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CSC 161-04
Dr. Farrett
Lab Assignment 10 – Employee Class

Pseudo-code

This program creates three Employee objects to hold the following data:

Name	ID Number	Department	Position
Susan Meyer	47899	Accounting	Vice President
Mark Jones	39119	IT	Programmer
Joy Rogers	81774	Manufacturing	Engineer

The program prompts the user to validate the data prior to writing it to a file and then asks the user to confirm the data is correct by reading the data from the file and displaying the results to the screen.

EmployeeDemo

Begin

```
1.  Create empty ArrayList of Employee objects as employees
2.  Employee.setInput() prompts user to add data automatically or enter it manually, autoAddData
    variable set to false if manually
3.  If Employee.getInput() is true, equals autoAddData is true
4.     Add new Employee objects with parameters included to employees ArrayList
5.     Print "Number of employees to add: " + employees.size()
6.     Print "Preparing to write data to file."
7.  Else
8.     Employee.inputData(employees) prompts user to enter data manually
9.  If employees contains elements
10.    Boolean dataNotValidated = true
11.    Do-while loop to validate data
12.       If employees.size() > 0
13.          Boolean dataValidation = Employee.confirmData(employees) calls method to confirm
14.          data, returns true if data is validated, false if data not validated
15.          If dataValidation = true
16.             dataNotValidated = false, end do-while loop
17.             Print "Data validated"
18.          Else
19.             employees.clear() to remove all elements from ArrayList
20.             Print "Please re-enter data."
21.             Employee.inputData(employees) to manually add data
22.       Else employee ArrayList is empty
23.          Print "No employees to be added."
24.          Close Scanner object
25.          Exit program
```

```
26.     End do-while loop when dataNotValidated == false
27.     Try opening file
28.         Employee.openFile()
29.         Print “File opened.”
30.     Catch IOException
31.         Print “An error occurred while trying to open the file.”
32.     Try writing to file
33.         Employee.writeToFile(employees)
34.         Print “Data written to file.”
35.     Catch IOException
36.         Print “An error occurred while writing to the file.”
37.     Try reading file
38.         Employee.readFile()
39.         Print “Data verified”
40.     Catch Exception
41.         Print “An error occurred while reading the file.”
42.     Finally
43.         Print “Employees added to the database.”
44.         Close Scanner object
45.         Exit program
46. If employees does not contain any elements
47.     Print “No employees added to database.”
48.     Close Scanner object
49.     Exit program
```

End

These are the variables, constructors, and methods that the program depends on to create new Employee objects, take user input, verify data, opening, writing, and reading a file, handling exceptions, and mutating and accessing the objects attribute fields.

<u>Employee</u>

// ----- VARIABLES -----

public static final Scanner input = new Scanner(System.in); For methods to use for getting user input

