Modern Education Society's College of Engineering, Pune

210256: DATA STRUCTURES ALGORITHM LABORATORY (2019 C0URSE)

NAME OF STUDENT:	Gauri S. Bharag	CLASS:	SE - Comp2
SEMESTER/YEAR:	II / 2022-23	ROLL NO:	37
DATE OF PERFORMANCE:	28/4/23	DATE OF SUBMISSION:	8/5/23
EXAMINED BY:	Prof. P.S Randive	EXPERIMENT NO: 12	

TITLE: Create index sequential file and maintain data as specified

AIM/PROBLEM STATEMENT: Company maintains employee information as employee ID, name, designation, and salary. Allow user to add delete information of particular employee. If employee does not exist an appropriate message is displayed. If it is, then system displays the employee details. Use index sequential file to maintain the data

OBJECTIVES:

1. To understand file handling.
2. To understand working of index sequential file.

OUTCOMES:

1. To apply appropriate file handling techniques on given data
2. To use index sequential file.

PRE-REQUISITE:

1. Knowledge of C++ programming
2. Basic knowledge of sequential file

THEORY:

File is a collection of records related to each other. The file size is limited by the size of memory and storage medium.

There are two important features of file:

1. **File Activity:** File activity specifies percent of actual records which proceed in a single run.
2. **File Volatility:** File volatility addresses the properties of record changes. It helps to increase e efficiency of disk design than tape.

Page No. 257
Date

Theory

File is a collection of records related to each other
The file is limited by the size of memory and storage medium
- File organization ensures that records are available for processing
- Type of File organization
  - Sequential access file Organization
  - Indexed sequential access file organization
  - Direct access file organization

Indexed sequential access file organization
- It combines both sequential file and direct access file organization.
- Records are stored randomly on a direct access device such as magnetic disk by a primary key.
- This file has multiple keys.
- The data can be access either sequentially or randomly using the index.

