

SREE VIDYANIKETHAN ENGINEERING COLLEGE (AUTONOMOUS)

Sree Sainath Nagar, A. Rangampet – 517 102

COURSE STRUCTURE

REGULATIONS: SVEC-10

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech II Semester

Code	Subject	Periods per week			Credits	Scheme of Examination Max. Marks		
		L	T	P		Internal	External	Total
10BT3BS02	Environmental Sciences	4	-	-	4	30	70	100
10BT4BS01	Managerial Economics and Principles of Accountancy	4	-	-	4	30	70	100
10BT40501	Computer Architecture and Organization	4	1	-	4	30	70	100
10BT40502	Object Oriented Programming	4	1	-	4	30	70	100
10BT40503	Principles of Programming Languages	4	-	-	4	30	70	100
10BT41221	Computer Graphics and Multi-Media Systems	4	1	-	4	30	70	100
10BT40511	Object Oriented Programming Lab	-	-	3	2	25	50	75
10BT41231	Computer Graphics and Multimedia Systems Lab	-	-	3	2	25	50	75
10BT40512	Programming skills (Audit Course)	-	3	-	-	-	-	-
	TOTAL	24	6	6	28	230	520	750

II B.Tech. II Semester

10BT3BS02: ENVIRONMENTAL SCIENCES

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UNIT - I: INTRODUCTION TO ENVIRONMENTAL SCIENCES

Definition and concept of the term environment – Various components of environment – Abiotic and biotic – Atmosphere – Hydrosphere – Lithosphere – Biosphere – Inter relationships – Need for public awareness – Role of important national and international individuals and organizations in promoting environmentalism.

UNIT - II: NATURAL RESOURCES, CONSERVATION AND MANAGEMENT

Renewable and Non renewable resources and associated problems– Forests: Deforestation, Causes, effects and remedies – Effects of mining, dams and river valley projects – case studies; Water resources: Water use and over exploitation – Conflicts over water – Large dams – benefits and problems; Food resources: World food problems – Adverse effects of modern agriculture – Fertilizer and pesticide problems; Land resources: Land degradation– Land slides- Soil erosion – desertification- water logging – salinity – Causes, effects and remedies; Mineral resources: Mining – Adverse effects; Energy resources: Growing needs – Renewable and Non renewable resources – Alternate resources: Coal, Wind, Oil, Tidal wave, Natural gas, Biomass and Biogas, Nuclear energy, Hydrogen fuel and Solar energy - Impact on environment - Sustainable life styles.

UNIT - III: ECOLOGY AND ECOSYSTEMS

Definitions and concepts – Characteristics of ecosystem – Structural and functional features – Producers, consumers and decomposers and food webs – Types of ecosystems – Forests grassland, desert, crop land, pond, lake, river and marine ecosystems – Energy flow in the ecosystem – Ecological pyramids – Ecological successions.

UNIT - IV: BIO DIVERSITY, CONSERVATION AND MANAGEMENT

Introduction – Definition and concept of biodiversity – Value of biodiversity – Role of biodiversity in addressing new millennium challenges – Global, national biodiversity – Hot spots of biodiversity– Threats to biodiversity – Man and wild life conflicts – Remedial measures – Endemic, endangered and extinct species – In-situ and ex-situ conservation of biodiversity.

UNIT - V: ENVIRONMENTAL POLLUTION AND CONTROL

Definition, causes, adverse effects and control measures of air pollution, indoor pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear pollution – Solid waste management – Causes, effects, control and disposal methods – Role of individuals in the prevention of pollution – Hazards and disaster management – Floods – Earthquakes – Tsunamis – Cyclones – Land slides – Case studies.

UNIT - VI: SOCIAL ISSUES AND THE ENVIRONMENT

Concept of sustainable development – Methods of rainwater harvesting – Watershed management – Waste land reclamation – Green cover – Green power – Green technology – Resettlement and rehabilitation of people and related problems – Case studies – Issues and possible solutions - Greenhouse effect and global warming – Carbon credits – Acid rains – Ozone layer depletion – Causes, effects and remedies – Consumerism and waste production– Environment protection acts – Air act – Water act – Forest conservation act – Wild life protection act – Issues involved in the enforcement.

