

Laboratory Manual

(Version 10.0)

for

Fundamentals of IT Lab

(MCA-151)

MCA - I Semester

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List of Abbreviations

BTL	Bloom's Taxonomy Level
CE	Communication Efficacy
CICP	Conduct Investigations of Complex Computing Problems
CK	Computational Knowledge
CO	Course Outcome
DAC	Departmental Advisory Committee
DDS	Design and Development of Solutions
I&E	Innovation and Entrepreneurship
I&T	Individual & Team Work
IT	Information Technology
IQAC	Internal Quality Assurance Cell
LLL	Life-Long Learning
MTU	Modern Tool Usage
PA	Problem Analysis
PE	Professional Ethics
PEO	Programme Educational Objective
PMF	Project Management and Finance
PO	Programme Outcome
SEC	Societal and Environmental Concern
SQL	Structured Query Language

Declaration

Department	:	Department of Computer Science and Applications
Course, Year and the Semester to which Lab is offered	:	MCA - I Year, I Semester
Name of the Lab Course	:	Fundamentals of IT Lab
Course Code	:	MCA-151
Version No.	:	10.0
Name of Course/Lab Teacher	:	Mrs. Narinder Kaur Seera
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(Head of Department)

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1. Vision of the Department

To become a Centre of excellence in the field of Computer Science and Applications, to contribute effectively in the rapidly changing global economy directed towards national development ensuring prosperity for the mankind.

2. Mission of the Department

- M1** To become a centre of excellence in the field of Computer Science and Applications and produce professionals as per global industry standards.
- M2** To foster innovation, entrepreneurial skills, research capabilities and bring all-round development amongst budding professionals.
- M3** To promote analytical and collaborative life-long learning skills, among students and faculty members involving all stakeholders.
- M4** To inculcate strong ethical values and professional behaviour while giving equal emphasis to social commitment and nation building.

3. Programme Educational Objectives (PEOs)

The PEOs for the MCA programme are as follows:

- PEO1** Exhibit professional competencies and knowledge for being a successful technocrat.
- PEO2** Adopt creative and innovative practices to solve real-life complex problems.
- PEO3** Be a lifelong learner and contribute effectively to the betterment of the society.
- PEO4** Be effective and inspiring leader for fellow professionals and face the challenges of the rapidly changing multi-dimensional, contemporary world.

4. Programme Objectives (POs)

PO1: Computational Knowledge (CK)

Demonstrate competencies in fundamentals of computing, computing specialisation, mathematics, and domain knowledge suitable for the computing specialisation to the abstraction and conceptualisation of computing models from defined problems and requirements.

PO2: Problem Analysis (PA)

Identify, formulate, and analyze complex real-life problems in order to arrive at computationally viable conclusions using fundamentals of mathematics, computer sciences, management and relevant domain disciplines.

PO3: Design and Development of Solutions (DDS)

Design efficient solutions for complex, real-world problems to design systems, components or processes that meet the specifications with suitable consideration to public health, and safety, cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex Computing Problems (CICP)

Ability to research, analyze and investigate complex computing problems through design of experiments, analysis and interpretation of data, and synthesis of the information to arrive at valid conclusions.

PO5: Modern Tool Usage (MTU)

Create, select, adapt and apply appropriate technologies and tools to a wide range of computational activities while understanding their limitations.

PO6: Professional Ethics (PE)

Ability to perform professional practices in an ethical way, keeping in mind cyber regulations & laws, responsibilities, and norms of professional computing practices.

PO7: Life-Long Learning (LLL)

Ability to engage in independent learning for continuous self-development

as a computing professional.

PO8: Project Management and Finance (PMF)

Ability to apply knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

PO9: Communication Efficacy (CE)

Ability to effectively communicate with the technical community, and with society at large, about complex computing activities by being able to understand and write effective reports, design documentation, make effective presentations, with the capability of giving and taking clear instructions.

PO10: Societal and Environmental Concern (SEC)

Ability to recognize and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities applicable to professional computing practices.

PO11: Individual & Team Work (I&T)

Ability to work in multi-disciplinary team collaboration both as a member and leader as per need.

PO12: Innovation and Entrepreneurship (I&E)

Ability to apply innovation to track a suitable opportunity to create value and wealth for the betterment of the individual and society at large.

