**Program With Persistent Data Assignment**

**Student Name: Ronan Dillon  
Student Number: C12355251**

**Assignment Definition**

The assignment is to create a program which manages an employee database. The program must store the data on a single data file. The program will displayed a looped menu which will accept inputs of 1-5. 1 will be entered when the user wishes to add a new employee to the database. There will be restrictions on the add employee so that there won’t be two employees in the database with the same ID number. 2 will be entered when the user wants to delete an employee from the database. This is done by putting an asterisk (‘\*’) in front of the employees ID. 3 will be entered when the user wants to display all of the employees that are recorded in the database. This will exclude the ex-employees that have an asterisk at the front of their IDs. After the employees have been listed the total number of records and total number of deleted records will be displayed which are retrieved from the header records. 4 will be entered when the user wants the file to be compacted. Compaction will move all of the records from the file which haven’t been deleted to a temporary file and from there they will be moved back overwriting what was originally in the file. This will mean that all the deleted files will be gone. 5 will be entered when the user wants to exit this will gracefully close the program.

The employee record fields will be as follows;

char id[6] (The employee’s id)

char surname [16] (The employee’s last name)

char firstname[16] (The employee’s first name)

char employed[2] (Number of years the employee has been working for the company)

char sector [10] (The sector of the company that the employee has been working in eg. IT, Finance etc.)

**Pseudo code**

void header(void)

void add(void)

void erase(void)

void list(void)

void compact(void)

struct employee

id[6]

surname[20]

firstname[20]

employed[10]

sector[10]

struct employee emp

struct header

records

deletedrecords

struct header head

main

while(exit!=1)

print’ 1 add employee

2 delete employee

3 list employees

4 compact employees

5 exit’

Read choice

Switch(choice)

Case1

Add()

Case 2

Erase()

Case 3

List()

Case 4

Compact()

Case 5

Exit=1

END switch

END while

END main

Header()

database=fopen("employees.dat","ab+")

while(fread(&emp, sizeof(emp), 1, database)==1)

head.records++

if(emp.id[0] == '\*')

head.deletedrecords++

END if

END while

close(database)

END header

Add()

database = fopen("employees.dat", "ab+")

do

print ’ Enter the employees ID:’

read emp.id

while(reading through the records in the database)

if(emp.id is the same as temp\_id)

id\_found = 'y';

offset measured from end of file

print ‘The ID you have entered already belongs to an employee in the database, please try again ‘

END if

END while

while(id\_found == 'y');

END do while

Copy test\_id into emp.id

print ‘Enter employees surname:’

read emp.surname

print ‘Enter employees firstname:’

read emp.firstname

print ‘Enter the number of years the employee has working for the company:’

read emp.employment

print ‘Enter the sector the employee works in:’

read emp.sector

write into database

head.records++

close(database)

END add

Erase()

database = fopen("employees.dat", "rb+")

while(end!=1)

print ‘Enter ID that you want to be deleted:’

read del\_id

offset the measurement to the start of the file

while(reading the records in the file)

if(emp.id is the same as del\_id)

Offset is measured to the current position

Puts an asterix in the first character of the id

Offset is measured to the end of the database

print ‘Record was successfully deleted!’

HEAD.deletedrecords++

End=1

END if

END while

if(no match)

print ‘ Record was not found! ‘

end=0

END if

END while

close(database)

END erase

List()

database = fopen("employees.dat", "rb")

while(There are still records to read in the database)

if(emp.id[0] != '\*')

Print ‘The employees ID: emp.id’

Print ‘The Employees name: emp.surname,emp.firstname’

Print ‘Enter the number of years the employee has working for the company: emp.employed’

Print ‘Enter the sector the employee works in: emp.sector’

print ‘Records in the database: head.records Records that have been deleted: head.deletedrecords’

END if

END while

close(database)

END list

Compact()

database = fopen("employees.dat", "rb+")

tempdatabase = fopen("tempemployees.dat", "wb+")

while(There are records to read in the database)

if(emp.id[0] != '\*')

write into temp database

END if

END while

close(database)

close(tempdatabase)

database=fopen("employees.dat","wb+")

tempdatabase=fopen("tempemployees.dat","rb+")

while(There are records to read in the temp database)

write into the database

HEAD.records++

END while

Close(database)

Close(tempdatabase)

END compact

**Code**















