

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 3rd

Subject: Mathematics - III

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: All branches

Course Code: B000311(014)

L: 3 T: 1 P: 0 Credits 4

Course Objectives:

1. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differential equations.
2. To have thorough knowledge of partial differential equations which arise in mathematical descriptions of situations in engineering.
3. To study about a quantity that may take any of a given range of values that can't be predicted as it is but can be described in terms of their probability.
4. To provide a thorough understanding of interpolation and methods to solve ordinary differential equation.

UNIT-I Laplace transform: Definition, Transform of elementary functions, Properties of Laplace transform, Transform of derivatives & integrals, Multiplication by t^n , Division by t , Evaluation of integrals, Inverse Laplace Transform, Convolution theorem, Unit step function, Unit impulse function, Periodic function, Application to solution of ordinary differential equations.

UNIT- II Partial differential equation: Formation, Solution by direct integration method, Linear equation of first order, Homogeneous linear equation with constant coefficients, Non-homogeneous linear equations, Method of separation of variables.

UNIT- III Random variable: Discrete and continuous probability distributions, Mathematical expectation, Mean and Variance, Moments, Moment generating function, probability distribution, Binomial, Poisson and Normal distributions.

UNIT- IV Interpolation with equal and unequal intervals: Finite differences, Newton's Forward & Backward Difference Formulae, Central Difference Formula, Stirling's Formula, Bessel's Formula, Lagrange's Formula and Newton's Divided Difference Formula.

UNIT-V Numerical Solution of Ordinary Differential Equations: Picard's Method, Taylor's Series Method, Euler's Method, Euler's Modified Method, Runge-Kutta Methods, Predictor-corrector Methods- Milne's Method, Adams-Bashforth Method.

Text Books:

1. "Higher Engg. Mathematics", Dr. B.S. Grewal– Khanna Publishers.
2. "Advanced Engg. Mathematics", Erwin Kreyszig – John Wiley & Sons.
3. "Numerical Methods in Engineering and Science", Dr. B.S. Grewal, Khanna Publishers.
4. "Numerical Methods for Scientific and Engineering Computation", M .K. Jain, S. R. K

Reference Books:

1. "Applied Mathematics", P. N. Wartikar & J. N. Wartikar. Vol-II Pune Vidyarthi Griha Prakashan, Pune.
2. "Applied Mathematics for Engineers & Physicists", Louis A. Pipes- TMH.
3. "Numerical Methods for Scientists and Engineers" K. Shankar Rao, Prentice Hall of India.
4. "Numerical Methods" P. Kandasamy, K. Thilagavathy and K. Gunavathi, S. Chand publication.

Course outcomes: After studying the contents of the syllabus in detail the students will be able to: Define (mathematically) unit step unit impulse, Laplace transform its properties, inverse and applications to solve ordinary differential equations and find Numerical solution of differential equations, which may be arising due to mathematical modelling based on engineering problems. Hands on these Mathematical topics will make them equipped to prepare for higher studies through competitive examinations.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Computer Architecture, Organization and Microprocessor
Assignments: Two (Minimum)
Class Tests: Two (Minimum)

Branch: Information Technology
Code: B033312(033)
Total Theory Periods: 40
Total Tutorial Periods: 10
Maximum Marks: 100
Minimum Marks: 35

Course Objectives:

- To have a thorough understanding of the basic structure and operation of a digital computer.
- To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixedpoint and floating-point addition, subtraction, multiplication & division.
- To study the different ways of communicating with I/O devices and standard I/O interfaces.
- To study the hierarchical memory system including cache memories and virtual memory.
- To introduce the basic concepts of microprocessor & assembly language programming.

UNIT 1: COMPUTER ARCHITECTURE BASICS

Computer Organization & Architecture, Interconnection Structure & Buses, Registers, Addressing Modes, **Instruction, Instruction format**, how to write a program in computer – how to write a program using various instruction format, Instruction Cycle, **Stack in a computer** – Register Stack, Memory Stack Organization, **Pipelining** – Need of Pipelining, Speed up, Efficiency & Throughput of Pipelining, Interrupt Basics.

Control Unit of a Computer -: Need of Control Unit, Function, Operation, μ Programmed control unit, Vertical & Horizontal μ instruction format. Logic and Shift micro-operations, Arithmetic logic shift unit.