UNIT - VII

HUMAN POPULATION AND ENVIRONMENT

Population growth and its impact on environment – Environmental ethics – Family welfare programmes – Human health: T.B., Cancer, HIV/AIDS – Causes, effects and remedies – Occupational health hazards – Human rights – Important international protocols and conventions on environment.

UNIT - VIII

FIELD WORK/ENVIRONMENTALIST'S DIARY/ASSIGNMENTS/ SEMINARS

TEXT BOOKS:

1. Erach Barucha, *Environmental Studies*, 1 ed, Universities Press, Hyderabad, 2010.
2. A. Kaushik and Kaushik, *Environmental Studies*, 3 ed, New Age International Publishers, 2011.

REFERENCE BOOKS:

1. Desh wal, *Environmental Studies*, 2 ed, Khanna Publications, New Delhi, 2010.
2. Rajagopalan, *Environmental Studies*, 1 ed, Oxford University Press, 2009.
3. Joseph Benny, *Environmental Studies*, 2 ed, Tata McGraw-Hill, New Delhi, 2010.

II B.Tech. II Semester

10BT4BS01: **MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY**

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UNIT-I : INTRODUCTION TO MANAGERIAL ECONOMICS AND DEMAND ANALYSIS

Definition, Nature and scope of managerial economics. Demand Analysis: Determinants of demand – Demand Function-Law of demand and its exceptions. Elasticity of demand. Types, Measurement and significance of Elasticity of demand. Demand forecasting and methods of demand forecasting.

UNIT-II : THEORY OF PRODUCTION AND COST ANALYSIS.

Production Function: isoquants and isocosts. Input – output relationship. Law of returns, internal and external economies of scale. cost concepts: opportunity Vs out lay costs, Fixed Vs Variable costs, Explicit Vs implicit costs, out of pocket Vs inputted costs. Break Even Analysis (BEA), Determination of break even point (Simple problems).

UNIT-III : INTRODUCTION TO MARKETS AND PRICING.

Market Structure:Types of Markets. Features of Perfect competition. Monopoly and Monopolistic competition. Price and Output determination in Perfect competition and Monopoly. Pricing: Objectives and policies of Pricing – Sealed bid pricing, Marginal cost pricing, Cost plus pricing, Going rate pricing, Limit Pricing, Market Penetration, Market Skimming, Block pricing, Bundling, Peak load pricing, Cross subsidization,Duel Pricing, Administrated pricing.

UNIT-IV : BUSINESS AND NEW ECONOMIC ENVIRONMENT.

Characteristic features of Business, features and evolution of Sole proprietorship, Partnership, Joint stock Company, New Economic policy 1991.

UNIT-V : INTRODUCTION AND PRINCIPLES OF ACCOUNTING

Accountancy: Introduction – Concepts – Conventions – Accounting Principles - Double Entry Book Keeping, Journal, Ledger, Trail Balance (Simple Problems).

UNIT – VI : FINAL ACCOUNTS

Introduction to Final Accounts. Trading Account, Profit and Loss Account, and Balance Sheet with simple adjustments (Simple Problems).

UNIT – VII : CAPITAL AND CAPITAL BUDGETING

Capital: Significance, Types of capital. Capital Budgeting: Nature and scope of capital budgeting. Features and Methods of capital budgeting. Pay Back Period Method, Accounting Rate of Return Method, Internal Rate of Return Method, Net present Value Method and Profitability Index (Simple Problems).

UNIT – VIII : COMPUTERIZATION OF ACCOUNTANCY SYSTEM

Manual Accounting Vs Computerized Accounting – Advantages and Disadvantages of Computerized Accounting – Using Accounting Software. Tally: Tally features – Company Creation – Account Groups– Group Creation – Ledger Creation.

TEXT BOOKS:

1. A.R. Aryasri, *Managerial Economics and Financial Analysis*, 3 ed, Tata MC-Graw Hill, New Delhi, 2007.
2. R. Cauvery, U.K.Sudhanayak, M.Girija and R. Meenakshi, *Managerial Economics*, 1 ed, S. Chand and company, New Delhi, 1997.

