



Department of Computer Application

Dr. Shyama Prasad Mukherjee University

(Following Upgraded to Ranchi College)

Semester	Honours (Core Courses)		Allied (Elective Courses)		Ability Enhancement	
	Code	14 Papers	Code	8 Papers	Code	4 Papers
I	C1 C2	Computer Organisation and Architecture + Pract Programming in C + Pract	GE1	Refer Table No. AI-2.1 04 Papers from Interdisciplinary Subject		Compulsory Language Communication ENG/ HINDI/
II	C3 C4	Data Structure with C + Pract Operating System + Pract	GE2		EVS	Environmental Science
III	C5 C6 C7	Programming in C++ and Pract Data Communication & Networking + Pract System Analysis and Design + Pract	GE3		SEC1	Soft Skills + Viva
IV	C8 C9 C10	Computer Graphics + Pract Data base Management System+ Pract Management Information System+ Pract	GE4		SEC2	Organizational Behaviour + Viva
V	C11 C12	Programming in JAVA + Pract Web Technology + Pract	DSE1 DSE2	Object Oriented Modeling and Design +Pract E-Commerce and Application +Pract		
VI	C13 C14	Software Engineering + Pract Entrepreneurship Development +Pract	DSE3 DSE4	Data Mining and Warehousing + Pract Project + Viva		



Department of Computer Application

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SEMESTER- I

COURSE CODE :- CC 1

COURSE TITLE :- COMPUTER ORGANISATION AND ARCHITECTURE

CREDIT :- 4

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory)

: 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions)

: 10 x 5 = 50

Total =

60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Number System, Binary nos., Signed/Unsigned nos., 2's complement no's, Boolean algebra, De Morgan's Theorem,

Module 2: Simplification of Boolean Expressions, Karnaugh Map. Logic Gates, Truth Tables

Module 3: Combinational Logic Circuits & Realizations with Logic Gates- Half & Full Adders , Multiplexers, Demultiplexers, Encoders, Decoders.

Module 4: Sequential Circuits- JK, RS, T, D Flip Flop,

Module 5: Shift register, Synchronous and Asynchronous counters.

Module 6: Architecture of a simple Computer, Microprocessor, simple Architecture of 8085 & 8086, Registers and ALU, Instruction set,

Module 7: Addressing Modes, Timing diagram, Fetch, Decode and Execute Cycle, Interrupt, Mechanism, DMA, Introduction of RISC And CISC

Module 8: Memory and Memory Organization, ROM, EPROM, SRAM, DRAM & Auxiliary Memory.

Books Recommended: 1. Computer system Architecture – M. M. Mano
2. Digital electronics – B.Ram.

PRACTICAL: Ms. Office

- (a) Slide making & presenting using MS-Power Point
- (b) Editing, mail merging, macros using MS-Word
- (c) Spreadsheets, worksheets application using MS-Excel



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SEMESTER- I

COURSE CODE :- **CC2**
COURSE TITLE :- **PROGRAMMING IN C**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory)

: 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions)

: 10 x 5 = 50

Total =

60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Origin and Introduction

Programming languages About C, Evolution of C, Structure of a C Program, Compilers & Interpreters Compiling a C Program, A Simple C Program.

Module 2: Data Types, Variables and Constants Data Types Variables, Constants Operators, Type Modifiers and Expressions Operators, Type Modifiers Expressions, Introduction to Input/output Console I/O Functions, Unformatted Console I/O Functions.

Module 3: Control Constructs Control Statements, Conditional Statements, Loops in C, The break Statement, The Continue Statement.

Module 4: Arrays and String Introduction to Arrays, One Dimensional & Two Dimensional Arrays. Introduction to strings

Module 5: Functions Introduction to Functions, Function Declaration and Prototypes, Recursion in Function.

Module 6: Pointers Introduction to Pointers, Pointer Notation. Pointer Declaration and Initialization, Accessing Variable through Pointer, Pointer Expressions, Pointers and One Dimensional Arrays.

Module 7: Structures Structure Definition, Structure Initialization, Arrays of Structures, Arrays within Structures. Structures within Structures, Passing Structures to Functions

Module 8: File Handling in C What is a File, Defining and Opening a File, Functions for Random Access to Files.

Reference Books:

1. Programming in C By Stephen G. Kochan
2. Programming in C By M.T. Somashekara

PRACTICAL: - C Programming

Basic program of C (a) Control Statement, (b) Arrays (c) String, (d) Structure (e) Pointers



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UNIVERSITY DEPARTMENT OF MATHEMATICS, DSPMU, RANCHI CBCS PATTERN SYLLABUS

Mat/ Sem1/ GE 1 – MATHEMATICS – I **F.M: -100**

Instruction for Generic Elective: -

7x10

Eleven Questions will be set. Candidates will be required to answer Eight Questions.

Question no. 1 will be **Compulsory** consisting of 10 short answer type covering entire syllabus uniformly. Each question will be of 3 marks. Out of remaining 10 questions will be required to answer 7 questions selecting at least one from each group. Each question will be of 10 marks.