UNIT 2: ARITHMETIC PROCESSOR DESIGN

Fixed-Point Arithmetic- Addition and Subtraction: addition and subtraction with Signed- Magnitude Data, Hardware Implementation, Hardware Algorithm, addition and subtraction with Signed- 2's Complement Data. Multiplication Algorithm: Hardware Implementation, Hardware Algorithm, Binary Multiplication, Booth Multiplication Algorithm, Division Algorithm, Floating-Point Arithmetic Operations: Basic Considerations, Register Configuration, Addition, subtraction, Multiplication & Division.

UNIT 3: 8086 PROCESSOR

Basic processor architecture with diagram

8086 Processor - 8086 basic block diagram, Internal Microprocessor Architecture, Real Mode Memory Addressing, Registers, pin configuration, segmentation.

Instruction Set: Data Movement Instructions, All Arithmetic and Logic Instructions, Basic Logic Instructions, Program Control Instructions, Procedures, Interrupts, Machine Control and Miscellaneous Instructions. Assembler directives, assembler instructions, Programming with 8086.

UNIT 4 : PROGRAMMING WITH 8086 PROCESSOR

Programming with an assembler, Assembly Language Programs, Introduction to Stack, Stack structure of 8086/8088, Interrupts & Interrupt service routines, Interrupt cycle of 8086 & 8088, Maskable & Nonmaskable Interrupts, Interrupt Programming, Passing Parameters to Procedures, MACROS, Timing & Delays.

UNIT 5 MEMORY & I/O SUBSYSTEM FOR A COMPUTER

Semiconductor Memories- RAM and ROM Chips, Memory Address Mapping, Memory connected to CPU, Virtual memory: address space, memory space, address mapping, paging and segmentation, TLB, page fault, effective access time, replacement algorithm, Cache memory, Cache Mapping Methods, Cache memory working principles, Cache coherence issues
I/O Interfacing, I/O Addressing, I/O instruction, Asynchronous methods- Strobe and Handshaking, Programmed I/O, Interrupt Mechanism, DMA.

Text Books:

1. *Computer System Architecture* By, M. Morris Mano Prentice- Hall, 1993.
2. *Computer Architecture & Organization* By John P. Hayes, McGraw Hill-1998.
3. *Advanced Microprocessors & Peripherals - 3e* by A.K.Ray, K M Bhurchandi, McGraw Hill.

Reference Books:

1. *Structured Computer Organization* by Andrew S. Tanenbaum.
2. *Computer Organization and Architecture*, W. Stallings, LPE
3. *Computer Organization and Design*, P. Pal Chaudhary, PHI
4. *Barry B Brey: The Intel Microprocessors, 8th Edition*, Pearson Education, 2009.
5. *Douglas V. Hall: Microprocessors and Interfacing, Revised 2nd Edition*, TMH, 2006.
6. *James L. Antonakos: The Intel Microprocessor Family: Hardware and Software Principles and Applications*, Cengage Learning, 2007

Course Outcomes:

After successful completion of this course, students will be able to

- Be familiar with the functional units of the processor such as the register file and arithmetic-logical unit.
- To analyze the cost-performance issues and design trade-offs in designing and constructing a computer processor including memory chips.
- Understanding of Microprocessor 8086
- To analyze, specify, design, write and test assembly language programs for microprocessor of moderate complexity.
- To Design Memory and IO interfacing.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Object Oriented Concepts & Programming using JAVA
Assignments: Two (Minimum)
Class Tests: Two (Minimum)

Branch: Information Technology
Code: B033313(033)
Total Theory Periods: 40
Total Tutorial Periods: 10
Maximum Marks: 100
Minimum Marks: 35

Course Objectives:

- Define object-oriented paradigm, compilation and execution of Java programs.
- Apply Java's object-oriented features to build applications.
- Use exception handling mechanism.
- Explain process of multithreading and File Handling.
- Demonstrate data retrieval from a database with JDBC and development of platform-independent GUIs.