REFERENCE BOOKS:

1. Ms. Samba Lalita, *Computer Accounting Lab Work*, 1 ed, Kalyani Publishers, Ludhiana, 2009.
2. Vershaney and Maheswari, *Managerial Economics*, 19 ed Sultan Chand and Sons, New Delhi, 2005.
3. H.Craig Petersen and W.Cris Levis, *Managerial Economics*, 4 ed, Pearson, 2009.
4. Lipy and Chrystel, *Economics*, 4 ed, Oxford University Press, New Delhi, 2008.
5. S.N.Maheswari and S.K.Maheswari, *Financial Accounting*, 4 ed, Vikas Publishing House, 2005.
6. S.P. Jain and K.L. Narang, *Financial Accounting*, 5 ed, Kalyani Publishers, Ludhiana, 2000.

II B.Tech. II Semester

10BT40501: **COMPUTER ARCHITECTURE AND ORGANIZATION**

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UNIT I: STRUCTURE OF COMPUTERS

Computer Types, Functional Units, Basic Operational concepts, Von-Neumann Architecture, Bus Structures, Software, Performance, Multiprocessors and Multicomputers.

Computer Arithmetic: Review of Representation of Information, Addition and Subtraction, Multiplication and Division Algorithms, Floating-Point Arithmetic Operation, Decimal Arithmetic Unit, Decimal Arithmetic operations.

UNIT II: REGISTER TRANSFER AND MICRO-OPERATIONS

Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic logic shift unit, Instruction Codes, Computer Registers, Computer Instructions, Instruction Cycle, Timing and Control, Memory-Reference Instructions, Input-Output and Interrupt.

Central Processing Unit: Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer (RISC). Comparison of RISC and CISC.

UNIT III: MICRO-PROGRAMMED CONTROL

Control Memory, Address Sequencing, Micro-program Example, Design of Control Unit, Hardwired Control, Micro-programmed Control, Nanoprogramming.

UNIT IV: PIPELINE AND VECTOR PROCESSING

Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Data Hazards, Instruction Hazards, Influence on Instruction sets, Data Path & Control Consideration, Superscalar Operations, Vector Processing, Array Processors.

UNIT V: THE MEMORY SYSTEM

Basic Concepts, Semiconductor RAM, Types of Read-only Memory (ROM), Cache Memory, Performance Considerations, Virtual Memory, Secondary Storage, and Introduction to Redundant Array of Inexpensive Disks (RAID).

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA).

UNIT-VI: INPUT-OUTPUT ORGANIZATION (ADVANCED)

Input-Output Processor (IOP), Serial communication, Introduction to peripheral component Interconnect (PCI) bus, Introduction to Standard Serial Communication Protocols Like RS232, USB, and IEEE1394.

UNIT VII: MULTIPROCESSORS

Characteristics of Multiprocessors, Interconnection Structures, Interprocessor Arbitration, Interprocessor Communication and Synchronization, Cache Coherence, Shared Memory Multiprocessors.

UNIT VIII: CASE STUDIES

CISC Architecture-Pentium IV, RISC Architecture-PowerPC.

TEXT BOOKS :

1. M. Moris Mano, *Computer System Architecture*, 3 ed, Pearson/PHI, 2008.
2. William Stallings, *Computer Organization and Architecture*, 6 ed, Pearson/PHI.

REFERENCE BOOKS:

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky, *Computer Organization*, 5 ed, McGraw Hill, 2002.
2. Andrew S. Tanenbaum, *Structured Computer Organization*, 4 ed, PHI/Pearson
3. Sivarama P. Dandamudi, *Fundamentals of Computer Organization and Design*, Springer Int. Edition, 2003.
4. John P. Hayes, *Computer Architecture and Organization*, 3 ed, Tata McGraw Hill, 1998.

II B.Tech. II Semester

10BT40502: **OBJECT ORIENTED PROGRAMMING**

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UNIT-I: OBJECT ORIENTED THINKING

Need for OOP paradigm, OOP concepts, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions. C++ class overview-class definition, objects, class members, access control, class scope, constructors and destructors, inline functions, static class members, this pointer, friend functions, dynamic memory allocation and de-allocation.

UNIT-II: POLYMORPHISM AND INHERITANCE

Function overloading, operator overloading, generic programming-function and class templates, inheritance basics, base and derived classes, different types of inheritance, base class access control, virtual base class, function overriding, run time polymorphism using virtual functions, abstract classes, Streams.

UNIT-III: BASICS OF JAVA

History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT-IV: INHERITANCE AND INTERFACES

Inheritance: Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes.

Interfaces: differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

UNIT-V: PACKAGES AND EXCEPTION HANDLING

Exception handling: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

Packages: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages.