GROUP - A

DIFFERENTIAL CALCULUS I

Successive differentiation, n^{th} order derivative of some standard functions. Leibnitz's theorem. n^{th} derivative of rational functions. Taylor's and Maclaurin's series expansions of functions. Applications of Taylor's and Maclaurin's series. Tangent and Normal, their equations in the Cartesian form, parametric form, Tangents at the origin. Angle between two curves. Length of tangent, normal, sub tangent, subnormal in Cartesian forms. **2 Questions**

INTEGRAL CALCULUS I

Integration of rational and irrational functions. Integration by partial fractions, Integration by transformations, Integration by substitution, Integration by parts. **2 Questions**

GROUP - B

VECTORS I

Scalar and Vector point functions, vector function of a scalar variables, Continuity of a vector function. differentiation of a vector with respect to the scalar variable "t". Differentiation of a vector function. Derivatives of a sum of vectors, derivatives of a product of vectors (both scalar and vector products.) **2 Questions**

COORDINATE GEOMETRY OF TWO DIMENSION I

Change of rectangular axes, Rotation and Shifting of origin. Transformation of the general equation of the second degree. Conditions for the general equation of second degree to represent a parabola, ellipse and hyperbola. Equations of the tangent and normal to a given curve using calculus. **2 Questions**

REAL ANALYSIS I

Sequence: Definition, Bounds, Limit of a sequence, Monotonic Sequences and their Convergence, Algebraic operations and limits, Cauchy Sequence, General principle of convergence of a sequence. **2 Questions**

BOOKS RECOMMENDED

1. Differential Calculus : A Das Gupta & S B Prasad
2. Integral Calculus : A Das Gupta
3. Vector Analysis : Lalji Prasad/ A Das Gupta & S B Prasad
4. Coordinate Geometry : A Das Gupta
5. Real Analysis : Lalji Prasad



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SEMESTER-II

COURSE CODE :- **CC 4**
COURSE TITLE :- **OPERATING SYSTEM**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Concept of Operating System:- Simple batch systems, multiprogrammed batch systems, time-sharing systems, parallel systems, distributed systems, real-time systems.

Module 2: Computer System structure:- Computer System Operation, I/O structures storage , structure, storage hierarchy and hardware protection.

Module 3: Process concept:- process state, process control blocks, process scheduling and schedulers

Module4:ProcessSynchronization:CriticalSectionProblem,Bakeryalgorithm,Semaphores(Producer-Consumer problems,Synchronization problems(Reader-Writers problem, Dining philosopher problem,

Module 5: CPU scheduling:- CPU-I/O burst cycle, scheduling criteria, scheduling algorithms (Non pre-emptive-FCFS, SJFS, Pre-emptive-SJFS, and RR).

Module 6: Deadlock:-Intoduction of Deadlock, Deadlock Prevention, Deadlock Avoidance algorithm(Banker's algorithm), Deadlock Detection and Deadlock Recovery.

Module 7: Memory management:- contiguous allocation, Paging, Swapping, Segmentation.

Virtual memory- Demand paging, page replacement, page replacement algorithms (FIFO, LRU) Thrashing.

Module 8 Disk structure- Disk scheduling (FCFS, SSTF, SCAN),Security- The problem, authentication, and program- threats, encryption.

Books Recommended:Operating System: Peter Gelvin
God bole, Dhamdhare

PRACTICAL: MS.DOS

Basic of DOS commands, Internal Commands, External Commands and Batch Creation



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UNIVERSITY DEPARTMENT OF MATHEMATICS, DSPMU, RANCHI CBCS PATTERN SYLLABUS

Mat/ Sem II/ GE 2 – MATHEMATICS – II

Instruction for Generic Elective: -

Eleven Questions will be set. Candidates will be required to answer **Eight Questions**.

Question no. 1 will be **Compulsory** consisting of 10 short answer type covering entire syllabus uniformly. Each question will be of 3 marks. Out of remaining 10 questions will be required to answer 7 questions selecting at least one from each group. Each question will be of 10 marks.

GROUP - A

Differential Calculus II

Partial Differentiation, Curvature, Asymptotes, Maxima and Minima of functions of two variables. **2 Questions**

Integral Calculus II

Evaluation of definite integrals, reduction formulae, curve tracing, length and area, Surface area and volume of solids of revolution. **2 Questions**

GROUP - B

Vector II

Gradient, Divergence and curl and second order vector differential operators in Cartesian coordinates systems. **2 Questions**

Co- ordinate geometry of two dimensions II

Reduction of the general equation of second degree to the standard forms, Chord of Contact, Polar and pair of tangents in reference to general equation of conic, Polar equation. **2 Questions**

Real Analysis II

Series: Definition, Convergent Series, Divergent Series, Pringsheim's theorem, Comparison tests, Cauchy's root test, D'Alembert's ratio test, Alternating series and Leibnitz test, Absolutely convergent series. **2 Questions**



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SEMESTER- III

COURSE CODE :- **CC 5**
COURSE TITLE :- **PROGRAMMING IN C++**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: OOPS: Concepts of OOPS and differences with procedural languages, characteristics of OOPS (Idea of objects, class, data abstraction & encapsulation, inheritance, polymorphism, dynamic binding, I/O stream, Cin, Cout, I/O manipulation).