5. Institutional Policy for Students' Conduct

The following guidelines shall be followed:-

5.1 All the students in their introductory Lab. shall be assigned a system, which shall be their workplace for the complete semester. Students can store records of all their Lab. assignments on their individual workstations.

5.2 Introductory Lab. shall include an introduction to the appropriate software/tool, followed by a basic Introductory Assignment having Practice

Questions. All the students are expected to complete this assignment within a week time, as the same shall be assessed through a lab. test.

- 5.3 Each week the instructor, in parallel to respective topics covered in the theory lecture, shall assign a set of practical problems to the students in form of Assignments (A, B, C,). The problems in these assignments shall be divided into two parts. The first set of Problems shall be compulsory for all the students and its record need to be maintained in the Practical File, having prescribed format, as given in Appendix-A. All the students should get the weekly assignment checked and signed in the Practical File by the respective teacher in the immediate succeeding week. The second set of problems are Advanced Problems and shall be optional. Student may solve these advanced problems for their further practice.
- 5.4 Cellular phones, pagers, CD players, radios and similar devices are prohibited in the classrooms, laboratories and examination halls.
- 5.5 Laptop-size computers / Tablets may be used in lectures for the purpose of taking notes or working on team-projects.
- 5.6 The internal practical exam shall be conducted towards the end of the semester and shall include the complete set of Lab exercises conducted as syllabus. However, students shall be assessed on continuous basis through overall performances in regular lab. tests, both announced and surprise and viva-voce.
- 5.7 The respective faculty shall prepare and submit sufficient number of practical sets of computing problems to the Dean (Examinations), atleast two weeks prior to the actual exam. It is the responsibility of the faculty to ensure that a set should not be repeated for more than 5 students in a given batch.
- 5.8 The exam shall be of 3 hours duration where the student shall be expected to implement solutions to his/her assigned set of problems on appropriate software tools in the lab.
- 5.9 Once implemented, student shall also appropriately document code implemented in the assigned answer sheets, which shall be submitted at the

end of the examination. All the students shall also appear for viva-voce examination during the exam.

5.10 Co-operate, Collaborate and Explore for the best individual learning outcomes but copying or entering into the act of plagiarism is strictly prohibited.

6. Learning Outcomes of Laboratory Work

The student shall demonstrate the ability to:

- ☑ Verify and Implement the concepts and theory learnt in class.
- ☑ Code and use Software Tools to solve problems and present their optimal solutions.
- ☑ Apply numerical/statistical formulas for solving problems/questions.
- ☑ Develop and apply critical thinking skills.
- ☑ Design and present Lab as well as project reports.
- ☑ Apply appropriate methods for the analysis of raw data.
- ☑ Perform logical troubleshooting as and when required.
- ☑ Work effectively as a member of a team in varying roles as need be.
- ☑ Communicate effectively, both oral and written.
- ☑ Cultivate ethics, social empathy, creativity and entrepreneurial mindset.

7. Course/Lab Outcomes (COs)

- CO1 Design logic circuits based on boolean expressions and basic micro-operations. (BTL6)
- CO2 Develop effective communication, data analysis and interactive presentations using MS Office tools and problem solving using SSAD tools. (BTL6)
- CO3 Use different Operating Systems (Windows and Linux) and databases through SQL commands. (BTL3)

CO4 Work with various types of transmission media and inter-networking devices with their functions. (BTL3)

CO5 Work in teams to assemble and troubleshoot PC. (BTL6)

8. Mapping of COs with POs

Table 1: Mapping of COs with POs

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	-	-	-	-	-	2	-	-
CO2	3	3	3	2	2	-	2	-	3	-	2	-
CO3	3	2	-	-	2	-	1	-	-	-	-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-
CO5	-	2	2	-	-	-	2	-	-	2	3	-

9. Course/Lab Description

Course (Lab) Title : Fundamentals of IT-Lab

Course (Lab) Code : MCA-151

Credits : 01

Pre-requisites : Basic working of Computers

Academic Session : July to December

Contact Hours/Week : 02 (01 Lab of 02 hours each/Week)