UNIT- I :INTRODUCTION

History of Java, Features of Java, comparison between procedural programming paradigm and object-oriented programming paradigm, basic concepts of object-oriented programming — concepts of an object and a class, abstraction, encapsulation, data hiding, inheritance, polymorphism, messaging. Java program Compilation and Execution, JVM, data types, variables, literals, expressions, operators, programming constructs, Classes, Objects and References, "this" keyword, Methods, overloading method, static keyword, Access specifiers, Arrays, Command line arguments. Garbage Collection

UNIT-II:CONSTRUCTORS, INHERITANCE AND PACKAGES

Constructors and finalizers, overloading constructors, Inner classes, Wrapper Classes, Inheritance; definition and advantages, overriding, Super, final and abstract classes, Interface, Package: Defining package, interfaces in package, importing packages.

UNIT- III:EXCEPTION HANDLING, STRINGS

Basics of exception handling, Checked and Unchecked Exceptions, default Exception handling, try and catch, Multiple catch statements, try-catch finally, uses of throw and throws, User Defined Exceptions, Strings: string constructor, string arithmetic, string methods, StringBuffer and methods.

UNIT-IV :MULTI THREADING AND FILE HANDLING

Thread Concepts, Thread life cycle, Runnable Vs Thread Class, Thread Priority, Thread Methods, Thread Synchronization:Synchronized methods & Synchronized blocks. File Handling using Java, Streams, Byte and Character Streams, Various operations with files.

UNIT-V :GUI APPLICATION AND APPLLET DEVELOPMENT

Overview of AWT , applets and application, applet life cycle, User interfacing components, Layout Managers, Event Driven programming in java, Event delegation model, Event types and classes, Listeners, Overview of Swing Components. Introduction to JDBC, ODBC, JDBC drivers: Type I, Type II, Type III, Type IV. JDBC Architecture, executing DDL, DML,DCL commands.

TEXT BOOKS:

1. *Introduction to Java Programming: Liang, Pearson Education, 7 th Edition.*
2. *Java The complete reference: Herbert Schildt, TMH, 5 th Edition.*

REFERENCE BOOKS:

1. *Balguruswamy, Programming with JAVA, TMH.*
2. *"Head first Java" by Kathy Sierra, Bert Bates , O'Reilly Media Publication.*
3. *Big Java: Horstman, Willey India, 2 nd Edition.*
4. *Java Programming Advanced Topics: Wigglesworth, Cengage Learning.*
5. *Java How to Program: H.M. Deitel& Paul J. Deitel, PHI, 8 th Edition.*

Course Outcomes:

- To construct Java programs using features of Object oriented programming.
- Able to explain object and package construction process.
- To construct robust Java programs using exception handling and String class.
- To develop java programs using multithreading and File Handling
- To design and develop application programs using UI components and Database connectivity.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Computer Networks
Assignments: Two (Minimum)
Class Tests: Two (Minimum)

Branch: Information Technology
Code: B033314(033)
Total Theory Periods: 30
Total Tutorial Periods: 10
Maximum Marks: 100
Minimum Marks: 35

Course Objectives:

- Understand the division of network functionalities into layers.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

UNIT I: INTRODUCTION TO COMPUTER NETWORKS

Definition, Components, Categories and Use of Computer networks, Data transmission modes: Serial & Parallel, Simplex, Half duplex & full duplex, Synchronous & Asynchronous transmission, Network topologies, Topology Comparison, Considerations when choosing a Topology, Switching: Circuit switching, Message switching, Packet switching, Relationship between Packet Size and Transmission time, Comparison, Multiplexing; FDM, WDM, TDM, Transmission medium; guided & Unguided, Twisted pair, Coaxial cable, Optical fiber, Radio transmission, Microwave transmission, The OSI Reference Model, The TCP/IP Reference Model, Comparison.

UNIT II: DATA LINK LAYER

Introduction; Goal of DLL: Design issues of DLL; Services provided to the Network layer, Framing, Flow Control and Error control: Stop and Wait, Go back – N ARQ, Selective Repeat ARQ, Sliding Window, Error detection and error control: single bit and busy bit, CRC, checksum, Hamming code error correction and detection method, HDLC, **Medium Access Control Sub layer**: Introduction: The channel allocation problem; Static channels allocation, Dynamic channels allocation in LAN's and MAN's: Multiple access protocols; Pure ALOHA or Unslotted ALOHA Protocol, Slotted ALOHA or Impure ALOHA Protocol, CSMA Protocol, CSMA/CD Protocol, Token ring and FDDI, IEEE standards; Ethernets, Fast Ethernet, Gigabit Ethernet, IEEE 802.3 frame format.