Module2: Data Types, operators, Control structure & looping statements, Functions and arrays.

Module 3: Objects & classes: classes and objects, constructor, destructor

Module 4: Operators overloading: unary operator (++ , --, -) binary operators using member function and friend function

Module 5: Inheritance: Derived class and base class, protected access specifier, derived class constructors, class hierarchies, abstract base class, public and private inheritance, Multiple inheritance, containership (classes within classes).

Module 6: Pointers: Address and pointers, pointers and arrays, memory management. "New" & "delete" pointer to objects, pointer to pointer and "this" pointer

Module 7: Functions: Virtual functions, Friend functions, static functions.

Module 8: Files and streams: String, string I/O, object I/O, I/O with multiple objects file pointer

Books Recommended: 1. C++ -Lafore 2. C++ -Balaguruswamy 3. C ++ -Kanetkar

PRACTICAL: Programming in C++

Programming Using C++ based on functions, constructor, destructor, operator overloading, inheritance, polymorphism, Pointer



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SEMESTER-III

COURSE CODE :- **CC6**
COURSE TITLE :- **DATA COMMUNICATION AND NETWORKING**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Basic network concepts, advantages and disadvantages of computer networks, types of networks-LAN, WAN, MAN LAN Technology: LAN architecture, Bus/Tree LAN, Ring & Star LANs Network topologies, Hardware requirement of a network, Network operating system.

Module 2: A communication model, communication tasks, three-layer approach to protocols, a brief introduction to TCP/IP and OSI (brief function to different layers), Bridge, Router

Module 3: Concept and terminology, analog and digital data transmission. Transmission impairments, Guided transmission media..Asynchronous & synchronous transmission

Module 4: Data encoding, digital data digital signal, digital data analog signal, analog data digital signal and analog data analog signal

Module 5: Flow control, Error detection (CRC). Error control, High level data control (HDLC). Multiplexing, statistical time division multiplexing

Module 6: Circuit switching and Packet switching: switched network, circuit switching networks, packet switching principals, routing, congestion and control

Module 7: Ethernet:-Standard Ethernet and Fast Ethernet, Aloha (pure Aloha and Slotted Aloha), CSMA, CSMA/CD, CSMA/CA, Token ring and FDDI.

Module 8: Network Security: Requirements, conventional encryption, public key encryption & Digital signature. (No numerical related questions are to be asked)

Reference Books: 1.Data Communication and Networking :Tannenbaum 2.Data Communication and Networking : Frowzen

PRACTICAL:- On Job Training-I(OJT1)

One Month On-Job Training in the Latest Technology : For detail refer page no-26



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SEMESTER- III

COURSE CODE :- **CC 7**
COURSE TITLE :- **SYSTEM ANALYSIS AND DESIGN**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: System Concept: Definition, Characteristics of a System, Elements of a System, Types of Systems.

Module 2: Introduction of System Development life cycle: Recognition of needs, Feasibility Study, Analysis, Design, Implementation and Maintenance

Module 3: Role of System Analyst, The place of the Analyst in the MIS organization, Fact Finding ,Fact Analysis.

Module 4: Information Gathering Tools: Review of Literature, Procedure and Forms , On-Site Observation, Interview and Questionnaires. Types of Interview and Questionnaires.

Module 5:Tools of Structured Analysis: Data Flow Diagram(DFD), Data Dictionary , Decision Tree and Structured English, Decision Tables.

Module 6:Feasibility Study: Feasibility Considerations, Steps in Feasibility Analysis, Feasibility Report.Cost and Benefit Analysis: Introduction, Cost and Benefit Categories, Procedures for cost/Benefit Determination.

Module 7:Process of Design: Logical and Physical Design,Structured Design, Structured Walk Through Input Design, Output Design , Form Design: Classification of Forms, Requirement of Forms.

Module 8:Testing: Definition,Types of Testing: Unit Testing, Integration Testing ,System Testing
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Books Recommended: System Analysis and Design: Elias M.Awad

PRACTICAL: LINUX

Basics of Linux Operating system, Commands



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SEMESTER- III

COURSE CODE :- **SEC-I**
COURSE TITLE :- **Soft Skills**
CREDIT :- **2**

Marks distribution

Full Marks: = 75 Duration: 3 hrs

This paper consists of 75 marks .

Descriptive types of questions (5 out of 8 questions) : 15 x 5 = 75

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module- I - SELF ANALYSIS SWOT Analysis, Who am I, Attributes, Importance of Self Confidence, Self Esteem.

Module-2 - CREATIVITY Out of box thinking, Lateral Thinking.

Module-3- ATTITUDE Factors influencing Attitude, Challenges and lessons from Attitude, Etiquette.

Module-4- MOTIVATION Factors of motivation, Self talk, Intrinsic & Extrinsic Motivators.