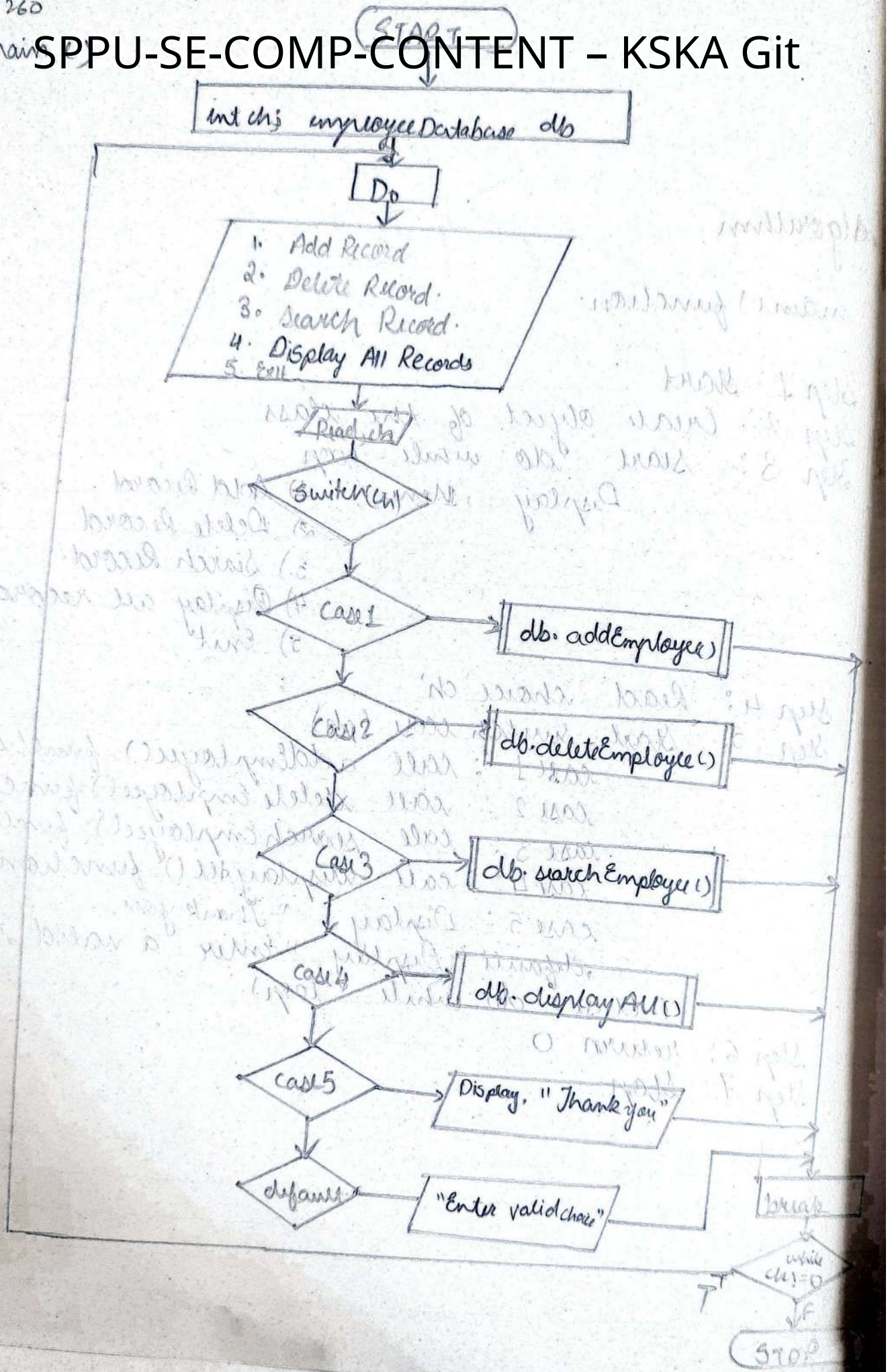
Page No. 259
Date

Algorithm

main() function

Step 1:- Start
Step 2:- Create object of the class
Step 3:- Start do-while loop
Display, Menu, 1) Add Record
2) Delete Record
3) Search Record.
4) Display all records
5) Exit

Step 4:- Read choice 'ch'
Step 5:- Start switch case (ch)
case 1 : call addEmployee() function
case 2 : call deleteEmployee() function
case 3 : call searchEmployee() function
case 4 : call displayAll() function
case 5 : Display, "Thank you"
default : Display, "Enter a valid choice"
(Close do-while loop)
Step 6:- return 0
Step 7:- Stop