private static boolean autoAddData = true; For adding data automatically

private static String fileName; Name of file

private String name; Employee Name

private int idNumber; Employee ID Number

private String department; Employee Department

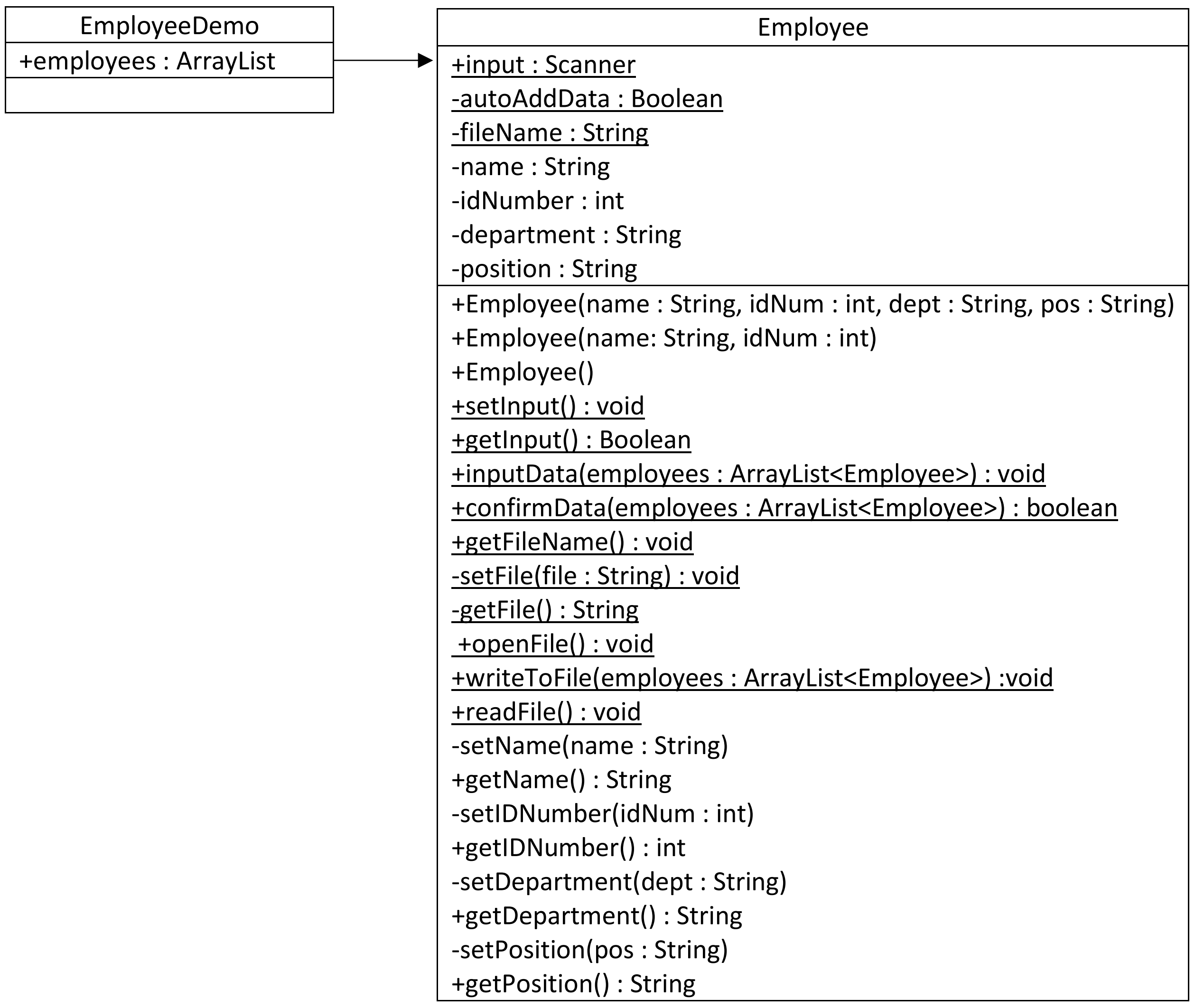
private String position; Employee Position

```
// ----- CONSTRUCTORS -----

Begin Employee(String name, int idNum, String dept, String pos)
    1.  this.name = name;
    2.  this.idNumber = idNum;
    3.  this.department = dept;
    4.  this.position = pos;
End

Begin Employee(String name, int idNum)
    1.  this.name = name;
    2.  this.idNumber = idNum;
    3.  this.department = “”;
    4.  this.position = “”;
End

Begin Employee()
    1.  this.name = “”;
    2.  this.idNumber = 0;
    3.  this.department = “”;
    4.  this.position = “”;
End

// ----- METHODS -----

Begin setInput()
    1.  int num = 0; used to hold user input
    2.  continueInput = true; for ending user input
    3.  Do-while loop for user input validation
    4.      Try
    5.          Print “To input data automatically, enter 1. To input data manually, enter 2: ”
    6.          num = input.nextInt(); prompts user for input
    7.          If (num == 1 || num == 2), continueInput = false; end do-while loop
    8.          Else
    9.              Print “Try again. (Incorrect input: 1 or 2 is required)”
    10.             Continue do-while loop
    11.     Catch InputMismatchException if user input is not an integer
    12.         Print “Try again. (Incorrect input: an integer is required.)”
    13.         input.nextLine(); discard input
    14. End do-while loop when continueInput == false
    15. If num == 2, autoAddData = false
    16. input.nextLine(); discard input
End

Begin getInput()
    1.  return autoAddData
End
```

```
Begin inputData(ArrayList<Employee> employees)
    1.  continueInput = true; for ending user input
    2.  numOfNewEmp = 0; counter for number of employees added
    3.  Do-while loop for adding new employee
    4.    Print "Add new employee? (Y/N): "
    5.    newEmp = input.nextLine(); prompt user for input
    6.    If newEmp == Y
    7.      Print "Enter employee name: "
    8.      name = input.nextLine(); prompt user for input
    9.      Print "Enter employee ID Number: "
    10.     idNum = input.nextInt(); prompt user for input
    11.     input.nextLine(); // discard input
    12.     Print "Enter employee department: "
    13.     dept = input.nextLine(); prompt user for input
    14.     Print "Enter employee position: "
    15.     pos = input.nextLine(); prompt user for input
    16.     employees.add( new Employee(name, idNum, dept, pos) ); creates new employee object
    17.       and adds it to employees ArrayList
    18.     numOfNewEmp++;
    19.   Else if newEmp == N && numOfNewEmp > 0
    20.     Print "Number of employees to add: " + numOfNewEmp
    21.     Print "Preparing to write data to file."
    22.     continueInput = false; end do-while loop
    23.   Else if newEmp == N && numOfNewEmp == 0
    24.     Print "Continue without adding any employees? (Y/N): "
    25.     noEmp = input.nextLine(); prompt user for input
    26.     If noEmp == Y; continueInput = false; ends do-while loop
    27.     Else if noEmp == N; continue loop
    28.     Else; print "Try again. (Incorrect input: Please enter Y or N)"
    29.   Else; print "Try again. (Incorrect input: Please enter Y or N)"; continue loop
    30. End do-while loop when continueInput == false
End

Begin confirmData(ArrayList<Employee> employees)
    1.  Print "Please confirm data entered is correct."
    2.  Print formatted table heading "Name   IDNumber   Department    Position"
    3.  For loop to print horizontal line heading divider
    4.  For employee object in employees Arraylist
    5.    Print formatted "employee.getName(), employee.getIDNumber, employee.getDepartment,
    6.      employee.getPosition()"
    7.  confirmWrite = "null"; for user input
    8.  continueInput = true; for ending user input
    9.  Do-while loop to prompt user to confirm writing data to file
    10.   Print "Write data to file? (Y/N): "
    11.   confirmWrite = input.next(); prompt user for input
    12.   If confirmWrite == Y || confirmWrite == N