Module-5- GOAL SETTING Wish List, SMART Goals, Blue print for success, Short Term, Long Term, Life Time Goals. Time Management Value of time, Diagnosing Time Management, Weekly Planner to do list, Prioritizing work. Extempore ASSESSMENT

Module-6- INTERPERSONAL SKILLS Gratitude Understanding the relationship between Leadership Networking & Team work. Assessing Interpersonal Skills Situation description of Interpersonal Skill. Team Work: Necessity of Team Work Personally, Socially and Educationally

Module-7 - LEADERSHIP Skills for a good Leader, Assessment of Leadership Skills

Module-8 - STRESS MANAGEMENT Causes of Stress and its impact, how to manage & distress, Circle of control, Stress Busters. Emotional Intelligence what is Emotional Intelligence, emotional quotient why Emotional Intelligence matters, Emotion Scales. Managing Emotions.

TEXT BOOK: SOFT SKILLS, 2015, Career Development Centre, Green Pearl Publications.

PRACTICAL: SOFT SKILLS

Personality development



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SEMESTER III

GENERIC ELECTIVE

1 Paper

Total 100 x 1 = 100 Marks

III. GENERIC ELECTIVE (GE 3)

(Credits: Theory-04, Practicals-02)

Marks : 75 (ESE: 3Hrs) + 25 (Pr 3Hrs)=100

Pass Marks: Th ESE = 30 + PrESE =10

End Semester Examination (ESE):

There will be two group of questions. **Group A is compulsory** and will contain two questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

THERMAL PHYSICS AND STATISTICAL MECHANICS

Theory: 60 Lectures

Laws of Thermodynamics:

Various Thermodynamical Processes, Applications of First Law: General Relation between C_p and C_v , Work Done during Isothermal and Adiabatic Processes, Reversible and irreversible processes, Second law and Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes.

Thermodynamical Potentials:

Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations and applications - Joule-Thompson Effect, Clausius-Clapeyron Equation, Expression for $(C_p - C_v)$, C_p/C_v , TdS equations.

Kinetic Theory of Gases:

Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) & its applications to specific heat of gases; mono-atomic and diatomic gases.

Theory of Radiation:

Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.

Reference Books:

- Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
- A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
- Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
- Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W. Sears and G.L. Salinger. 1988, Narosa University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- Heat and Thermodynamics, A. B. Gupta and H. P. Roy.
- Heat and Thermodynamics, P. K. Chakraborty.
- Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed., 1996, Oxford University Press.
- Statistical Physics, Berkeley Physics Course, F. Reif, 2008, Tata McGraw-Hill
- Statistical and Thermal Physics, S. Lokanathan and R.S. Gambhir. 1991, Prentice Hall



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SEMESTER- IV

COURSE CODE :- **CC8**
COURSE TITLE :- **COMPUTER GRAPHICS**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory)	:	1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)	:	10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview of Graphics systems:- Video display devices, refresh cathode ray tubes, raster-scan and random-scan display, colour CRT monitor, direct view storage tubes, random scan system.

Module 2: Lines : line drawing algorithm , DDA and Bresenham's Line drawing algorithm, Program in C

Module 3: Circle: DDA , Bresenham's and midpoint circle drawing algorithm, Program in C

Module 4: Ellipse generating algorithm, Bezier curve, spline curves, pixel addressing, filled area

Module 5: Scan-line algorithm , boundary fill and flood-fill algorithm.

Module 6: Two dimensional geometric transformation: Basic transformation, matrix representation, composite transformation (translation, rotation, & scaling).

Module 7: Raster methods for transformation, viewing pipeline, viewing coordinates frame, clipping (points, line & polygon), Cohen Sutherland line clipping algorithm.

Module 8: Visible surface detection methods: Classification of visible surface detection algorithm, back face detection algorithm, depth buffer algorithm

Books Recommended: 1. Computer Graphics – Hearn & Baker
 2. Computer Graphics – RDS Asthana

PRACTICAL: COMPUTER GRAPHICS

Implementation of DDA and Bresenham's line drawing algorithm, DDA, Bresenham's and Mid-point Circle drawing algorithm, flood fill



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SEMESTER- IV

COURSE CODE :- **CC 9**
COURSE TITLE :- **DATA BASE MANAGEMENT SYSTEM**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Introduction to DBMS- Purpose, difference with respect to conventional file processing system, data abstraction, data independence, data models(object-based, record based, physical data models), database manager, database administrator, overall system structure.

Module 2: Entity- Relationship model- Relationship sets, Mapping, keys and entity sets. Entity Relationship diagram, specialization, generalization and aggregation.

Module 3: Relational algebra- Project, select, Cartesian product, joins, natural join, union, intersection, minus, division operations.

Module 4: Normalization-Functional dependency, 1NF, 2NF, 3NF, BCNF, multivalued dependency & 4NF. Lossless joins, dependency preservation, redundancy control and integrity preservation during decomposition.

Module 5: Transaction- concepts, transaction state, concurrent executions, serializability, conflict serializability, view serializability.