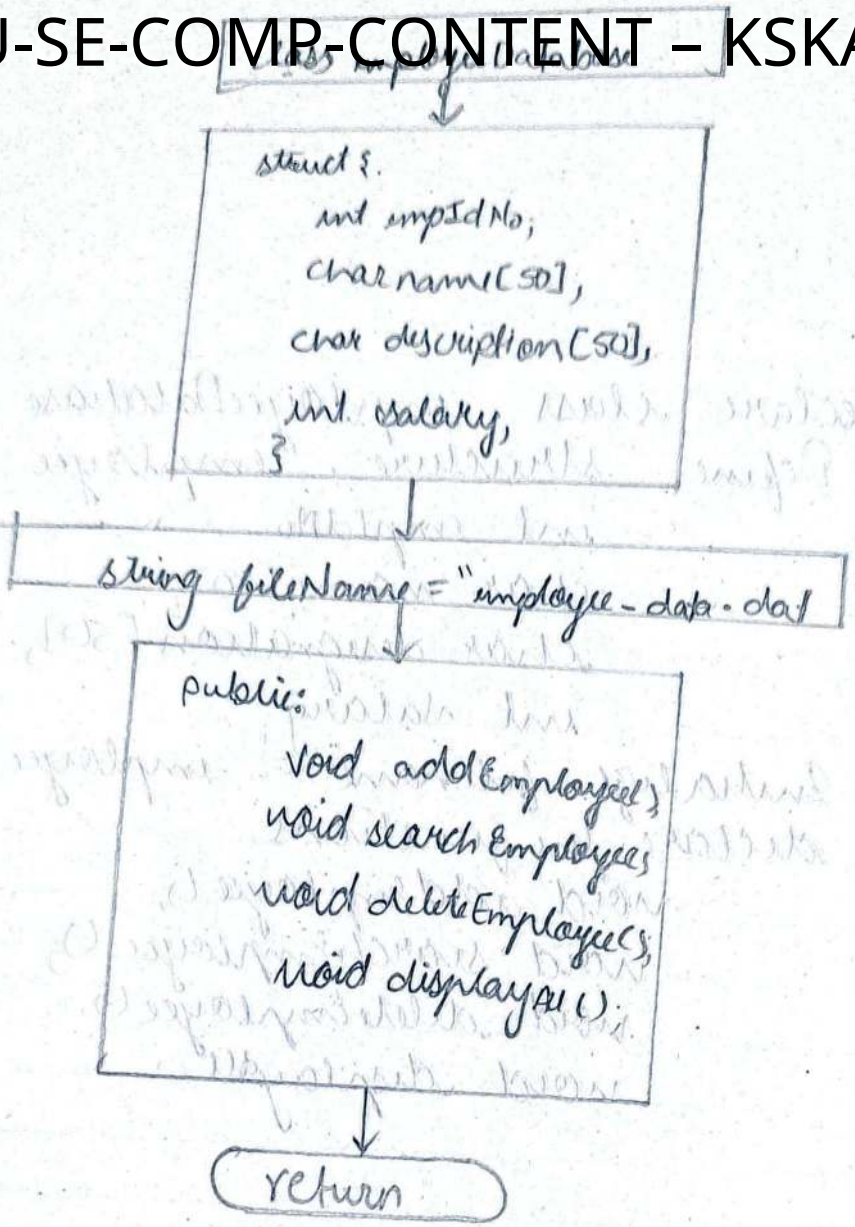


Page No. 261
Date

class ( )

Step 1:- Declare class employeeDatabase
Step 2:- Define structure, employee, with variable
int empIdNo.
char name[50];
char designation[50];
int salary
Step 3:- Initialize filename = "employee_data.dat"
Step 4:- declare the functions
void addEmployee();
void searchEmployee();
void deleteEmployee()
void displayAll()

2]