Internal Assessment : 40 Marks

External Assessment : 60 Marks

10. Grading Policy

Item	Points	Marks	Remarks
Weekly Lab Assignments including Practical Files	10	10	Closed Book/Open Book
Internal End-Term Practical Examination	20	10	Closed Book
Viva-Voce	20	20	Closed Book
External End-Term Examinations	60	60	Closed Book (conducted and evaluated by the University)
Total		100	

11. Lesson Plan

Week No.	Lab No.	Topics / Concepts to be Covered	Reference of Lab Manual
1.	1.	Designing circuits using basic gates and universal gates (NAND / NOR) in Logisim	Assignment A (Problem AP1 to AP4)
2.	2.	Exploring features of MS Word	Assignment B (Problem BP1)
3.	3.	Exploring features of MS Powerpoint.	Assignment B (Problem BP3)
4.	4.	Exploring features of MS Excel and using built-in functions, ranges, charts, pivot table reports, goal seek etc.	Assignment B (Problem BP2)
5.	5.	Buffer Reserved for Revision	Assignment A – B
6.	6.	Designing solutions for computational problems using flowcharts and writing algorithms for the same.	Assignment C (Problem CP1 to CP6)

Week No.	Lab No.	Topics / Concepts to be Covered	Reference of Lab Manual
7.	7.	Designing Decision tables and Decision trees for given case studies.	Assignment D (Problem DP1 to DP5)
8.	8.	Various File and Directory management commands in Linux and exploring Linux file system	Assignment E (Problem EP1)
9.	9.	Buffer Reserved for Revision	Assignment C – E
10.	10.	File management commands on Windows Command Prompt	Assignment F (Problem FP1)
11.	11.	Writing SQL queries for retrieving desired records from tables and exploring the use of DDL and DML commands.	Assignment G (Problem GP1)
12.	12.	Understanding functionalities of basic internetworking devices and different hardware to assemble a computer system.	Assignment H (Problem HP1 to HP2)
13.	13.	Buffer Reserved for Revision	Assignment F – H

12. Assignments

Assignment Set: A

Objectives of the Assignment:

- Familiarize with designing and simulating logic circuits using Logisim .
- Test working of logic circuits with truth tables.

CO/BTL Covered: CO1/BTL6

Problems:

AP1 Construct logic circuits for following expressions in Logisim:

And also draw truth tables for these expressions to verify the results.

1. $A'B + (CD)'$
2. $A + B.(C + D)'$
3. $AB' + A'C + B'C'$

AP2 Construct logic circuits for following expressions in Logisim using only NOR gates:

And also draw truth tables for these expressions to verify the results.

1. $A + B.(C + D)'$
2. $F(A,B,C) = \Pi(1,2,4,6)$

AP3 Construct logic circuits for following expressions in Logisim using only NAND gates:

And also draw truth tables for these expressions to verify the results.

1. $(A + B)' . (C + B)'. (A' + C)'$
2. $F(A,B,C) = \Sigma (0,3,5,7)$

AP4 Construct logic circuits using basic gates to implement:

1. XOR for 3 inputs
2. XNOR for 3 inputs

And also draw truth tables to verify the results.

Advanced Problems:

AA1 Construct a logic circuit to implement half adder.

Expression for 'sum' and 'carry' are given below:

$$\text{Sum} = A'.B + A.B'$$

$$\text{Carry} = A.B$$

AA2 Construct a logic circuit to implement half subtractor.

Expression for 'difference' and 'borrow' are given below:

$$\text{Difference} = A'.B + A.B'$$

$$\text{Borrow} = A'.B$$

AA3 Construct a logic circuit to implement 4X1 Multiplexer

AA4 Construct a logic circuit to implement full adder.

Expression for 'sum' and 'carry' are given below:

$$F(A,B,C) = \Sigma(1,2,4,7) \text{ ---- Sum}$$

$$F(A,B,C) = \Sigma(3,5,6,7) \text{ ---- Carry}$$

Assignment Set: B

Objectives of the Assignment:

- Familiarize with basic features of MS Word, MS Excel and MS Powerpoint.
- Construct formula and use ranges, addresses and built-in functions for mathematical computations in MS Excel.
- Use various advanced features and tools of Excel such as Chrts, Pivot tables, pivot charts, Goal Seek etc.
- Use MS Powerpoint to create interactive presentations.

