

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
PROPOSED SYLLABUS : S.Y.B Sc : COMPUTER SCIENCE
With effect from June 2008

Paper 3 : Data Structure in C++

Objected Oriented Programming: C++

1] Introduction:

- 1.1 Introduction to object oriented programming
- 1.2 C++ fundamentals

2] Classes and Objects:

- 2.1 Classes
- 2.2 Constructor & Destructor
- 2.3 Inline functions
 - 2.3.1 Defining inline functions within a class
- 2.4 Friend functions & classes
- 2.5 Static class members
 - 2.5.1 Static data members & members functions
- 2.6 Local & nested classes
- 2.7 Passing objects to functions & returning objects from functions
- 2.8 Object assignment

3] Arrays, Pointers, References & the dynamic allocation operators

- 3.1 Arrays of objects
- 3.2 References
- 3.3 Dynamic allocation operators
- 3.4 Pointers to objects
- 3.5 This pointer

4] Functions overloading, copy constructor & default arguments

- 4.1 Functions overloading
- 4.2 Overloading constructor functions
- 4.3 Copy constructor
- 4.4 Default arguments

5] Operator overloading

- 5.1 Creating a member operator functions
- 5.2 Operator overloading using friend functions
- 5.3 Overloading new & delete
- 5.4 Overloading some special operators

6] Inheritance

- 6.1 Base class access control
- 6.2 Inheritance and protected members
- 6.3 Inheriting multiple base class
- 6.4 Constructor destructor & inheritance
- 6.5 Virtual base class

7] Virtual functions & polymorphism

8] Templates

- 8.1 Generic functions
- 8.2 Applying generic functions
- 8.3 Generic classes

9] Exceptions handling

- 9.1 Exception handling fundamentals
- 9.2 Handling derived class exceptions

- 10] I/O systems
 - 10.1 Streams & streams class
 - 10.2 formatted I/O
 - 10.3 file I/O
 - 10.3.1 Opening & closings files
 - 10.3.2 Reading & writing text files
 - 10.3.3 Unformatted & binary I/O

DATA STRUCTURES

- 11] Primitive data structures & operations on them
- 12] Non-primitive data structures
 - 12.1 Arrays
 - 12.1.1 Single & multiple array
 - 12.1.2 Storage representations
 - 12.1.3 Operations
 - 12.2 Stack
 - 12.2.1 Operations on stack
 - 12.2.2 Applications in recursions, polish notations etc.
 - 12.3 Queues
 - 12.3.1 Types of queue
 - 12.3.2 Operations on queue & applications
 - 12.4 Linked lists
 - 12.4.1 Types of linked lists
 - 12.4.2 Operations on linked lists & applications
 - 12.5 Tree
 - 12.5.1 Concepts & definition of tree & operations
 - 12.5.2 Binary tree, 2-3 tree, height & weight balanced tree
 - 12.5.3 Linked & threaded representations of tree & applications
- 13] Sorting & searching
 - 13.1 Insertion sort, selection sort, quick sort
 - 13.2 Sequential search
 - 13.3 Binary search

Recommended References Books:

1. The Complete Reference C++ :- Herbert Schildt, THM
2. Objected Oriented Programming in C++ :- Robert Lafore Galgotia publications
3. C++ :- Effective Object Oriented Software Construction – Kayshav Dattari
4. Objected Oriented Programming in C++ :- Addition Wesley
5. Objected Oriented Programming in C++ :- Balaguruswamy
6. Wirth , Niclaus , Algorith+Data Structure Programs , Prentice Hall
7. Horwith E & Sahni S , Fundamental Of Data Structure , Computer Science Press
8. Knuth D. , The Art Of Computer Programming Vol 1-2 Additioin Wesley
9. Aho A. V. , Hopcrott & Ullman, Data Structure & Algorithms , Addition- Wesley