UNIT III: NETWORK LAYER

Network layer design issues and devices: Bridge, Hub, Switch, Router, and Gateway. Routing and congestion control: Routing algorithms, Flooding, Shortest path routing, Link State routing, Hierarchical routing, Broadcast and multicast routings, Routing in the Internet, Path Vector routing, OSPF routing. The network layer in the Internet: IP protocol: IPv4, IPv6, ARP and RARP, BOOTP, ICMP, DHCP, Network Address Translation (NAT) Internetworking

UNIT IV: TRANSPORT LAYER

Introduction, Services of Transport layer; Service primitives: Transport Protocols: TCP, UDP. TCP Service Model, Connection Establishment and in Release in TCP, TCP Connection Management Modeling, TCP Congestion Control and Flow control, Quality of service(QoS): QoS mechanisms, Frame relay, X.25, Asynchronous Transfer Mode (ATM), Multiprotocol Label Switching (MPLS).

UNIT V: APPLICATION LAYER

Application Layer: File Transfer, Access and Management, Electronic Mail: SMTP, POP3, IMAP, MIME, HTTP, Web Services: DNS, SNMP, Virtual Terminals, Network security: Goal, attacks, basics of public key and private key cryptography, digital signature, firewalls.

Text Books:

1. *Data communication & Networks*, by Behrou A. Forouzan, Tata McGraw Hill.
2. *Networks*, by Andrew S Tanenbaum, PHI. (2010).
3. *Data and Computer Communications*, by Walliam Stallings, PHI. (2002).

Reference Books:

1. *Data Communications, Computer networking on OSI*, by Fred Halsall, Addison Wesley Publishing Co.1998
2. *Computer Networking -A Top-Down Approach Featuring the Internet*, James F. Kurose and Keith W. Ross, Addison Wesley Publishing Co. 2004
3. *Computer Networks: Protocols standards and interfaces*, by Uyles Black, Prentice Hall.2002.
4. *Computer Network*, by V. S. Bagad, I. A. Dhotre ISBN-9789333211369, Technical Publication. 2018

Course Outcomes:

After completing this course the student must demonstrate the knowledge and ability to:

- Identify the components required to build different types of networks.
- Identify functionality of each layer.
- Understand and explain Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and TCP/IP.
- Identify the different types of network devices and their functions within a network

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Digital Electronics
Assignments: Two (Minimum)
Class Tests: Two (Minimum)

Branch: Information Technology
Course Code: B033315(033)
Total Theory Periods: 30
Total Tutorial Periods: 0
Maximum Marks: 100
Minimum Marks: 35

Course Objectives:

- To study various logic gates used to design various digital circuits.
- To motivate the students to develop their logic to design different combinational and sequential circuits.
- To design new digital circuits usable for hardware design and integrated circuit design using VLSI.
- Understand the concepts of Memories, Programmable Logic Devices & Digital ICs.

UNIT-I OVERVIEW OF DIGITAL ELECTRONICS:

Logic Gates: Basic and Universal logic Gates, Realization of switching functions using gates. Binary codes: Weighted & Non-weighted codes: 8-4-2-1 BCD code, Excess-3 code, Gray code; Code Conversion: Binary to Gray and Gray to binary code conversion etc., Error detecting/correcting code: Parity, 7-bit Hamming code. Binary Arithmetic, Function Minimization Techniques: Demorgan's Theorem, Karnaugh's Map Method (Up to 4 variables), Quine-McCluskey's Method (Up to 6 variables).

UNIT-II COMBINATIONAL CIRCUITS:

Combinational Circuits: Adder & Subtractor : Half adder, Full adder, Half - subtractor , Full-subtractor, Parallel Binary adder, Look Ahead carry adder, Serial adder, BCD adder. Code converter, Parity bit generator/Checker, Magnitude Comparator (Up to 2 bit). Decoder: 3-line to 8-line decoder, 8-4-2-1 BCD to Decimal decoder, BCD to Seven segment decoder. Encoder: Octal to binary and Decimal to BCD encoder. Multiplexer: 2- input multiplexer, 4-input multiplexer. Demultiplexer : 1-line to 4-line, study of Multiplexer as Universal Logic Function Generator.