UNIT-VI: MULTITHREADING

Differences between multithreading and multitasking, thread life cycle, creating threads, synchronizing threads.

Applets: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets, Graphics class.

UNIT-VII: EVENT HANDLING

Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scroll pane, dialogs, menu bar, graphics, layout manager – boarder, grid, flow, card and grid bag.

UNIT-VIII: SWINGS

Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing – Japplet, JFrame and JComponent, Icons and labels, text fields, The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed panes, Scroll Panes, Trees and Tables.

TEXT BOOKS:

1. Robert Lafore, *Waite Group's Object-Oriented Programming in C++*, 3 ed.
2. Herbert Schildt, *Java; The complete reference*, 7 ed, TMH.

REFERENCE BOOKS:

1. Y. Daniel Liang, *Introduction to Java programming*, 6 ed, Pearson Education.
2. Cay.S.Horstmann and Gary Cornell, *Fundamentals*, 7 ed, Core Java 2, Vol.1, Pearson Education.
3. S.B. Lippman, *C++ primer*, 3 ed, Pearson Education Ltd.
4. W.Savitch, *Problem solving with C++, The OOP*, 4 ed, Pearson education.
5. B. Stroustrup, *The C++ Programming Language*, 3 ed, Pearson Education.

II B.Tech. II Semester

10BT40503: **PRINCIPLES OF PROGRAMMING LANGUAGES**

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UNIT-I: PRELIMINARY CONCEPTS

Concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms: Imperative, Object Oriented, functional Programming, Logic Programming. Programming Language Implementation, Compilation and Virtual Machines, Programming environments, Introduction to Syntax and Semantics.

UNIT-II: DATA TYPES

Introduction, primitive, character, String, user-defined, array, associative arrays, records, set, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT-III: EXPRESSIONS AND STATEMENTS

Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures: Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT-IV: SUBPROGRAMS AND BLOCKS

Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co-routines.

UNIT-V: ABSTRACT DATA TYPES

Abstractions and encapsulation, introductions to data abstraction, design issues, Concept of Object, Inheritance, Derived classes , language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95, Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.

UNIT-VI: EXCEPTION HANDLING

Exceptions, exception Propagation, Exception handler in Ada, C++ and Java. Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT-VII: FUNCTIONAL PROGRAMMING LANGUAGES

Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages, Database Query Languages(using SQL as Example).

UNIT-VIII: SCRIPTING LANGUAGES

Case Study : Python, PERL,PHP,ABAP – Key concepts ,Values and Types, Variables , Storage and Control, Bindings and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

TEXT BOOKS:

1. Robert W. Sebesta, *Concepts of Programming Languages*, 8 ed, Pearson Education, 2008.
2. D. A. Watt, *Programming Language Design Concepts*, Wiley Dreamtech, RP-2007.

REFERENCE BOOKS:

1. A.B. Tucker, R.E. Noonan, *Programming Languages*, 2 ed, TMH.
2. K.C. Loudon, *Programming Languages*, 2 ed, Thomson, 2003.
3. Patric Henry Winston and Paul Horn, *LISP*, 2 ed, Pearson Education.
4. M. Lutz, *Programming Python*, 3 ed, O'Reilly, SPD, RP-2007.

II B.Tech. II Semester

10BT41221: **COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS**

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UNIT I : INTRODUCTION

Application areas of Computer Graphics, overview of graphics systems, video-display devices, and raster-scan systems, random scan systems, graphics monitors and work stations and input devices, graphics standards.

UNIT II : OUTPUT PRIMITIVES

Points and lines, line drawing algorithms, midpoint circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT III : 2-D GEOMETRICAL TRANSFORMS

Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

UNIT IV : 2-D VIEWING

The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland-Hodgeman polygon clipping algorithm.

UNIT V : 3-D GEOMETRIC TRANSFORMATIONS

Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3-D Viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

3-D Object Representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces.

UNIT VI: MULTIMEDIA SYSTEMS DESIGN

An Introduction – Multimedia applications – Multimedia System Architecture –Evolving technologies for Multimedia – Defining objects for Multimedia systems – Multimedia Data interface standards – Multimedia Databases.

UNIT VII: MULTIMEDIA FILE HANDLING

Compression & Decompression – Data & File Format standards – Multimedia I/O technologies - Digital voice and audio – video image and animation – Full motion video – Storage and retrieval Technologies.

