LAKSHMI NARAIN COLLEGE OF TECHNOLOGY EXCELLENCE BHOPAL

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

BASIC COMPUTER ENGINEERING (BT-205)

LAKSHMI NARAIN COLLEGE OF TECHNOLOGY EXCELLENCE, BHOPAL

Department of Computer Science and Engineering

LAB MANUAL

Subject Name: Basic Computer Engineering

Course Code: BT205

Course: B.Tech

Session: 2023-24

Prepared By

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<div align="center">**Vision and Mission of the Institute**</div>

Vision of the institute

To become a pioneer institute in technical education and innovations to build competent technocrats and leaders for the nation.

Mission of the institute

M1. To enhance the academic environment with innovative teaching learning processes and modern tools.

M2. To Practice and nurture high standards of human values, transparency and accountability.

M3. To collaborate with other academic and research institutes as well as industries in order to strengthen education and research.

M4. To uphold skill development for employability and entrepreneurship for interdisciplinary research and innovations.

Vision and Mission of the Department

Vision of the Department

To be a centre of excellence for providing quality technical education to develop future leaders with the aspects of research & computing, Software product development and entrepreneurship.

Mission of the Department

Mission No.	Mission Statements
M1	To offer academic program with state of art curriculum having flexibility for accommiodating the latest developments in the areas of computer science engineering.
M2	To conduct research and development activities in contemporary and emerging areas of computer science & engineering.
M3	To inculcate moral values & entrepreneurial skills to produce professionals capable of providing socially relevant and sustainable solutions.

COURSE OUTCOMES: BT205 – Basic Computer Engineering

CO205.1	Illustrate basic commands and operations in operating system
CO205.2	Implement basic programming concepts with C++.
CO205.3	Understand various object oriented features like polymorphism, inheritance, object, classes.
CO205.4	Study and analyze OSI models as well as computer security issues.
CO205.5	Learn and illustrate DBMS fundamental concepts.

Course Articulation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO205.1	3	3	3	3	-	1	-	1	2	1	-	3
CO205.2	3	3	3	3	-	1	-	-	2	1	-	3
CO205.3	3	2	3	3	-	1	-	-	1	1	1	3
CO205.4	3	3	3	3	-	1	-	1	2	1	-	3
CO205.5	3	3	3	3	1	1	-	-	2	1	1	3
	3	2,8	3	3	1	1	-	1	1.8	1	1	3

Program Outcomes as defined by NBA (PO)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Department of Computer Science and Engineering

Program Specific Outcomes (PSO)

A graduate of Computer Science and Engineering Program will develop

PSO1: An ability to apply technical knowledge of computer science and engineering fundamentals to become employable in industry.

PSO2: An ability to develop programming skills using modern software tools and techniques.

PSO3: An ability to develop real time projects for problem solving of domains such as Machine Learning, Cyber security, block chain and big data.

PSO4: An ability to grab research, higher studies and entrepreneurship opportunities towards society with moral values and ethics.

Department of Computer Science and Engineering

Program Educational Objectives (PEO):

PEO 1: Evolvé as globally competent computer professionals, researchers and entrepreneurs possessing collaborative and leadership skills, for developing innovative solutions in multidisciplinary domains.

PEO 2: Excel as socially committed computer engineers having mutual respect, effective communication skills, high ethical values and empathy for the needs of society.

PEO 3: Involve in lifelong learning to foster the sustainable development in the emerging areas of technology

Department of Computer Science and Engineering

Basic Computer Engineering (BT205)

List of Program to be performed: -

Lab No.	List of Program	CO Covered
1	Study and Practice Internal and External DOS commands.	(CO1)
2	Study and Practice of MS windows-Folder related operations, My computer, Window Explore, Control Panel	(CO1)
3	Creating and operating of spreadsheet using MS Excel	(CO1)
4	Creation and manipulation of database table using SQL in MS-Access	(CO1)
5	WAP to illustrate various arithmetic functions using functions like add(),sub(),multi(), div() etc.	(CO1)
6	WAP to take 10 numbers in any array and print sum of that numbers.	(CO2)
7	WAP to add two numbers using function	(CO2)
8	WAP using class to illustrate concept of Constructor and Destructor. Also try to use scope resolution program	(CO3)
9	WAP to implement operator overloading like "+" operator.	(CO3)
10	WAP to implement runtime polymorphism.	(CO3)
11	Study and analyze OSI models as well as computer security issues	(CO4)
12	Creating and manipulation of Database table using SQL in MS Access.	(CO5)

Basic Computer Engineering BT205

Computer engineering is a multidisciplinary field that integrates principles from electrical engineering and computer science to design, develop, and optimize computer systems. At its core, it involves understanding digital logic circuits, encompassing basic logic gates and more complex structures. Computer architecture plays a pivotal role, exploring the organization of key components such as the Central Processing Unit (CPU), memory, and input/output devices. Proficiency in programming languages, including high-level ones like C++, Java, or Python, is essential. Operating systems knowledge is crucial, covering processes, memory management, and file systems. Additionally, computer engineers delve into computer networks, studying protocols, routing, and layers. Data structures and algorithms form fundamental building blocks for efficient software development. Knowledge of embedded systems, VLSI for integrated circuits, and computer security principles further enriches the skill set. As technology evolves, areas like digital signal processing and computer graphics become increasingly relevant. The dynamic nature of computer engineering requires continuous learning and adaptation to stay abreast of advancements in this rapidly evolving field.

OOPs Concepts:

- Class
- Objects
- Data Abstraction
- Encapsulation
- Inheritance
- Polymorphism
- Dynamic Binding
- Message Passing

EXPERIMENT-1

Aim: Study and practice of Internal & External DOS commands.

The study and practice of DOS (Disk Operating System) commands involve understanding and utilizing commands to interact with the computer's operating system. DOS commands can be categorized into internal and external commands.

Internal Commands:

Internal commands are built into the command interpreter (usually COMMAND.COM or CMD.EXE in Windows). They don't require separate executable files and are directly interpreted by the command shell. Some common internal commands include:

1. DIR: Displays a list of files and subdirectories in a directory.
2. CD (or CHDIR): Changes the current directory.
3. CLS: Clears the screen.
4. COPY: Copies one or more files to another location.
5. DEL (or ERASE): Deletes one or more files.
6. REN (or RENAME): Renames a file or directory.
7. TYPE: Displays the contents of a text file.
8. MKDIR (or MD): Creates a new directory.
9. RMDIR (or RD): Removes a directory.
10. DATE: Displays or sets the date.

External Commands:

External commands are separate executable files stored in directories listed in the PATH environment variable. These commands extend the functionality of the operating system. Examples of external commands include:

1. FORMAT: Prepares a disk for use by an operating system.
2. CHKDSK: Checks a disk for errors and fixes them.
3. XCOPY: Copies files and directory trees with more options than the COPY command.
4. DISKPART: Manages disk partitions on a hard drive.
5. PING: Tests network connectivity.
6. IPCONFIG: Displays network configuration information.
7. TASKKILL: Terminates processes or applications by name or process ID.
8. TREE: Displays the structure of a directory or path graphically.
9. EDIT: Opens a simple text editor for creating or editing text files.

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