UNIT-III SEQUENTIAL CIRCUITS:

Sequential Circuits: Difference between Sequential & Combinational Circuits, Latches (S-R Latch, D Latch) and Flip-Flops JK F/F, Master- Slave and Edge triggered Flip-Flops; Characteristics / Excitation Tables, Flip/ Flop Conversions. Introduction to registers: BUFFER register, Shift Registers (PIPO, SIPO, PISO, SISO, Bi-Directional Shift Registers), counters: Synchronous and Asynchronous counters and Designing of sequential circuits: code converter and counters. Mod-k and divide by K counters, Counter applications.

UNIT-IV ANALYSIS OF SEQUENTIAL CIRCUITS

Analysis of Sequential Circuits : (Moore and Mealy Circuits), Analysis of clocked sequential Circuits : State Table, State Diagram, State Equation, State Reduction, State Assignment, Flip flop excitation Table, Design procedure.

UNIT- V MEMORY DEVICES AND DIGITAL INTEGRATED CIRCUITS:

Memory devices and digital integrated circuits: Basic memory structure and designing of ROM, Programmable Logic Devices : Programmable Logic Array (PLA), Programmable Array Logic (PAL). Implementation of combinational logic circuits using PLA, PAL. **Digital integrated circuits:** Logic levels, propagation delay, power dissipation, fan-out and fan-in, noise margin, logic families and their characteristics-RTL, DTL, open collector and totem pole TTL, CMOS.

Text Books:

1. *Fundamental of Digital Circuits – A.Anand Kumar 2nd edition PHI Learning.*
2. *R. P. Jain: “Modern Digital electronics”, TMH*

Reference Books:

1. *R J Tocci, “Digital System principles and Applications”*
2. *“Digital Electronics “ by A.K.Maini, Wiley India.*
3. *M.M. Mano:” Digital design”, PHI.*
4. *MillmanTaub, “Pulse, Digital and Switching Waveforms “TMH*
5. *H. Taub and D. Schilling, Digital Integrated Electronics, McGraw Hill, 1977.*
6. *Floyd: “Digital fundamentals”, UBS.*

Course Outcomes:

After completion of this course, students will be able to -

- Acknowledge about the fundamentals of digital circuit design.
- Understand the operation of Latch circuits & Flip flops.
- Take interest to design & develop ICs in VLSI.
- Learn operation of different Semiconductor Memories.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Digital Electronics Lab
Total Practical Periods: 30

Branch: Information Technology
Course Code: B033321(033)
Maximum Marks: 40
Minimum Marks: 20

Course Objectives:

The course should enable the students to get practical experience in design, realisation and verification of

- Demorgan's Theorem, SOP, POS forms
 - Full/Parallel Adders, Subtractors and Magnitude Comparator
 - Multiplexer using logic gates
 - Demultiplexers and Decoders
 - Flip-Flops, Shift registers and Counters
1. To study the characteristics and operations of TTL Inverters, OR, AND, NOR and NAND gate using ICs.
 2. To study NAND and NOR gates as a universal logic.
 - (a) Demorgan's Theorem for 2 variables.
 - (b) The sum-of product and product-of-sum expressions using universal gates.
 3. Design and implement 4-bit Parallel Adder/ subtractor.
 4. Design and Implementation of 4-bit Magnitude Comparator using.
 5. To study the 7 segment decoder.
 6. Realize
 - (a) 4:1 Multiplexer using gates.
 - (b) 3-variable function using IC 74151(8:1MUX).
 7. Realize 1:8 Demux and 3:8 Decoder.
 8. Realize the following flip-flops using NAND Gates.
 - (a) Clocked SR Flip-Flop
 - (b) JK Flip-Flop.
 9. Realize the following shift registers
 - (a) SISO (b) SIPO (c) PISO (d)PIPO.
 10. Realize the Ring Counter and Johnson Counter.
 11. Realize the Mod-N Counter.
 12. Simulate Full- Adder using simulation tool
 13. Simulate Mod-8 Synchronous UP/DOWN Counter using simulation tool.