UNIT VIII: HYPERMEDIA

Multimedia Authoring & User Interface – Hypermedia messaging- Mobile Messaging– Hypermedia message component – creating Hypermedia message – Integrated multimedia message standards- Integrated Document management – Distributed Multimedia Systems.

TEXT BOOKS:

1. Donald Hearn and M.Pauline Baker, *Computer Graphics C Version*, 2 ed, Pearson Education, 2003.
2. Prabat K Andleigh and Kiran Thakrar, *Multimedia Systems and Design*, 3rd Indian Reprint Edition, PHI Learning.

REFERENCE BOOKS:

1. Judith Jeffcoate, *Multimedia in practice technology and Applications*, PHI, 1998.
2. Foley, Vandam, Feiner, Huges, *Computer Graphics: Principles & Practice*, 2 ed, Pearson Education, 2003.
3. David F Rogers, *Procedural elements for Computer Graphics*, 2 ed, Tata McGraw Hill.
4. Newman and Sproul, *Principles of Interactive Computer Graphics*, 2 ed, TMH.
5. Shalini Govil, Pai, *Principles of Computer Graphics*, Springer, 2005.
6. Steven Harrington, *Computer Graphics*, 2 ed, TMH.

II B.Tech. II Semester

10BT40511: **OBJECT ORIENTED PROGRAMMING LAB**

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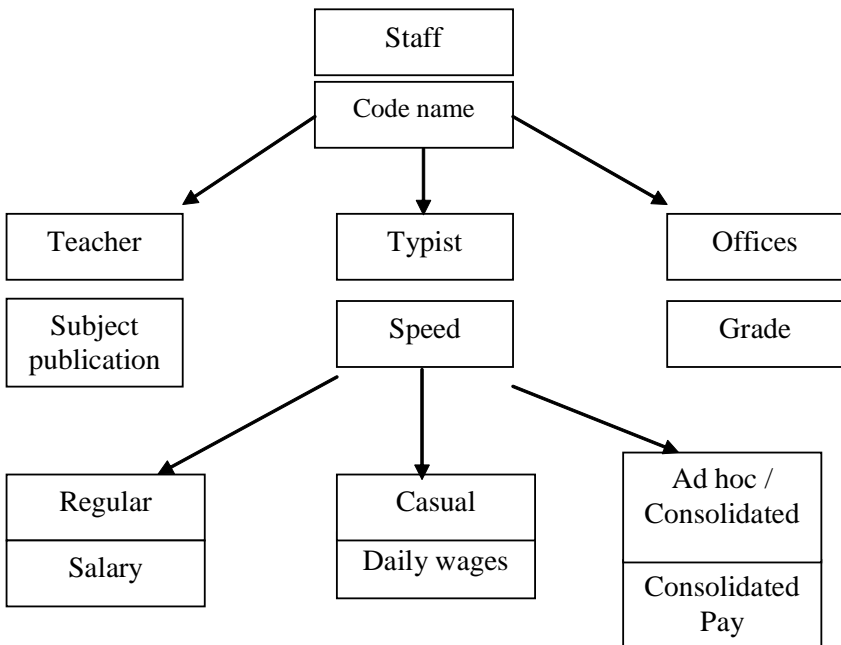
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1. a) Write a C++ program that prints Student Name, Roll No., Branch, Marks and display the Total and Division in the following format after reading the necessary input (Use\n \t etc.).

```
Name      :: *****
Roll No   :: *****
Branch    :: *****
Marks     :: *****
Total     :: *****
Division  :: *****
```

- b) Write a C++ program to perform complex operations addition, Subtraction, Multiplication and Division using friend function.
2. a) Write a program in C++ to perform the following using the function template concepts.
- a. To read a set of integers
 - b. To read a set of floating point numbers
 - c. To read a set of double numbers
- Write function for finding average of non-negative numbers and also calculate the deviation of the numbers.
- b) Write a class Fraction that defines methods addition, subtraction, multiplication and division of fractions by overloading basic arithmetic operators.
3. a) Write a C++ program to implement the given hierarchy, using the appropriate methods.

Class relations



Salary – DA, HRA, PF, Dailywages – 200/- per day,
Consolidated pay – Fixed Amount

- b) Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get data() to initialize base class data members and another member function display area() to compute and display the area of figures. Make display area() as a virtual function and redefine this function in the derived classes to suit their requirements.

Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively, and display the area.

Remember the two values given as input will be treated as length of two sides in the case of rectangles, and as base and height in the case of triangles, and used as follows:

$$\text{Area of rectangle} = x * y$$

$$\text{Area of triangle} = \frac{1}{2} * x * y$$

4. a) Create a class called Date that includes three pieces of information as instance variables—a month (type int), a day (type int). Your class should have a constructor that initializes the three values provided are correct.
Provide set and get method for each instance variable.
Provide a method display date that displays the month, day, year separated by forward slashes (/).
Write a test application named DateTest that demonstrates Class Date's capabilities.
- b) Create a class huge Integer which uses a 40-element array of digits to store integers as large as 40 digits each. Provide Methods: isEqualTo, isNotEqualTo, isGreaterThan, isLessThan, isGreaterThanOrEqual and isLessThanOrEqual.
Each method returns a boolean value if the relationship holds true.
5. a) Write a program that reads a line of integers (maximum limit 6 digits), and then displays each integers and sum of all the integers. (Hint: Use StringTokenizer class)
- b) Write a program to do the following
 - a) To print a question "Who is inventor of Java"?
 - b) To accept the answer
 - c) To print out "Good" and then stop, if the answer is correct.
 - d) To output the message "try again", if the answer is wrong.
 - e) To display the correct answer when the answer is wrong even at the third attempt and stop.
6. a) Assume that a bank maintains two kinds of account for its customers, one called saving account and the other current account.

The savings account provides compound interest and with drawl facilities but no chequebook facility. The current account provides chequebook facility but no interest.

Current account holders should also maintain a minimum balance and if the balance falls below this level a service charge is imposed.

Create a class account that stores customer name, account number and type of account. From this derive the classes Curr_Acct and Sav_Acct to make them more specific to their requirements.

Include the necessary methods in order to achieve the following tasks:

- a) Accept deposit from a customer and update the balance
 - b) Display the balance.
 - c) Compute and deposit interest.
 - d) Permit with drawl and update the balance.
 - e) Check for the minimum balance, impose penalty, if necessary and update the balance.
- b) Write an inheritance hierarchy for classes Quadrilateral, Trapezoid, Parallelogram, Rectangle and Square. Use Quadrilateral as the super class of the hierarchy. Make the hierarchy as deep as possible. Specify the instance variables and methods for each class. The private instance variables of Quadrilateral. Write a program that instantiates objects of your classes and outputs the object's area (except Quadrilateral).
7. a) Write a program to illustrate an inner class by creating an anonymous object in the main class.
- b) Design an interface 'Movable Shape' that can be used as a generic mechanism for animating a shape. A movable shape must have two methods: move and draw. Write a 'Animation Panel' class that paints and moves any 'Movable Shape' supply movable rectangle and car shapes.
8. a) Write a package called Math that implements class exactly `java.lang.math`, with a distinguished set of mathematical functions and also Date manipulation functions.
- b) Implement Stack ADT using Packages.

9. a) Write a program that converts from 24-hour time to 12-hour time. Define an exception class `IllegalTimeFormat`, if the user enters an illegal time like 11:65 or even gibberish like `&&* 68`, throw and catch the exception.
b) Write a program that calls a method that throws an exception of type `ArithmeticException` at a random iteration in a for loop. Catch the `Exception` in the method and pass the iteration count when the exception occurred to the calling method by using an object of an exception class you define. Add a finally block to the method to output the iteration count when the method exists.
- 10.a) Write a program that correctly implements producer consumer problem using the concept of inter thread communication.
b) Write a program that demonstrates time slicing among equal priority threads, show that a lower priority thread's execution is deferred by the time slicing of higher-priority threads.
- 11.a) Develop an applet that displays a simple message.
b) Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked.
- 12.a) Write a Java program for handling Mouse Events.
b) Write a Java program for handling Keyboard Events.
13. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the `+`, `-`, `*`, `%` operations. Add a text field to display the result.

II B.Tech. II Semester

10BT41231: **COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS LAB**

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Line and Circle Drawing Algorithms:

1. Write a program to implement DDA line drawing algorithm.
2. Write a program to implement Bresenham's line drawing algorithm.
3. Write a program to implement Bresenham's circle drawing algorithm.
4. Write a program to draw an ellipse using Bresenham's algorithm.
5. Write a program to perform various transformations on line, square & rectangle.