Module 6: Concurrency control- locks, granting of locks, timestamp based protocols, deadlock prevention, detection & recovery

Module 7: Security- Authorization, views

Module 8: Oracle: - Oracle functions, SQL, simple queries, nested sub-queries, self join, equijoin, non-equijoin, PL/SQL programming (Writing small blocks for data Manipulation). Update, Insert, Triggers

Books Recommended: 1. DBMS -Korth 2. DBMS -C.J. Date 3. Oracle –Byross

PRACTICAL : ORACLE

Writing and executing simple and complex queries ,Creation and alteration of tables updating Inserting, deleting a table. Writing simple PL/SQL codes for data manipulation Database triggers. Generating simple client applications.



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SEMESTER- IV

COURSE CODE :- **CC 10**
COURSE TITLE :- **MANAGEMENT INFORMATION SYSTEM**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview of MIS, Significance of MIS, explain management, information and system, nature, scope characteristics of MIS, Comparing information IT with MIS

Module 2: Structure of MIS on the basis of physical components, support for decision making, classification of MIS-(Transaction processing system, management information system decision support system, office automation system)

Module:3 Functional Information System-financial information system, marketing information system, production/manufacturing information system

Module :4 Decision Making Type-purpose of decision making, simon's model of decision-making
Decision tree

Module:5Information and system concepts-types of information-strategic information, operational information, definition of system, element of system-input, process, output, feedback

Module :6 System development approaches-Spiral model, water fall model

Module7: System analysis-introduction to system analysis, determination of requirements, identify the data used and information evaluation of mis-evaluation approaches, evaluation classes, product-based mis evaluation, cost/benefit-based evaluation.

Module 8: Information System Planning-Planning terminology, mission, objectives, strategies, policies Location of mis in the structure of organization.

Books Recommended:Management Information System – Javedkar

PRACTICAL:- JOB Training-II(OJT-2)

One Month On-Job Training in Latest Trends (IT market demands): For details refer page no-26



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SEMESTER- IV

COURSE CODE :- **SEC-II**
COURSE TITLE :- **Organizational Behaviour**
CREDIT :- **2**

Marks distribution

Full Marks: = 75 Duration: 3 hrs

This paper consists of 75 marks .

Descriptive types of questions (5 out of 8 questions) : 15 x 5 = 75

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module-1 Introduction: Meaning and importance of the study of OB

Module-2 Behaviour and its causation: Introduction to personality, perception, learning and attitude

Module-3 Motivation: Importance of psychological process of motivation, salient motivation tools
Need Theories/ Content Theories (Maslow's Hierarchy of Needs, Alderfer's ERG Theory)
Process Theories (Herzberg's Two Factor Theory and Vroom's Expectancy Theory)

Module-4 Leadership and Group Dynamics: Historically Important (Ohio State and Michigan leadership Theories), Traditional Theories (Trait Theory and Contingency Theory)
Modern Theories (Charismatic Theories), Formal and informal groups, role concept

Module-5 Improving Interpersonal Effectiveness: Interpersonal communication, Introduction to TA

Module-6 Conflict Management and Team Building: Sources of Conflict, Types of Conflict, Negotiation (process and issues)

Module-7 Concepts of Organizational Culture and Organizational Development: Definition, Organizational Culture

Module-8 Organizational Development: Concept of OD, Phases of OD and OD Interventions, Limitations of OD Interventions Concept of Morale and Job Satisfaction

Text Books:

1. Pareek, U. Understanding Organizational Behaviour (Oxford University Press: New Delhi)
2. Robbins, S.P. & Sanghi Organizational Behaviour (Prentice Hall India: New Delhi)

PRACTICAL: Organizational Behavior

Organizational Behavior, Leadership & Group Discussion and Organizational Development



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SEMESTER- V

COURSE CODE :- **CC 11**
COURSE TITLE :- **PROGRAMMING IN JAVA**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs Pass Marks: 34

This paper consists of 50marksand divided into two groups:

Group-A: Objective questions (Compulsory)	:	1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)	:	10 x 5 = 50

Total =		60
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The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Introduction to Java: History of Java, features of Java, types of Java programs.JDK Tools: Javac compiler, Java interpreter, applet viewer, Java tools, Javap disassemble, Javadoc Tool, JavahTool,Java keywords,

Module 2:Data types in Java, Variable naming conventions, Initializing variables, literals, operators, type conversion, construct, looping construct, Arrays and vectors.

Module 3: Classes and objects: Declaring classes, creating objects, declaring objects, declaring methods, passing arguments to methods,

Module 4: Constructors, access specifies (public, private, protected, Default), modifiers, the Method Overloading, Method Overriding, Garbage collection (Introduction).

Module 5: Inheritance: Introduction to Inheritance, Types of Inheritance Abstract class and Interface

Module 6: Introduction to threads: Threads, Single threaded and multithreaded applications, life cycle of a Thread, the current thread, the thread class, Problems in multithreading.

Module 7: Packages: Java packages, using a package, the Lang packages, the package, the creating a package.