    13.      continueInput = false; to end do-while loop
    14.   Else print “Try again. (Incorrect input: Enter Y or N)”
    15. End do-while loop when continueInput == false
    16. input.nextLine(); discard input
    17. if confirmWrite == Y; return true
    18. else; return false
End

Begin getFileName()
    1. Print “Enter name of text file to store data: “
    2. file = input.nextLine(); prompt user for input
    3. setFile(file); call setFile method to assign string value of file to fileName attribute
End

Begin setFile(String file)
    1. fileName = file
End

Begin getFile()
    1. return fileName
End

Begin openFile()
    1. getFileName(); to get filename
    2. File file = new File(getFile()); create new File object with fileName value as argument
    3. If file.exists()
    4.   Print “File already exists. Do you want to overwrite the existing file? (Y/N): “
    5.   overwrite = input.nextLine(); prompt user for input
    6.   If overwrite == Y
    7.      file.createNewFile(); create new file over existing file
    8.      Print “Overwriting file: “ + file.getName()
    9.   Else; openFile(); calls self recursively until file is created
    10. Else if file.createNewFile() == true; creates new file and returns true if file is created
    11.   Print “File created: “ + file.getName()
End

Begin writeToFile(ArrayList<Employee> employees)
    1. Print “Writing data to file.”
    2. PrintWriter writer = new PrintWriter(getFile()); creates new Printerwriter object
    3. Write formatted table heading “Name, ID Number, Department, Position”
    4. writer.flush()
    5. for loop to write horizontal line table heading divider
    6. writer.flush()
    7. for employee in employees ArrayList
    8.   write formatted data ( employee.getName(), employee.getIDNumber(),
    9.      employee.getDepartment(), employee.getPosition() )
    10.    writer.flush()
    11. writer.close()
End

Begin readFile()
    1.  continueInput = true; for ending user input
    2.  Do-while loop to prompt user to verify data
    3.    Print “Verify data written to file? (Y/N): “
    4.    dataVerification = input.next(); prompt user for input
    5.    If dataVerification == Y
    6.      Print “Reading data from file.”
    7.      FileReader reader = new FileReader(getFile()); create new FileReader object
    8.      char[] a = new char[1000]; create character array to hold FileReader input
    9.      reader.read(a); reads data from file and stores in character array
    10.     For character in character array
    11.       Print character
    12.     reader.close()
    13.     continueInput = false; to end do-while loop
    14.   Else if dataVerification == N
    15.     Print “Data not verified.”
    16.     continueInput = false; to end do-while loop
    17.   Else print “Try again. (Incorrect input: Enter Y or N)”
    18. End-do while loop when continueInput == false
End

Begin setName(String name)
    1.  this.name = name
End

Begin getName()
    1.  return name
End

Begin setIDNumber(int idNum)
    1.  this.idNumber = idNum
End

Begin getIDNumber()
    1.  return idNumber
End

Begin setDepartment(String dept)
    1.  this.department = dept
End

Begin getDepartment()
    1.  return department
```

```
End

Begin setPosition(String pos)
    1.  this.position = pos
End

Begin getPosition()
    1.  return position
End
```

UML


EmployeeDemo
+employees : ArrayList
Employee
+input : Scanner
-autoAddData : Boolean
-fileName : String
-name : String
-idNumber : int
-department : String
-position : String
+Employee(name : String, idNum : int, dept : String, pos : String)
+Employee(name: String, idNum : int)
+Employee()
+setInput() : void
+getInput() : Boolean
+inputData(employees : ArrayList<Employee>) : void
+confirmData(employees : ArrayList<Employee>) : boolean
+getFileName() : void
-setFile(file : String) : void
-getFile() : String
+openFile() : void
+writeToFile(employees : ArrayList<Employee>) :void
+readFile() : void
-setName(name : String)
+getName() : String
-setIDNumber(idNum : int)
+getIDNumber() : int
-setDepartment(dept : String)
+getDepartment() : String
-setPosition(pos : String)
+getPosition() : String

Requirements

Exception handling was designed into the program to handle any exceptions that would be thrown from file input and output.