**Lab 1**

**Revision**

This exercise uses the classes written in lab 1 last semester. Create a new package and copy the classes from lab 1 into this. If you don’t have the files then you can download the file lab1skeleton from Moodle.

Run the program to make sure you understand what the program does.

In this exercise you modify the Manager class to add an array of Employee objects to the manager class, and create methods to add and remove employees from the Manager. Finally, add a method to Manager to print the staff names and IDs.

Tasks (Amend the Manager Class as follows)

1. Add fields to the Manager class to keep the employee objects.
2. Declare a private field called staff that is declared as an array of type Employee
3. You will need to keep track of the number of employees in staff, so create a private integer field employeeCount to keep a count of the number of employees. Initialize the employee count with 0.
4. In the constructor, initialize the staff array to size 20
5. Add a method called findEmployee(). This method takes an Employee reference as parameter and scans the current staff Employee array to see whether there is a match between any member of staff and the Employee passed in.
6. Return -1 if there is no match. Otherwise return the index number of the Employee if there is a match.
7. Add a method called addEmployee. This method takes an Employee reference as parameter and adds it to array.
8. The method should return true if the employee was successfully added and false if the employee already exists as a member of staff.
9. Call the findEmployee method to determine whether the Employee is a member of staff already. Return false if there is match.
10. Add the employee object to the staff array.
11. Increment the employeeCount and return true.
12. Add a method called removeEmployee which takes an Employee reference as parameter. This method is a bit more complicated. When you remove an element from the array, you must shift the other elements of the array so there are no empty elements. The easiest way to do this is to create a temporary array and assign a copy of each of the staff elements to it except for the match. This effectively removes the match from the array.
13. Declare a local boolean variable initialized to false to return as the status for the method.
14. Declare a temporary array of Employee objects to copy the revised staff array to.
15. Declare an integer counter of the number of employees copied to the temporary array.
16. Use a for loop to go through the staff array and attempt to match the employee ID of each element of the staff array with the employee ID of the Employee passed into the method as a parameter.
17. If the employee ID’s do not match, copy the employee reference from the staff array to the temporary array from step b and increment the count of employees in the temporary array.
18. If there is a match, “skip” this employee by continuing to the next element in the staff array, and set the local boolean variable from step a to true.
19. If there was a match (the local boolean is true), replace the current staff array with the temporary array, and the count of employees with the temporary counter from step c.
20. Return the local boolean variable.
21. Add a method called printStaffDetails. This method prints the name of the manager and then each of the elements of staff in turn.

Test Class - Amend this class as follows:

Create a 2nd Engineer object with the following details

Employee ID: 120

Employee Name: Bill Lecomte

Employee RSI: 6754341N

Employee Salary: €110,450.34

Attempt to add three employees (admin and 2 engineers) to the manager. If the add was successful display a message as shown in sample output.

Call the printStaffDetails() method to print out the staff details

Attempt to remove a staff member (eng1)

Print out the staff details again

Sample Output

Employee ID: 101

Employee Name: Jane Smith

Employee SSN: 012-34-5678

Employee Salary: €120,345.27

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Employee ID: 120

Employee Name: Bill Lecomte

Employee SSN: 045-89-1010

Employee Salary: €110,450.34

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Employee ID: 304

Employee Name: Bill Munroe

Employee SSN: 108-23-6509

Employee Salary: €75,002.34

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Employee ID: 207

Employee Name: Barbara Johnson

Employee SSN: 054-12-2367

Employee Salary: €109,501.36

Department: US Marketing

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Employee ID: 12

Employee Name: Susan Wheeler

Employee SSN: 099-45-2340

Employee Salary: €120,567.36

Department: Global Marketing

Budget: 1000000.0

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Testing raiseSalary and setName on Manager:

Employee ID: 207

Employee Name: Barbara Johnson-Smythe

Employee SSN: 054-12-2367

Employee Salary: €119,501.36

Department: US Marketing

Success: added admin

Success: added eng1

Success: added eng2

Staff of Barbara Johnson-Smythe:

Name: Bill Munroe Employee id: 304

Name: Jane Smith Employee id: 101

Name: Bill Lecomte Employee id: 120

Success: removed eng1

Staff of Barbara Johnson-Smythe:

Name: Bill Munroe Employee id: 304

Name: Bill Lecomte Employee id: 120