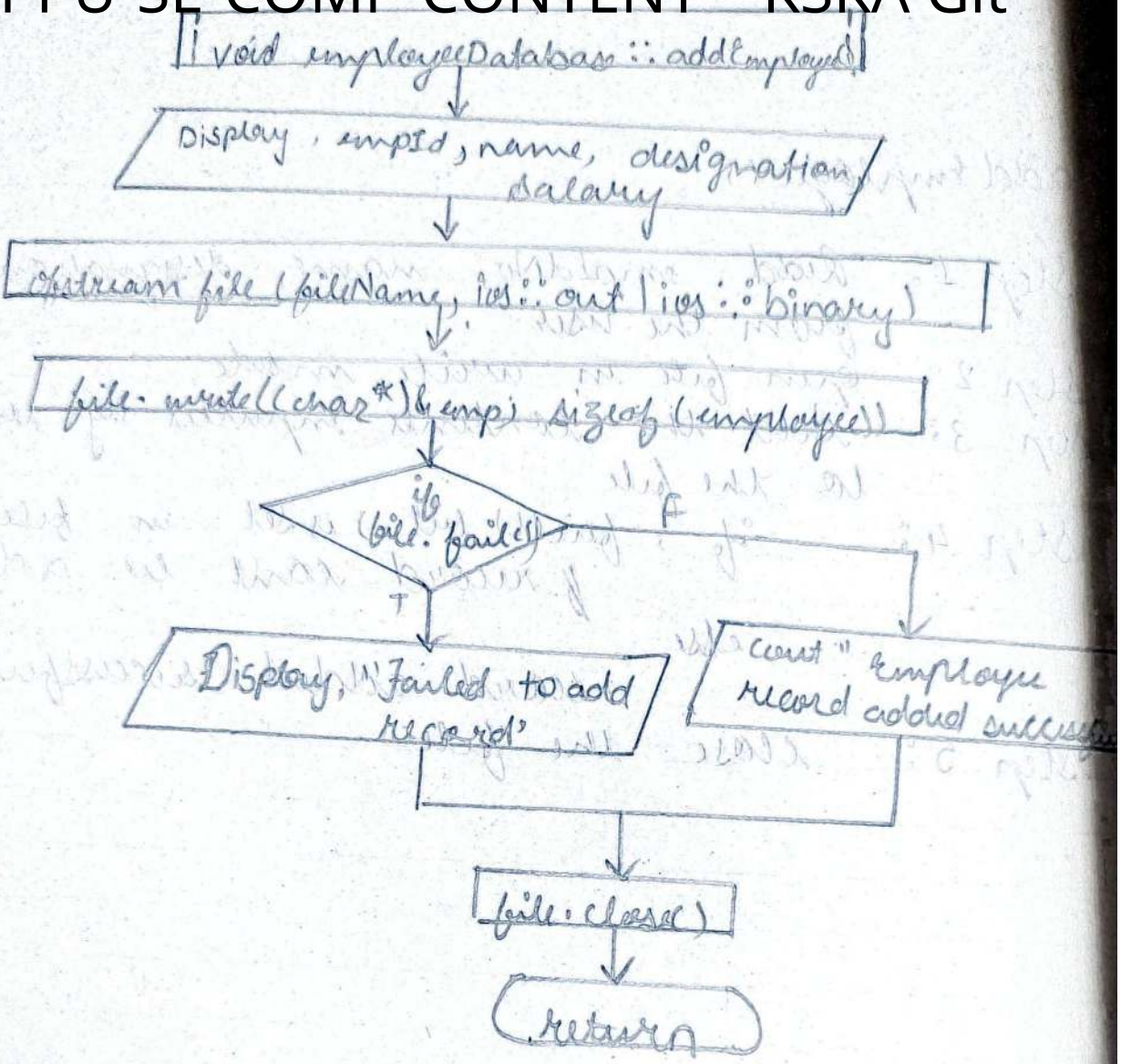


Page No. 963
Date

Employee()

1: Read empIdNo, name, designation, salary from the user
2: Open file in write mode
3: Add the contents inputted by the user to the file
4: if, fail() bit is set in file, then
    if record can't be added
    else
        record added successfully
5: close the file().