Course outcomes:

On the completion of this laboratory course, the students will be able to:

- Demonstrate the truth table of various expressions and combinational circuits using logic gates.
- Design, test and evaluate various combinational circuits such as adders, subtractors, comparators, multiplexers and demultiplexers.
- Construct flips-flops, counters and shift registers.
- Simulate full adder and up/down counters.

List of Equipments /Machine Required:

- Logic gate trainer
- Arduino Kit
- Digital ICs Trainer
- Various ICs 7400,7402,7404,7408,7432,7486,74138,74151,74155 etc.

Recommended Books: M.M. Mano : "Digital Logic and Computer Design"

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: COA & Microprocessor Lab
Total Practical Periods: 30

Branch: Information Technology
Code: B033322(033)
Maximum Marks: 40
Minimum Marks: 20

Course Objectives:

The course should enable the students to get practical experience in design and realisation of

- Booth's Algorithm
- Multiplication and Division Algorithms
- Assembly Language Programs in 8086
- Stack and Delay Programming

Computer Architecture Algorithms using C

1. To implement Booth's Algorithm using C.
2. To implement Multiplication Algorithm using C.
3. To implement Division Algorithm using C.
4. To implement floating point number multiplication & Division using C.

8086 Assembly Language Programs

1. (A) Write a Program in assembly language to perform Addition, Subtraction, Multiplication & Division on 8bit & 16 bit Data.
(B) To perform addition of 32 Bit data.
(C) BCD Addition & Subtraction.
2. Write a Program in assembly language to arrange a Byte & Word Series in Ascending & Descending order in a single program.
3. (A) Write a Program in assembly language to find +ive & -ive Bytes or Words in a given series.
(B) Write a Program in assembly language to find odd & even Bytes or Words in a given series.
4. Write a Program in assembly language to find odd & even parity in a given series.
5. Write a Program in assembly language to create Fibonacci Series up to the range given in program.
6. Write a Program in assembly language to compare a series of Bytes & Word and store '1' in BL if yes else '0'.
7. Write a Program in assembly language – Data Conversion :
(A) BCD to Hexadecimal Conversion.
(B) Binary to BCD Conversion.
(C) Binary to Gray Conversion.
(D) Packed BCD to ASCII Value Conversion
(E) Packed BCD to Unpacked BCD Conversion
8. Write a Program in assembly language to find whether the number is prime or not?
9. Write a Program in assembly language to 3×3 Matrix addition & Multiplication.
10. Write a Program in assembly language to Add 2 Multibyte Numbers & store the result as a third number.
11. **String Operation-:**
(A) To arrange your name in reverse order.
(B) To find count of any specific character in your name.
(C) To Add or remove any single alphabet in your name at any position.
(D) To find whether your first & last name is a Palindrome or Not.

12. STACK Programming-:

- (A) Write a Program in assembly language to calculate squares of BCD numbers 0 to 9 and store them sequentially from 2000H offset onwards in the current data segment. The numbers & their squares are in BCD format. Write a subroutine for the calculation of the square of the number.
- (B) Write a Program in assembly language to change a sequence of sixteen 2-Byte numbers from ascending to descending order. The numbers are stored in data segment. Store the new series at address starting from 6000H. Use the LIFO property of STACK.
- (C) Write a Program in assembly language to create a file RESULT and store in it 500H Bytes

from the memory block starting at 1000:1000. If either an interrupt appears at INTR pin with Type 0AH or an instruction equivalent to the above interrupt to the above interrupt is executed.

13. Delay Programming:-

(A) Write a Program in assembly language to generate a delay of 100ms using an 8086 system that runs on 10 MHz frequency.

(B) Write a Program in assembly language to generate a delay of 10 minutes using an 8086 system that runs on 10 MHz frequency.

Course Outcomes:

- To implement ALU hardware algorithms for arithmetic operations using C
- To develop assembly language programs for data and string operations.
- To utilize the concept of stacks in assembly programs.
- To demonstrate delay programming

List of Equipment's/Machine Required:

8086 based microprocessor kit, MASM assembler, 8086 simulator, PCs.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology

Semester: III

Subject: Computer Networks Laboratory

Total Practical Periods: 30

Course Objectives:

Branch: Information Technology

Code: B033323(033)

Maximum Marks: 40

Minimum Marks: 20

The student should be made to:

- Be familiar with simulation tools.
 - Have hands on experience on various networking protocols.
 - Learn to communicate between two desktop computers.
 - Be familiar with the various routing algorithms.
1. To learn handling configuration and testing of networking hardware like RJ-45 connector, CAT-6 cable, crimping tool and LAN tester.
 2. Connecting two computers using RJ45 and share files from a system to another.
 3. Establish an Ethernet LAN between computers.
 4. To learn configuration of router, hub, switch in a network. (Using real devices or simulators).
 5. Running and using services/commands like ping, traceroute, nslookup, arp, telnet, ftp, etc.
 6. To get the MAC or Physical address of the system using Address Resolution Protocol.
 7. Simulation of Star, Bus, Ring Topology Using LAN Trainer Kit.
 8. Study the different Network Standard Topologies.
 9. Installation and working of Net meeting and Remote Desktop.
 10. To study Client-Server Communication Using Switch.
 11. Write a program for a HDLC frame to perform the following.
 - i. Bit stuffing
 - ii. Character stuffing.
 12. Implementation of Error Detection / Error Correction Techniques. Verify the program for the cases
 - i. Without error
 - ii. With error
 13. Implementation of Stop and Wait Protocol and Sliding Window Protocol.
 14. Implementation and study of Goback-N and selective repeat protocols.
 15. Perform a case study about the different routing algorithms to select the network path with its optimum and economical during data transfer.
 - i. Shortest path routing
 - ii. Flooding
 - iii. Link State
 16. Create a socket (TCP) between two computers and enable file transfer between them.
 17. Write a program to encrypt and decrypt a file using a key.

Course Outcomes:

At the end of the course, the student should be able to

- Use simulation tools
- Implement the various protocols.
- Analyse the performance of the protocols in different layers.
- Analyze various routing algorithms

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of program: Bachelor of Technology
Semester: III
Subject: Software Lab(Programming in Java)
Total Practical Periods: 30

Branch: Information Technology
Code: B033324(033)
Maximum Marks: 40
Minimum Marks: 20

Course Objectives:

- Select object-oriented features for Java programs.
- Use inheritance and packages in java programs.
- Demonstrate exception handling mechanism.
- Use concept of Multithreading and file handling.
- Demonstrate working of GUI components and JDBC.

1. Write a program to find the volume of a box having its side w,h,d means width ,height and depth. Its volume is $v=w*h*d$ and also find the surface area given by the formula $s=2(wh+hd+dw)$. use appropriate constructors for the above.
2. Develop a program to illustrate a copy constructor so that a string may be duplicated into another variable either by assignment or copying.
3. Create a base class called shape. Apart from Constructors, It contains two methods get xy564value() and show xyvalue() for accepting co-ordinates and to display the same. Create the sub class Called Rectangle which contains a method to display the length and breadth of the rectangle called showxyvalue().Illustrate the concepts of Overriding and Constructor call sequence.
4. Write a program that creates an abstract class called dimension, create two subclasses, rectangle and triangle. Include appropriate methods for both the subclass that calculate and display the area of the rectangle and triangle.
5. Write a program, which throws Arithmetic Exception. Write another class (in a different file) that handles the Exception.
6. Create a user defined Exception class which throws Exception when the user inputs the marks greater than 100 Catch it and again rethrow it.
7. Write a program to illustrate various String class methods.
8. Write a program to illustrate various String Buffer methods.
9. Write a program in which a Mythread class is created by extending the Thread class. In another class, create objects of the Mythread class and run them. In the run method print “CSVТУ” 10 times. Identify each thread by setting the name.
10. Write a program to illustrate various Thread methods.
11. Write a Program to implement Bank Account Class which illustrates the concept of Thread Synchronization.
12. To write a program to create a text file using Byte Stream class.
- 13.To write a program to copy contents of one file to another.
14. Write a program to find numbers of occurrence of vowels in a file.
15. Write a program, which illustrates capturing of Mouse Events. Use Applet for this.
16. Write a program using swing components which simulates simple calculator.
17. Write a JDBC program for Student Mark List Processing.

Course Outcomes:

- To develop java programs using constructors and destructors.
- To utilize the concept of inheritance to develop java programs.
- To demonstrate the use of exception handling and Strings in java programs.
- To create multithreaded applications using java programming.
- To design and develop interactive application programs using user Interfacing components, file handling, and JDBC.