Module 8: Applets & Applications: Applet class, Applet & HTML, Life cycle of an Applet, Graphic class (Introduction) , Passing parameters to Applets, Creating an application

Books Recommended:

1. Java- Complete Reference
2. Mastering Java

PRACTICAL: Programming in JAVA

Entire syllabus of java Programming



Department of Computer Application

Dr. Shyama Prasad Mukherjee University

(Following Upgraded to Ranchi College)

SEMESTER- V

COURSE CODE :- CC 12
COURSE TITLE :- Web Technology
CREDIT :- 4

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: History of the Internet and World Wide Web, Search Engines, News-group, E-mail and its Protocols, Web Portal, Browsers and their versions, Its functions, URLs, web sites

Module 2: Static Web Development: HTML - Introduction to HTML, HTML Document structure tags, HTML comments, Text formatting, inserting special characters, anchor tag, adding images and Sound, lists types of lists, tables, frames and Developing Forms

Module 3: Introduction to Java Script: Data Types, Control Statements, operators, Functions, Objects in Java Script, Handling Events.

Module 4: Cascading Style Sheet: Types of Style Sheets – Internal, inline and External style sheets, creating styles, link tag.

Module 5: DHTML: Introduction to DHTML, JavaScript & DHTML, Document Object Model, DHTML Events, Dynamically change style to HTML Documents.

Module 6: Overview to ASP, features of asp, client side scripting vs server side scripting, web server, configuration of IIS in xp windows, creation of virtual directory.

Module 7: Asp objects and their characteristics- Request, response, server, session, application, form method-get, post,

Module 8: introduction of ado , ado work, oledb, odbc, query string, client certificate, connection object, recordset object

Books Recommended:

1. HTML DHTML Java Script VB Script – Ivan Bayross
2. Black Book : Holzner

PRACTICAL : WEB TECHNOLOGY

Program of Web Technology covering entire syllabus, creating web page



Department of Computer Application

Dr. Shyama Prasad Mukherjee University

(Following Upgraded to Ranchi College)

SEMESTER- V

COURSE CODE :- **DSE 1**
COURSE TITLE :- **DSE-I(OBJECT ORIENTED MODELING AND DESIGN)**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory)	:	1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)	:	10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1:Introduction: What Is Object-Oriented? What Is Object Oriented Development? Object Oriented Theme.

Module 2:Modeling as a Design Technique: Modeling, Abstraction, The three model

Module 3:Class Modeling: Object and class concepts, link and association concepts, Generalization and inheritance, a sample class model. **Advanced class Modeling:** Aggregation, abstract classes, multiple inheritances, metadata, and constraints.

Module 4:State Modeling: Events, states, state diagrams. **Advanced states Modeling:** Nested state diagrams, nested states, concurrency, a sample state model.

Module 5:Interaction Modeling: Use case models, sequence models, activity models, Data Flow Diagrams

Module 6:Process Overview: Development states, Development life cycle.

Module 7:System Design: Overview of system design, breaking a system into subsystems, indentify concurrency, allocation of subsystems, management of data storage, handling global resources, choosing a software control strategy, handling boundary conditions, setting trade-off priorities, common Architectural styles, architecture of the ATM system.

Module 8:Programming style: Object-Oriented Style, Reusability, Extensibility, Robustness, Programming – in-the-Large.

Text Book:

Michael R Blaha and James R Rumbaugh– Object Oriented Modeling and Design, PHI, New Delhi, 2003

PRACTICAL: UML

Object Oriented with UML ,Class diagram,Object Diagram,Activity Diagram, State Diagram



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SEMESTER- V

COURSE CODE :- **DSE 2**
COURSE TITLE :- **DSE-II(E-COMMERCE AND APPLICATION)**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Introduction to e-commerce, Advantages and Disadvantage of Ecommerce, Types of E-Commerce EDI-electronic data interchange, Benefits of EDI, Component of EDI System.

Module 2: Introduction to UN/EDIF ACT standard, An EDIFACT Message, Interchange Structure, Un/EDIFACT message Directories.

Module 3: Internet & Extranets, Commerce over the Internet, Commerce over the Extranet Identification & tracking tools, EAN system, Eancom, Article numbering, bar Coding.

Module 4: Business process Re-engineering, Strategic Alignment Model BPR Methodology. Rapid Re Methodology, Management of change

Module 5: Concerns for e-commerce growth – Legal issues, Risks, Technology for Authenticating Electronics Document, Laws for E-Commerce, Legal issues for internet commerce.

Module 6: Cyber security, Cyber attacks, Hacking, Firewalls, cryptography based solutions, Digital Signature

Module 7: Cyber crimes, Information Technology act 2000, Public Key Infrastructure, PKI and Certifying Authorities

Module 8: Electronic payment system, Payment gateway and Internet banking, Pay pal, Secure Electronic Transaction (SET) protocol

Books Recommended :

- 1.K. K. Bajaj & D. Nag – TMH
- 2.Rayport & Jawors

PRACTICAL: E-COMMERCE AND APPLICATION

CASE STUDY ON E-COMMERCE, APPLICATION OF E-COMMERCE



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SEMESTER- VI

COURSE CODE :- CC 13
COURSE TITLE :- SOFTWARE ENGINEERING
CREDIT :- 4

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50 marks and divided into two groups:

Group-A: Objective questions (Compulsory)	:	1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)	:	10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Software : Characteristics, Components and Applications, Software process, Software Engineering – A layered Technology, The software process, Software Process models, Linear Sequential Model, Prototyping Model, RAD Model and Evolutionary Software Models.