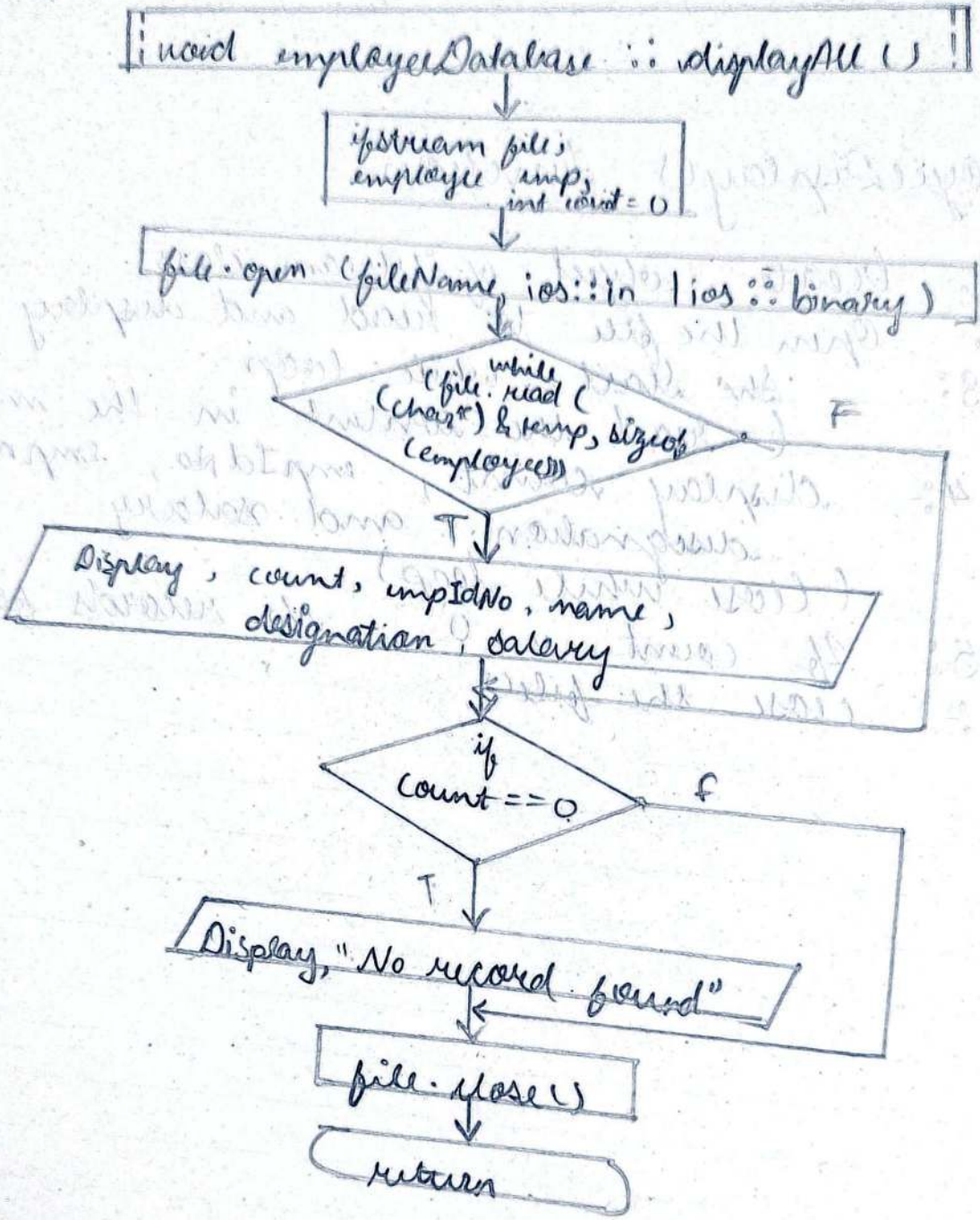
3) add



employeeDisplay() function

tep 1 :- Create, object of ifstream class
ep 2 :- Open the file to read and display
Step 3 :- Start, while loop.
(read the content in the main file)
tep 4 :- display count, empIdNo, empname, designation, and salary
(close while loop)
tep 5 :- If count is '0', No records found.
p 6 :- close the file()

