**CMPSC-121**

# Project #3

**Due Monday, December 12, 2016 5:00PM**

The VP of Manufacturing, Silas Grump, calls you down to his large office with a desk on a slightly raised platform. He looks down at you and says, "I heard you can program a little, kid. They sure do pay you computer guru types a lotta bucks!" Then he says, "But, what can you do for me? I need a program that will read the payroll file into a vector of structs, sort it by employee name and then show a menu like:

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Choose Desired Function:

1. Find Employee by Name

2. Enter Department and display its employees

3. Add Employee

4. Get list of Employees

5. Display total of salaries for a department

6. End Program

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Most of them are self-explanatory. For 4, the list is long so stop and make the user press a key after every 25 lines, IT said you could use system(“pause”); for that. Oh and clear the screen just before you display the menu every time. They said use system(“cls”); for that. You tech guys talk funny!

6 should end the program but it should write the file out again, so the additions are saved. Simple request for a hotshot programmer, ain’t it?”

Back in your office you look up the file and find out it contains last name, first name, employee number, department code, salary. A typical line is:

**Marsiglio Beth 94 Payroll 295199.81**

You also note that it is not in order. For sorting, you decide to use a shell sort. You know you need to copy the file to the directory where your .cpp file will be.

You decide you need the following functions:

**// Locates an employee by last name**

**//Called by main**

**void findByName(const vector <Employee> &V, string lName);**

**// Asks for employee info and calls insertData to add employee to vector**

**// Called by main**

**void getEmployee(vector <Employee> &V);**

**//Lists employee names in a given department**

**// Called by main**

**void employeesPerDept(const vector <Employee> &V, string dept);**

**//Lists all employees Called by main**

**void employeeList(const vector <Employee> &V);**

**//Displays the total of salaries for a given department**

**//Called by main**

**void salaryByDept(const vector <Employee> &V, string dept);**

**//Reads the payroll file and fills the vector of structs**

**//Called by main**

**bool readFile(vector <Employee> &V);**

**//Called by findByName to return the index of lName**

**int binSearch(const vector<Employee> &V, int hi, int lo, string lName);**

**// Sorts vector called by main**

**void ShellSort(vector<Employee> &V);**

**//Writes sorted file at end. Called by main**

**void putData(const vector<Employee> &V);**

**//Called by getEmployee to insert into correct position**

**void insertData(vector <Employee>& V, Employee toAdd);**

**// Called by main Displays menu**

**int displayMenu();**

**//templated swap function**

**template<class CType>**

**void swapper(CType& a, CType& b)**

**{**

**CType temp;**

**temp = a;**

**a = b;**

**b = temp;**

**}**