CO/BTLCovered: CO2/BTL6

Problems:

- BP1**
1. Create a document and apply different formatting features and headers & footers in it.
 2. Create a time table for your class using tables and apply formatting features to format row and column headers.
 3. Create a database of few contacts and then use the same for mail merging.
 4. Create two column document and apply different levels of headings in it.
 5. Explore other features of MS Word such as creating lists, paragraph settings, page layouts, password protection etc and apply the same in your documents.

- BP2**
1. Create a Database of your class for marks obtained by 10 students in five different subjects:

Name of Student, FIT, CO, C, DM, PPM

Draw a chart to easily compare the performance of the class and answers the following questions by observing your charts:

- i. In which subject the students performed well?
- ii. Which student has scored maximum and minimum in any particular subject?

- iii. Individual performance of a particular student in all subjects.
2. Use the same database to filter records based on some conditions, such as show only those records where marks is between 40 to 70. Use add and remove filters on your data.
3. Use the above dataset to do the following:
 - Find the total marks obtained by each student in all the five subjects.
 - i. Calculate percentage of all the students.
 - ii. Use built-in functions to find maximum, minimum, average marks in all subjects separately.
4. Apply 5 different formatting features on your data to record a macro. Then apply the same formatting features on another set of data using that macro.
5. Enter Principal, Rate and Time to calculate Interest and Amount. Use Goal Seek to find the changes in rate of Interest or in time period when - Total amount is doubled.
6. Also exercise on groups/ungroup and subtotals.
7. Use data Validation feature to restrict users to enter only valid data in the cells. For example restrict users to enter marks between 0 and 100. Any entry above 100 should be shown as invalid.
8. Try importing data from a text file in your worksheet.
9. Use conditional formatting to change the color and font of text that satisfies some condition.
For example, use Highlight cells rules, Top/Bottom rules, defining new rules etc, in conditional formatting to show the marks greater than 50, students who are fail etc.
10. Create a database with five columns
Country, Salesperson, Order_Date, Order_id, Amount as shown below:

	A	B	C	D	E
1	Country	Salesperson	Order Date	Order ID	Order Amount
2	UK	Buchanan	7/16/2003	10248	\$440.00
3	UK	Suyama	7/10/2003	10249	\$1,863.40
4	USA	Peacock	7/12/2003	10250	\$1,552.60
5	USA	Leverling	7/15/2003	10251	\$654.06
6	USA	Peacock	7/11/2003	10252	\$3,597.90
7	USA	Leverling	7/16/2003	10253	\$1,444.80
8	UK	Buchanan	7/23/2003	10254	\$556.62
9	UK	Dodsworth	7/15/2003	10255	\$2,490.50
10	USA	Leverling	7/17/2003	10256	\$517.80
11	USA	Peacock	7/22/2003	10257	\$1,119.90
12	USA	Davolio	7/23/2003	10258	\$1,614.88
13	USA	Peacock	7/25/2003	10259	\$100.80
14	USA	Peacock	7/29/2003	10260	\$1,504.65
15	USA	Peacock	7/30/2003	10261	\$448.00

Create pivot tables to answer the following :

- i. What are the total order amounts for each salesperson?
- ii. What are the total order amounts for salesperson in a specific country?
- iii. What are the top 3 salesperson?
- iv. Total amount received date wise.
- v. Total sales by individual salesperson date wise.

BP3 Create an interactive powerpoint presentation on Instruction Set Classification, using different animation and slide transition effects.

Advance Problems:

- BA1**
1. Create a table for storing subject performance related details of students such as marks scored in Tests, Assignments, Internal Theory, Practical etc, along with Enrolment number and names of students. Apply formatting features to format row and column headers.
 2. Create a database of storing contacts of your friends and then use the same for sending birthday invitation, using mail merging.
 3. Write an article on any topic of your interest and apply two-column formatting on it. Use different levels of headings & sub-headings and page headers & footers on it.

BA2 Create an interactive powerpoint presentation on different components of a Computer System and their functions, using different animation and slide transition effects.

Assignment Set: C

Objectives of the Assignment:

- Create step by step solution for a problem using algorithm.
- Familiarize with notations of flowcharts to provide solutions of simple computational problems.