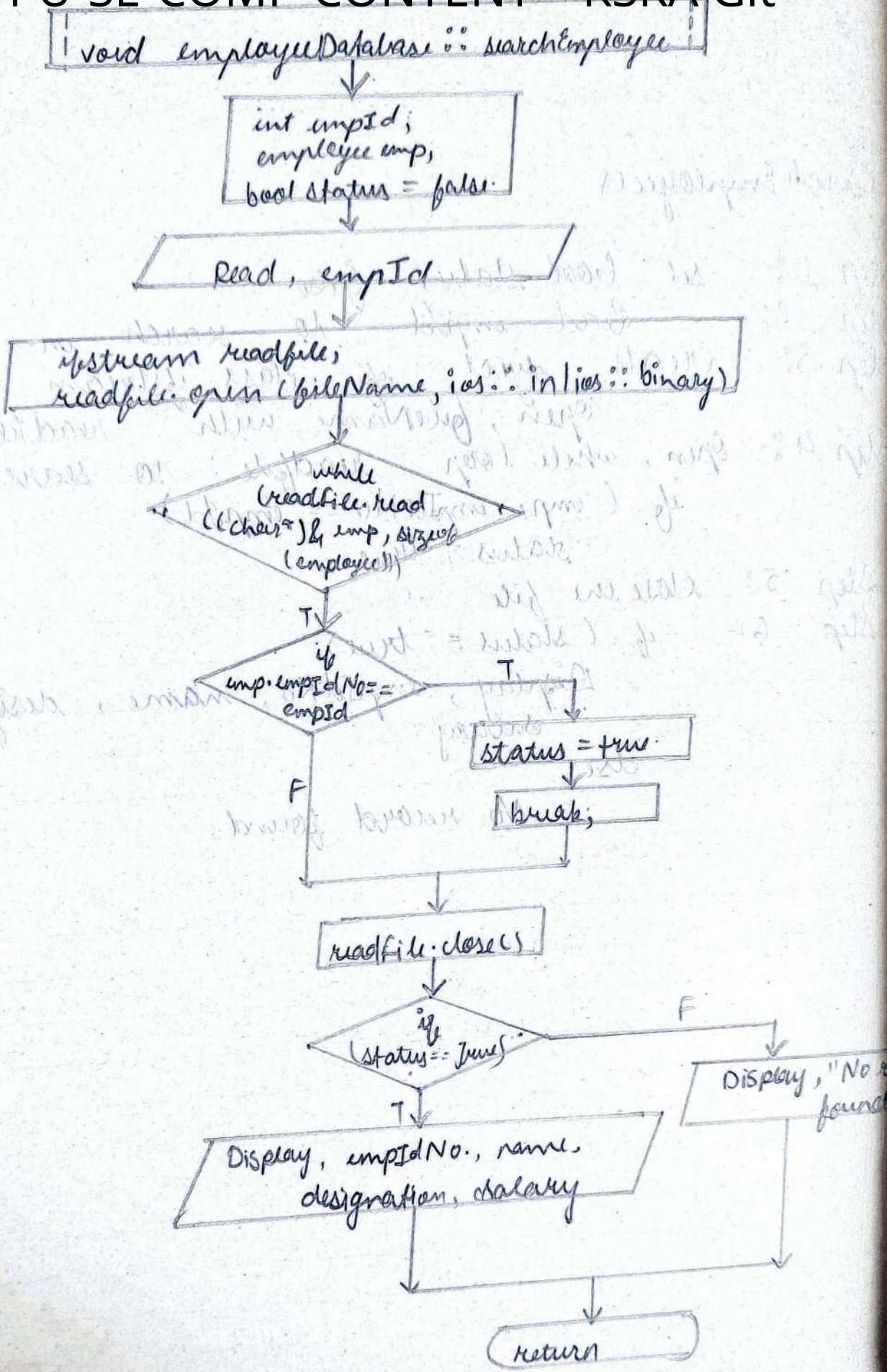
47



Page No. 267
Date

searchEmployee()