Module 2: Software Process & Project Metrics: Metrics in Project & Process Domains, Software Measurement and Metrics for Software Quality,

Module 3: Project Planning Objectives: Software Scope, resources, Software Project Estimation, Decomposition Techniques, Empirical estimation Models, Make-Buy decision.

Module 4: Risk Management: Software risks, Risk Identification, Projection, Defining Task set for software Project, selecting software engineering tasks, scheduling and project plan,

Module 5: Software Quality Assurance. Software reviews, Formal approach to SQA Software Reliability, The SQA plan.

Module 6: Conventional Methods for Software Engg : System Engg. Product Engg., Modeling the System, Architecture, System specifications, Analysis Concepts & Principles, Software prototyping, Specifications, Analysis Modeling, Design Concepts, Principles & Methods, Design for real-time system, Software Testing Methods.

Module 7: Object Oriented Software Engineering, Object Oriented Analysis, Object Oriented Design & Testing.

Module 8: Advanced Topics in Software Engg : Software Reuse, Reengineering, Client/Server Software Engg and Computer Aided Software Engg

Books Recommended :

1. Roger S. Pressman – Software Engineering – A Practitioner's Approach – McGraw Hill.
2. Richard Fairley – Software Engineering Concepts, TATA McGraw Hill.
3. Pankaj Jalote – An Integrated Approach to Software Engineering – Narosa.



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SEMESTER- VI

COURSE CODE :- CC 14

COURSE TITLE:- ENTREPRENEURSHIP DEVELOPMENT

CREDIT :- 4

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : $1 \times 10 = 10$
Group-B: descriptive questions (5 out of 8 questions) : $10 \times 5 = 50$

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1:Need, scope and characteristics of Entrepreneurship, special schemes for Technical Entrepreneurs, STED. Identification of opportunity. Exposure to demand based, resource based, service based, import substitute and export promotion Industries.

Module2: Market survey Techniques. Need scope and approaches for project formulation. Criteria for Principles of Product selection and development. Structure of project report.

Module3: Choice of technology, plant and equipment. Institutions, financing procedure and financial incentives. Financial ratio and their significance.

Module4 :Books of accounts, financial statements and funds flow analysis. Energy requirement and Utilization.Resource Management Men, Machine and Materials.

Module5:Critical Path Method [CPM] and Project Evaluation Review Techniques [PERT] as planning tools for establishing SSI. a] Creativity and innovation. b] Strength weakness Opportunity and Threat [SWOT] Techniques.

Module6: Techno – economic feasibility of the project. Plant layout and Process Planning for the product.Quality control/quality assurance and testing of product.

Module7: Elements of Marketing and Sales management. a] Nature of product and market strategy b] Packaging and advertising.c] After Sales service.Costing and Pricing.

Module8: Management of self and understanding human behavior. Sickness in small scale industries and their remedial measures.Copying with uncertainties, stress management and positive reinforcement.a] Licensing , registration. b] Municipal bye laws and insurance coverage.Important provisions of factory Act, Sales of Goods Act , Partnership Act. a] Dilution controlb] Social responsibility and business ethics.Income Tax, Sales Tax and Excise Rules.

Books Recommended : Entrepreneurship Development: S.B. Khanka, EDP – Khanka and Gupta

PRACTICAL: EDP

1. Conduct of mini market survey,Data collection through questionnaire and personal visits.
2. Analysis of simple project reports, communication written and oral practices



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SEMESTER- VI

COURSE CODE :- **DSE 3**
COURSE TITLE :- **DSE-III(DATA WAREHOUSE AND DATA MINING APPLICATION)**
CREDIT :- **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75 Duration: 3 hrs

Pass Marks: 34

This paper consists of 50marks and divided into two groups:

Group-A: Objective questions (Compulsory) : 1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions) : 10 x 5 = 50

Total = 60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview and Concepts of Data Warehousing, Overview of Data warehousing Strategic information and the need for Data warehousing, Defining a Data warehouse, Evolution of Data warehousing, Data warehousing and Business Intelligence The Building Blocks of Data warehouse

Module 2: Defining features - Subject-oriented data, Integrated data, Time-variant data, Nonvolatile data, Data granularity Data warehouses and Data marts Architectural Types - Centralized, Independent data marts, Hub-and-Spoke,

Module 3: Data Staging, Data Storage, Information Delivery, Metadata, and Management and Control components Business Requirements and Data warehouse Requirement Gathering methods and Requirements Definition Document (contents) Business Requirements and Data Design - Structure for Business Dimensions and Key Measurements,

Module 4 : Data warehouse Architecture and Infrastructure Architectural components Concepts of Data warehouse architecture - Definition and architecture in the areas of Data acquisition, Data storage, and Information delivery Distinguishing characteristics