CO/BTL Covered: CO2/ BTL6

Problems:

CP1 Draw a flowchart to check whether a number inputted by user is Prime.

CP2 Design an algorithm to check whether a number inputted by user is Prime.

CP3 Draw a flowchart to print the sum of the series:

$$\frac{1}{n} + \frac{2}{(n-1)} + \frac{3}{(n-2)} + \dots + \frac{n}{1}$$

CP4 Design an algorithm to print the sum of the series:

$$5 + 55 + 555 + \dots + n \text{ terms}$$

CP5 Design an algorithm to find factorial of a number inputted by user.

CP6 Design an algorithm to print the sum of the series: **11 + 22 + 33 + 44 + + nn**

Advanced Problems

CA1 Design an algorithm to print the sum of squares of all even numbers upto 20.

CA2 Draw a flowchart to find factorial of all numbers from 20 to 30.

CA3 Design an algorithm to find the reverse of a number.

CA4 Draw a flowchart to find reverse of all numbers from 850 to 1050.

CA5 Draw a flowchart to print the sum of the series : **1! + 2! + 3! + + n!**

Assignment Set: D

Objectives of the Assignment:

- Identify solution for case studies with multiple conditions and actions.
- To structure logic by generating rules in decision tables.

- To represent complex relationships of condition and their permissible actions given in the case studies, using decision tables and decision trees.

CO/BTL Covered: CO2/ BTL6

Problems:

DP1 Draw a decision table to show the calculation of the postage for the parcel, as described below:

“The rules of deciding the postage of a postal parcel is described as follows: if the parcel is to be sent by express, then the basic charge will be 6\$/kg, otherwise the basic charge will be 4\$/kg. If the distance is over 200km, then each kg will be charged for one more dollar. If the parcel’s weight is over 10kg, then another 0.5 dollar will be charged for each kg that exceeds 10 kg. Suppose a parcel’s weight is W kilograms, calculate the total charges.”

DP2 Draw a decision table for online bookstore.

When buying books online, customers are given choices to pay amount either in advance or through COD (cash-on delivery). It depends on the following cases: New customer has to pay in advance.

Old customers are given choices. If the amount of transactions a customer made in the previous month is more than \$1,000, and if the amount of transaction is more than \$500 this time, allow the customer to pay upon delivery.

If the amount of transactions a customer made in the previous month is more than \$1,000, but the amount of transaction is less than \$500 this time, we still allow the customer to pay upon delivery but he/she has to make a 15% prior deposit.

If the amount of transactions a customer made in the previous month is less than \$1,000, but the amount of transaction is more than \$500 this time, request the customer to pay in advance and ask him/her to make a 15% prior deposit.

If the amount of transactions a customer made in the previous month is less than \$1,000, and less than \$500 this time, the customer has to pay in advance.

DP3 Draw a decision table for the following case study for credit cards:

If you are a new customer and you want to open a credit card account then there are three conditions first you will get a 15% discount on all your purchases today, second if you are an existing customer and you hold a loyalty card, you get a 10% discount and third if an existing customer has a coupon, he can get 20% off today (but it can’t be used with the ‘new customer’ discount).

A company sells products to wholesale and retail outlets. Wholesale customers receive a 2% discount on all orders. The company also encourages retail customers to pay using credit card by offering an additional 2% discount for this method of payment. Another 2% discount is given on orders of 50 or more units. **Draw a decision tree to show various discounts.**

DP4 12. **Draw a decision tree for deciding the** Policy for charging flight customers for certain in-flight services:

If the flight is more than half-full and costs more than \$350 per seat, we serve free cocktails to all passengers more than 15 years old, unless it is a domestic flight. If the flight is not half-full, we ask customers to avail cocktails on a discount of 20% of the price. We charge for cocktails on all domestic flights; that is, for all the ones where we serve cocktails. (Cocktails are only served on flights that are more than half-full, otherwise it will be a paid service.)

DP5 Consider a library membership Automation software (LMS), where it should support three options for its new and existing members:

New Member : If this option is selected, the software asks for the details like Name, Address, contact number etc and after saving the entries, it generates a membership number and also prints a bill for annual membership including security fees.