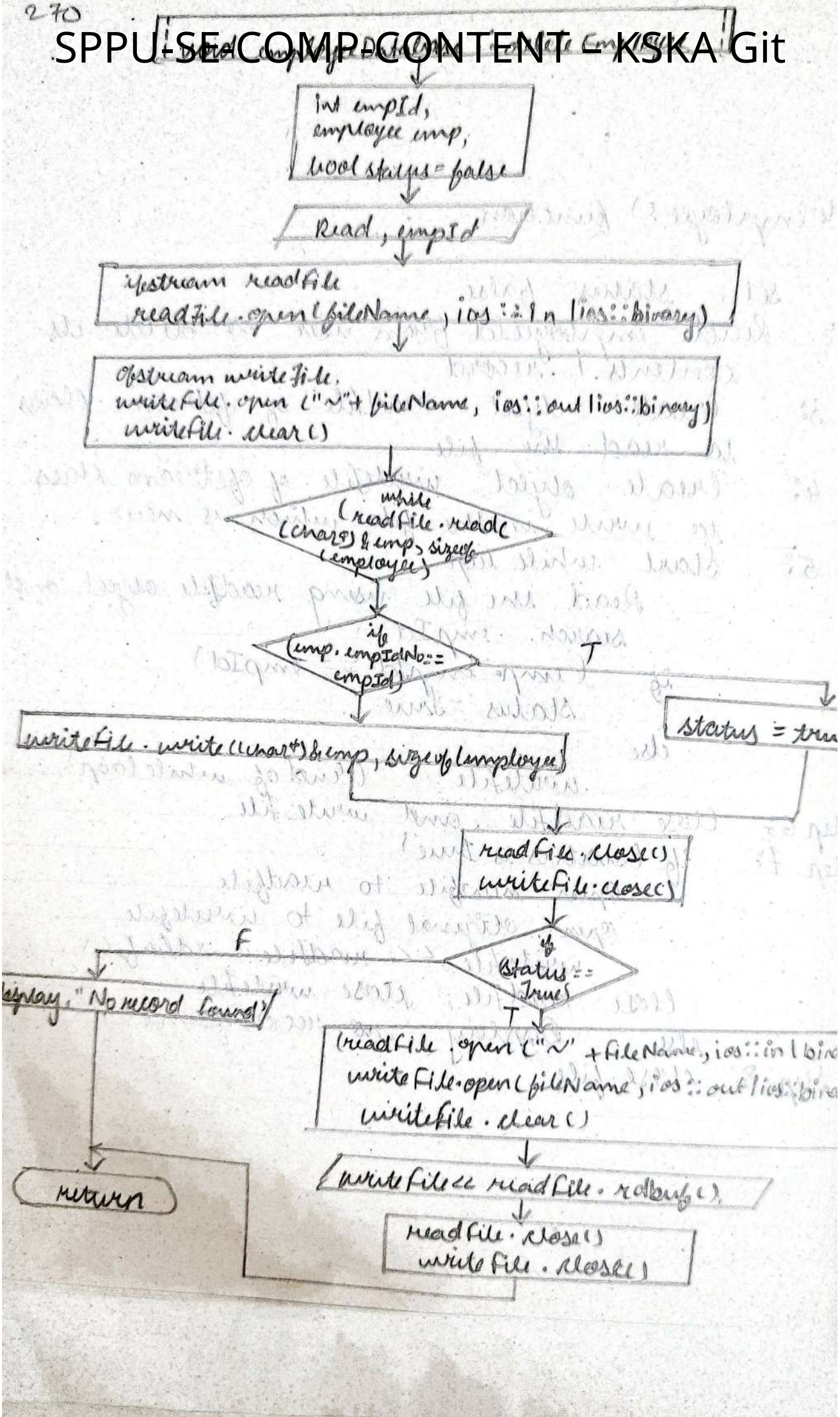
tep 1:- set bool status = false.
tep 2:- Read empId. to search in file
tep 3:- Create object of class ifstream
open, fileName with readfile object
tep 4:- Open, while loop, readfile to search
if (emp.empIdNo == empId)
status = true
tep 5:- close the file
tep 6:- if (status == true)
Display, empIdNo, name, designation, salary.
else.
No record found.



Page No. 269
Date

delete Employee () function

Step 1:- Set, status = false
Step 2:- Read employeeId from user to delete its contents / record.
Step 3:- Create object readfile of ifstream class to read the file
Step 4:- Create object writefile of ofstream class to write in the file which is new
Step 5:- Start while loop
Read the file using readfile object and search empId.
if (emp.empId == empId)
Status = True
else
writefile (End of while loop)
Step 6:- Close readfile, and writefile
Step 7:- if (status is True)
Open newfile to readfile
Open original file to writefile
writefile << readfile.rdbuf();
Close readfile, close writefile
else Display no recordfound.
Step 8:- close file.



Page No. 031
Date

Questions

Explain direct sequential file

Direct access file is also known as random access or relative file organization
It is also called as hashing.
In direct access file, all records are stored in direct access storage device (DASD), such as hard disk.
The records are randomly placed throughout the file.
The records does not need to be in sequence because they are updated directly and rewritten back in the same location

Explain advantage and disadvantages of the index sequential file:

Advantages
In this, sequential file and random file access is possible.
It reduces the degree of the sequential search
The records can be inserted in the middle of file

Disadvantages
It requires more storage space.
It is expensive because it requires special software
It requires unique keys and periodic reorganization
It is less efficient in the use of storage space as compared to other file organization

Conclusion :

Hence we have successfully implemented and file handling techniques on given data using index sequential file.