Module 5: Data Mining Overview of Data mining - Definition, Knowledge Discovery Process (Relationships, Patterns, Phases of the process), OLAP versus Data mining Some aspects of Data mining - Association rules, Outlier analysis, Predictive analytics etc) Concepts of Data mining in a Data warehouse environment

Module 6: Data Mining Classifiers K-NN, SVM, Naviebayes(In brief introduction) Algorithms

Books Recommended: 1. Data Warehousing Fundamentals for IT Professionals, Second Edition by Paulraj Ponniah, Wiley

2. Data Warehousing, Data Mining, & OLAP - Second Edition by Alex Berson and Stephen J. Smith, Tata McGraw Hill Education



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SEMESTER- VI

COURSE CODE :- **DSE 4**
COURSE TITLE :- **DSE-IV**
CREDIT :- **12**

Marks Distribution: (OJT1+OJT2+ Project)= 175

(A) DEVELOPMENT OF SOFTWARE

(B) USE OF LATEST TECHNOLOGY

(C) VIVA VOCE

For details refer page no :- 27 to 32



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ON JOB TRAINING GUIDELINES

The main reason students need to do On Job Training (OJT) is so they are well prepared for a graduate job in their chosen field. It is a chance for you to put what you have learned at university to work in the kind of real-life situations you will come up against when you start your career. On Job training gives you great experience during your degree including:

- First-hand experience working as a professional Developer.
- Apply your technical knowledge to a real-life situation.
- Work with other professionals related to your industry.
- Experience what it's like to work in a professional organisation.
- Increase your technical, interpersonal and communication skills.
- Observe interactions of engineers with other professional groups.
- Witness the functioning and organisation of business and companies

Student has to do on Job Training (OJT) in Sem-III(OJT1) and Sem-IV(OJT2). Syllabus for the on job training will be provided by the Department.

Student have to do two months (OJT1 One Month + OJT2 One Month) industrial Training from two different IT organizations. Student has to produce daily report. In this daily report, Attendee sheet, Work culture and working hour list day by day, must be listed. No Online Certification will be considered.

Academic Credits for training shall be based on following:

A Power Point presentation (based on the report) for duration of 10 minutes should be make. This will be presented in front of examiners. Marks will be awarded on this presentation and documents submitted.



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PROJECT GUIDELINES

Student must follow the below guidelines

1. Synopsis Submission
2. Synopsis Approval will be given within a week from the date of submission.
3. A Power Point presentation (based on the report) for the duration of 10 minutes should be make.This will be presented in front of Examiners.
4. Faculty members will be the internal guide of each students.
5. Synopsis contains
 - a) Title of the Project.
 - b) Introduction of the Project.
 - c) Objective of the Project.
 - d) Platform used (Hardware/Software).
 - e) Module of the project.
 - f) Project Type
 - g) System Design
 - I. Data Flow Diagram.
 - II. Entity-Relationship Diagram.
 - III. Object Diagram.
 - IV. Class Diagram.
 - V. Gantt and Pert Chart.
 - VI. Activity diagram.
 - VII. Collaboration diagram.
 - h) Conclusion.



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- i) Limitation of the Project.
- j) Future Scope of the Project.

6. Final Project Submission contains Hardcopy and Softcopy

Project Hardcopy contains

- a) Front page
- b) Certificate of Authenticity
- c) Certificate of job Trainings(OJT1+OJT2)
- d) Declaration
- e) Acknowledgement
- f) Table of content/index

g) Project Guidelines

- i. Introduction
- ii. Vision, mission,objective
- iii. Swot analysis
- iv. Chronology of Achievements.
- v. Topic discussion
- vi. Platform used (Hardware/Software).
- vii. Module of the project.
- viii. Project Type
- ix. System Design

- a) Data Flow Diagram.



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- b) Entity-Relationship Diagram.
 - c) Object Diagram.
 - d) Class Diagram.
 - e) Gantt and Pert Chart.
 - f) Activity diagram
 - g) Collaboration diagram
- x. Its relevance and implication in company.
 - xi. Finding
 - xii. Conclusion
 - xiii. Limitation of the project
 - xiv. Further Enhancement
 - xv. Bibliography
7. Project that assigned to the student should be executed (run) during viva of project Dissertation.
8. Documentation of Synopsis/ Project must be well formatted.
9. Main text of Synopsis/ Project should be typed on A4 size paper in Font Times New Roman (Size 12) with margin : Left 1.5”, Right : 1”, Top : 1”, Bottom : 1” and arranged in suitable sections like introduction, Problem Definition, Computational / Design, Results and Discussion, Conclusion, Future Scope of Work, References, Appendix(if any).The Project must be hard cover bound.
10. Contents of the final project also include coding and snapshot of the executed project.
11. Contents of the synopsis and final project must not copied from any website.



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Department of Computer Application

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Ranchi

2021



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Dept.of Computer Application
Dr.Shyama prasad Mukherjee university
Ranchi



Department of Computer Application

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