For existing members:

Renewal Membership : If this option is selected, the software asks for member name and his membership number to validate the user. If the user is valid, it updates the expiry date of membership and prints a bill for annual subscription, otherwise an error message appears.

Cancel Membership : If this option is selected, the software asks for member name and his membership number to validate the user. If the user is valid, it deletes the member's record from the database and prints a cheque for the balance amount, otherwise an error message appears.

Draw a decision tree for LMS.

Advance Problems:

DA1 Draw a Decision Table for following case: A bank offers two types of savings accounts, Type A and Type B. For the Type A account, the bank pays a dividend on the account balance at the end of each quarter. The balance can be insured. The insured amount gets 8.75% annual interest. The uninsured amount gets 5.00% annual interest. For the Type B account, dividends are paid monthly on an average daily balance for that month. No dividend is paid for a balance below Rs 2,000,

otherwise 5% interest is paid on the first Rs 5,000, 5.5% on the next Rs 20,000 , and 7% over Rs 25,000.

DA2 Draw a Decision Tree for the following case study:

Your company is considering whether it should tender for two contracts (MS1 and MS2) on offer from a government department for the supply of certain components. The company has three options:

- tender for MS1 only; or
- tender for MS2 only; or
- tender for both MS1 and MS2.

If tenders are to be submitted the company will incur additional costs. These costs will have to be entirely recouped from the contract price. The risk, of course, is that if a tender is unsuccessful the company will have made a loss.

The cost of tendering for contract MS1 only is £50,000. The component supply cost if the tender is successful would be £18,000.

The cost of tendering for contract MS2 only is £14,000. The component supply cost if the tender is successful would be £12,000.

The cost of tendering for both contract MS1 and contract MS2 is £55,000. The component supply cost if the tender is successful would be £24,000.

DA2 Draw a Decision Tree for the following case study:

A company is trying to decide whether to bid for a certain contract or not. They estimate that merely preparing the bid will cost £10,000. If their company bid then they estimate that there is a 50% chance that their bid will be put on the "short-list", otherwise their bid will be rejected.

Once "short-listed" the company will have to supply further detailed information (entailing costs estimated at £5,000). After this stage their bid will either be accepted or rejected.

The company estimate that the labour and material costs associated with the contract are £127,000. They are considering three possible bid prices, namely £155,000, £170,000 and £190,000. They estimate that the probability of these bids being accepted (once they have been short-listed) is 0.90, 0.75 and 0.35 respectively.

Assignment Set: E

Objectives of the Assignment:

- Familiarize with basics of shell and command-line syntax to run commands that include options and arguments.
- Familiarize with file and directory management commands and navigate

directory structure in Ubuntu.

- Work with redirection symbols to redirect the output of a command in a file and connect commands using pipeline.

CO/BTL Covered: CO3/ BTL3

Problems:

EP1 Execute the following LINUX commands and write their syntax and example:

1. Cd
2. mkdir
3. Pwd
4. Ls
5. Expr
6. History
7. Cat
8. Redirection > and >>
9. Mv
10. Cp
11. Who
12. Pipes (|)
13. Rmdir
14. Find
15. Cmp
16. alias
17. Man
18. Cal
19. date
20. Echo
21. Exit
22. Test
23. Sort
24. script
25. Ps
26. Kill
27. Wc
28. Head
29. Tail
30. uniq

Advance Questions:

- EA1**
- a. Create a file and send top and last 5 lines of it in another file.
 - b. Use test command to test an arithmetic condition and send the output to a file.
 - c. Create a large text file and display its contents page wise.
 - d. Create five files in a directory and move all files together in another directory.
 - e. Edit history to show only last 20 commands executed.
 - f. Use ls command with 5 different switches and observe the difference in their outputs.
 - g. Navigate the entire filesystem of Linux and try using ~ / .. / . / \ symbols for switching between directories.

Assignment Set: F

Objectives of the Assignment:

- Familiarize with command-like syntax for file management.
- Able to perform actions for certain types of tasks on Windows such as searching for files, creating and using batch files, setting date and time etc.

