Final Project:

CloudEra Inc is a medium size company that is growing everyday. They currently have two locations within United States. One location is in New York City and the other one in San Francisco. They are growing at a very rapid and are expanding their business in South. They are planning on starting their third location in Austin Texas this year, and plan on expending to Central US by end of 2020.

The Human Resources department at CloudEra Inc is facing numerous challenges as the company grows in size. They currently have 1000 employees and only hands full of them are in Human resources team. Only 25% of the HR department is dedicated to conduct interviews, hire candidates, and maintain the database. They currently use a shared Google sheets to maintain their employees information. When a new employee is hired, or an existing employee quits the HR team member has to go inside excel and add or delete a row. They also have to maintain another excel sheet that keeps track of their past employees information. Sometimes the junior HR team members forget a step, or update the wrong employees information by accident. The HR director has raised these issues to the CEO, and he has allocated a million dollar to computerize their HR process.

The HR director has hired you, a freelance programmer, to come up with an application that will solve the HR department's issues. The HR has given a list of common functions they perform each day. Your program should provide a feature for each of the functions. Your program will be broken down into three separate sections. You will have to write three modules for this project where one module is responsible for one section.

Modules:

1. **Data module** – This module will be responsible for reading, writing, and updating files.
2. **Business module** – This module will be responsible for validating and ensuring the business logic is applied correctly. This module will leverage the Data module to get data, and cannot open files to read or write directly.
3. **Main module** – This module will be the python script that you will use as the driver for the entire application. This is where you will write code that provides the HR team the actions they can take.

Functions of HR:

1. Pull up an employee's information periodically to make sure it is correct in the database.
2. When a new employee is hired, the HR collects their information and writes them in the database. They have to ensure the person they are hiring was not

a previous employee, and if they were then HR have to ensure the person is not black listed by the organization.

3. When an employee quits, lay off, or fired from the job. HR removes their information from the database, and adds their information to previous employees database. If an employee quits then they are welcome to join the organization in the future. If an employee gets lay off then they are welcome to join the organization. If an employee is fired then they cannot get hired again.
4. When an employee is promoted the HR goes in the system and updates their salary. HR has to make sure the new salary is not less than the previous salary. The company has a default raise of 2% for promotions, so if the new salary is not 2%.
5. When an employee has a name change or email change the HR goes into the system and updates the employee's information.
6. Sometimes the HR is requested to generate reports by upper management. The reports are sometimes based on the employee salary, department head count, gender, age, list of black listed employees, list of employees who were lay off, or list of employee who quit the firm.

There are many other functions that HR performs, but for phase one of the project the HR Director has requested that you only provide the above functionality and deliver it as soon as possible.

Main Module:
The main module should be the driver for the entire application. This is a console application so it should never end. The only way to end the application is if the user explicitly closes the application by either entering 0, or force closing the application. The application should print a welcome message along with a menu of possible actions, and prompt the HR representative to select an option. The menu should appear each time a flow of a single use case is complete.

Business Module:
The business module should provide functions that the Main module can call for each of the use cases. The Business module should validate the input and call the appropriate function in Data module. The Data module will return some things in most cases, and that might be needed for you to send back to the main module to display to the user.

Data Module:
The Data module should provide functions that the Business module can call. The functionality that Data module provides is of reading and writing files. You should define functions that will be needed to ensure the end-to-end flow from Main module to Data module works properly. The functions should not have any validation and should only worry about creating, reading, updating or deleting records from the file. NOTE that this does not mean your functions will not have if statements. This simply means that you should not write statements that check for

valid input. The Business module will worry about that and will ensure that you will always get correct input.

Feature	**Requirements**
Pull up a single employees Information	• Should be able to search employee by ID • Should be able to search Employee by Email • Should be able to search Employee by SSN
Hire a new Employee, so add their information to the existing database.	• Employee should be eligible to be hired. They should not be black listed from before. • Validate all the fields of employee. Refer to the fields' table for each file at the end of this document. If the rule is not met for a field then prompt the user to re-enter. • Assign the employee an id – Should be the next available number, and should have not been used before by an Ex Employee.
Employee quits the job	• Employee information should be removed from Employee.txt and added to Previous_employee.txt • Should follow the Previous employee file format for writing. • Status field should be saved as quit
Employee is fired from the job	• Employee information should be removed from Employee.txt and added to Previous_employee.txt • Should follow the Previous employee file format for writing. • Status field should be saved as fired
Employee is laid off from the job	• Employee information should be removed from Employee.txt and added to Previous_employee.txt • Should follow the Previous employee file format for writing. • Status field should be saved as lay off
Employee is promoted to next level	• Employee Salary should change, and minimum of 2% raise should be given
Employee has changed their name, phone	• Employee information should change,

number, or email	but must be validated before writing to file.
Employee has changed teams and has been transferred to another department	• Employee department should change to the new department
Generate reports	• Generate report based on Salary range, Department, and Gender from the Employee file • Generate report based on employee status from previous employee file.

Employee.txt

Field	**Position**	**Rules**
Employee Id	1	4 characters long
First Name	2	20 characters max and no trailing spaces
Last name	3	20 characters max and no trailing spaces
Email	4	20 characters max and must contain one @ and a DNS name: ex. Gmail.com or yahoo.com
Gender	5	Male or Female
Department	6	Can only be one of the following: Accounting Business Development Engineering Human Resources Legal Marketing Product Management Research and Development Sales Services Support Training
Salary	7	Number in range between 50000 and 100000. The company pays a maximum of 100000 Salary so no one should get more than that.

Previous_employee.txt

Field	**Position**
Employee Id	1
First Name	2
Last name	3
Email	4
Gender	5
Department	6
Status	7