ java RtoCaps
HELLO WORLD! FROM INPUT.TXT
riglerr@university-work:~/workspace/210CT_Programming/Portfolio/Item_1/com.Pre-Homework/src (master) $
```

1. Pseudocode for linear search

Algorithm 1 LinearSearch

```
procedure BOOL LINEARSEARCH(item, list[ ])
  for each element i in list do
    if list[i] = item then
      return true
    end if
  end for
  return false
end procedure
```

2. Pseudocode for finding duplicates in a list

Algorithm 2 Examining for duplicates

```
procedure BOOL EXFORDUPES(list[ ])
  for each element i in list[ ] do
    for each element j in list[ ] do
      if list[i] = list[j] then
        return true
      end if
    end for
  end for
  return false
end procedure
```

Item 2: Week 4 - Big-O of Linear Search and Duplicate Finder

Additional work

Item 3: Week 6 - Harmonic Series or Pivot Selection

Item 4: Week 7 - Heapworksheet or RPN Calculator

Item 5: Week 8 - Linked List Delete function or Linked List Sortings