2-D Clipping Algorithms:

6. Write a program to implement Cohen Sutherland line clipping algorithm.
7. Write a program to implement Liang-Bersky line clipping algorithm.
8. Write a program to implement Cohen-Sutherland polygon clipping algorithm to clip a polygon with a Pattern.

3-D Algorithms:

9. Write a program to implement 3D Geometrical transformations.
10. Write a program to implement 3D shear transformations.

Multimedia:

11. Write a program to convert a color given in RGB space to its equivalent CMY color space.
12. Study of various Multimedia file formats: -RTF, MIDI, GIF, JPEG, MPEG, TIFF etc.
13. Write a program to implement JPEG compression scheme for still images.
14. Write a program to perform Pack-bits compression & decompression.

15. Write a short program to create a TIFF file using bitmap segments and text files as the TIFF File components.
16. Write a program to convert a BMP file into either JPEG or GIF file.

TEXT BOOKS:

1. Donald Hearn and M. Pauline Baker, *Computer Graphics C Version*, 2 ed, Pearson Education, 2003.
2. Prabat K Andleigh and Kiran Thakrar, *Multimedia Systems and Design*, 3 ed, PHI Learning.

REFERENCE BOOKS:

1. Judith Jeffcoate, *Multimedia in practice technology and Applications*, PHI, 1998.
2. Foley, Vandam, Feiner, Huges, *Computer Graphics: Principles & Practice*, 2 ed, Pearson Education, 2003.
3. David F Rogers, *Procedural elements for Computer Graphics*, 2 ed, Tata McGraw Hill.

II B.Tech. II Semester

10BT40512: PROGRAMMING SKILLS

(AUDIT COURSE)

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List of Problems:

1. (a) Write a C program that accepts two integer arguments by a reference and perform a swap.
(b) Write a C program to perform the following operations on N X N matrices.
 - (i) Addition
 - (ii) Subtraction
 - (iii) Multiplication
 - (iv) Transpose
2. (a) Write function that accepts two arguments an array and its size .it performs a Bubble sort on the array elements. Use the indirection operator '*' instead of the array subscript operator '['].
(b) Write a function that accepts a string a character as arguments and returns the number of occurrences of the character in the string.
3. (a) Write a function that accepts a string as arguments and return 1 if it is a Palindrome and 0 it is not.
(b) Write a C program which copies one text file to another.
(c) Write a C program to reverse the first N characters of a given text file.
4. Write C program to process student records by using Structures with pointers. The student record consist of name, roll number, age, department, percentage.
5. Write a C++ program that prints the factorial of a given number using a constructor and a destructor member function.
6. Write an object oriented program in C++ to read a number n and print it digit by digit in words using inline member function.
7. Develop an object oriented program in C++ to prepare the mark sheet of an university examination with the following items read from the keyboard.

Name of the student, roll number, subject name, subject code, internal marks, external marks.

Design a base class consisting of the data members such as name of the student, roll number, subject name. The derived class consists of the data members, subject code, internal marks, external marks.

8. Write a program in C++ to perform the following using operator overloading:
 - i) area of a circle
 - ii) area of rectangle
 - iii) area of a triangle
9. Develop a program in C++ to create a library information system containing the following for all the books in the library. Accession number, name of the author, title of the book, year of publication, publisher's name, cost of the book.
Design a base class with the data members Accession number, name of the author, title of the book. Another base class consists of year of publication, publisher's name. The derived class consists of data member cost of the book. Construct a virtual base class for the Accession number.
10. Write a program in C++ to perform the following using the function template concepts.
 - i) to read a set of integers.
 - ii) to read a set of floating point numbers.
 - iii) to read a set of double numbers individually.Find out the average of the nonnegative integers.
11. Write a program in C++ using a class template to read any five parameterized data type such as float and integer and print the average.
12. Write a program to convert a lower case character to an upper case character of a text file.

TEXT BOOKS:

1. Behrouz A. Forouzan and Richard F. Gilberg, *A Structured Programming Approach using C*, 2 ed, Cengage Learning
2. Yashwant Kanetkar, *Pointers in C*, BPB Publications, 2002.
3. W.Savitch, *Problem solving with C++, The OOP*, 4 ed, Pearson education.