CO/BTL Covered: CO3/ BTL3

Problems:

FP1 Execute the following commands at command-prompt and write with their use, syntax and example:

- **Attrib**
- **Cd**
- **Md**
- **Cls**
- **Copy**
- **Del**
- **Deltree**
- **Dir**
- **Echo**
- **Edit**
- **Exit**
- **Find**
- **Help**
- **More**
- **Move**
- **Path**

- **Rd / rmdir**
- **Set**
- **Sort**
- **Time / date**
- **Tree**
- **Type**
- **Undelete**

Practice Questions:

- FA1**
1. Move a file available in one folder to some other location using absolute path.
 2. Create three levels of nested directories in one main directory 'MCA I year' and try moving/copying files within the directory structure.
 3. Search for all files with '.c' extension and create a copy of all those files in a separate folder in D drive.
 4. Create a '.txt' file and make it read-only and hidden file using attrib command.

Assignment Set: G

Objectives of the Assignment:

- Familiarize with basics of SQL (Structured Query Language) such as data types, DDL and DML commands etc.
- Create tables and insert records in it.
- Execute queries to retrieve desired records from tables using 'where conditions'.

CO/BTL Covered: CO3/ BTL3

Problems:

GP1 Create a table 'Employee' with following attributes:

Attribute	Data Type & Size	Keys
Emp_id	Number (3)	Primary Key
Name	Varchar (10)	Not Null
Dept	Varchar (10)	Not Null
Salary	Number(5)	
City	Varchar (10)	

DOB	Date	Not Null
Designation	Varchar (10)	

Now, execute the following queries:

1. Insert 10 records in your table as following

Emp_id	Name	Dept	Salary	City	DOB	Designation
E01	John	HR	50000	London	12-jan-1990	
E02	Smith	Technical	25000		2-jun-1989	Engineer
E03	Mary	Accounts	45000	Paris	2-feb-1987	Clerk
E04	Clark	Technical	66000	Berlin	8-mar-1988	Manager
E05	Johny	Accounts	75000	Paris	22-aug-1991	Jr. Clerk
E06	Tom	HR	77000	Amsterdam	5-sep-1994	
E07	Jack	Technical	55000		9-jan-1992	TL
E08	Farah	Accounts	57000	London	17-sep-1991	Sr. Clerk
E09	Sherry	HR	80000	Amsterdam	13-oct-1990	
E10	Farhan	Technical	45000	Berlin	12-nov-1992	Engineer

2. Display all records.
3. Display records of those employees who belong to 'HR' department.
4. Display the names and departments of those employees whose salaries are less than 50000.
5. Display the names and cities of all the employees who are working as 'Managers'.
6. Display the records of those employees who draw salary between 40000 to 70000.
7. Increase (Update) the salary of all employees by 5% of their current salary.
8. Update the salary of all those employees who live in Delhi, by 1000.
9. Change the city of employee whose id E01.
10. Change the department of 'Smith', 'John' and 'Jack'.
11. Delete the record of 'Mary'.
12. Delete the records of those employees who belong to 'Accounts' or 'HR' department.

Advanced Questions:

GA1 Create a table 'Employee' with same set of attributes as done in above question GP1.

Now, execute the following queries:

1. Retrieve the names of employees where name starts with 'J'.
2. Retrieve the names of employees having salary more than the salary of 'Mary'.
3. Retrieve the details of employees living in the same city where 'Jack' lives in.
4. Display the details of employees born in the month of 'June'.
5. Display the names of employees working in John's department.

Assignment Set: H

Objectives of the Assignment:

- Familiarize with basic networking components with their functions.
- Familiarize with different parts of a motherboard and able to assemble different components of a system.

CO/BTL Covered: CO5/BTL6

Problems:

HP1 Discuss different types of twisted pair cables and designing straight and cross over cables.

HP2 Discuss different parts and ports on a motherboard with their functions.

Assemble different components – microprocessor, CPU fan, hard disk, RAM etc to design a complete system.

APPENDIX

Template for the Index of Lab File

WEEK NO.	PROBLEMS WITH DESCRIPTION		PAGE NO.	SIGNATURE OF THE TEACHER WITH DATE
1	AP ₁			
	AP ₂			
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2	AA ₁			
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3	BP ₁			
	BP ₂			
	BP ₃			
	BP ₄			

Note: The students should use Header and Footer mentioning their roll no. & name in header and page no. in footer