NOTE: - Practical Shall Be Based On Syllabus of all three.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
PROPOSED SYLLABUS FOR : S.Y.B Sc : COMPUTER SCIENCE
With Effect from June 2008

Paper 4 : System Development Tools

Visual Basic.Net

1. OVERVIEW OF MICROSOFT.NET FRAMEWORK

What is .NET Framework & its benefits
The Common Language Runtime(CLR), purpose of CLR
Managed/Unmanaged code, Compilation & Execution
Memory Management, Garbage Collection
The .NET Framework class Library
.NET Web Services
Introduction to Ms Visual studio .NET

2. VB.NET PROGRAMMING LANGUAGE

Data Types, Types Conversion Functions, Operator & Expressions
Variable Declaration : Levels, Lifetime, Scope & Accessibility
Arrays, Collections, User-Defined Data Types
Decisions Structures
Loop Structures: While, Do.. Loop, For.. Next, For Each. Next, With..End With
Nested Control Statements, Exit & End Statements
Procedures

3. CONSOLE APPLICATIONS

Console Class
Handling Strings, Character, & Dates

4. OBJECT ORIENTED PROGRAMMING

Classes: Methods, Properties, Fields, Events
Overloading
Constructor & Destructor
Creating & Using Objects, Managing Groups Of Objects
Abstraction, Encapsulation & Polymorphism
Events & Delegates
Interfaces & Inheritance
Namespaces

5. DESIGNING USING INTERFACE

Working With Forms
Basic Windows Controls
Menus, Timer, Common Dialog Control
SDI & MDI Applications

6. DATA ACCESS

History Of Microsoft Data Access Technologies
Overview Of ADO.NET
The Server Explorer & Query Builder
ADO.NET Object Model
Programming ADO.NET

ADVANCED VB.NET & ASP.NET

1. Data Reporting Tool (Crystal Report)

Designing report with and without Report Expert
Record Selection Expert
Sorting, Grouping and Totaling Data on report
Report Formulas and Report Parameters
Accessing and manipulating report from VB.Net application

2. EXCEPTION HANDLING

Error In Programming
Exception Handling Overview
Structures Exception Handling
Programmer – Defined Exception Class
On error GoTo Statement
Debugging

3. MULTITHREADING

Introduction TO thread
Life Cycle Of a Thread
Creating Multithreading application
Thread Priorities & Thread scheduling
Thread Synchronization

4. INTRODUCTIONS TO WEB PROGRAMMING

Introduction To HTML
Overview Of ASP.NET
Building a Web Application
Building Forms With Web Controls
Validation User Input
Session Tracking

5. ASP.NET DATABASE PROGRAMMING

- 5.1 Understanding Data Binding
- 5.2 Working With Data Grids

REFERENCES BOOKS :-

1. Mastering Visual Basic.NET
By Evangelos Petroustos BPB
2. Professional VB.NET 2003,2004 edition
By Bill Evjen, Billy Hollis, Rockford Lhotka et al.-Worx, Wiley Dreamtech
3. Visual Basi.NET Programming Bible
By Bill Evjen, Jason Beres et al. – Wiley Dreamtech
4. Visual Basic.NET How TO Program , 2nd Edition
By H.M.Deitel , P. J. Deitel, T.R.Nieto Person education (Low Price Edition)
5. Data Base Access With Visual Basic.NET 3rd Edition
By Jeffery P .Mo Manus, Jackie Goldstein – Person Education (Low Price Edition)
6. ASP.NET Bible By Mrudulla Parihar et al. – IDG Books India
7. VB.NET black book

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
Proposed Syllabus of S.Y.B.Sc. Computer Science
With Effect From July 2008

Paper – 5: Relational Database Management System

1. Introduction to DBMS

What is database?

Requirement of database system

Data Models and Data Independence

DDL, DML

Database Manager, Database Administrator

2. Entity Relationship Models

2.1 Entities and Entity sets

2.2 Relationship and Relationship Sets

2.3 Mapping Constraints

2.4 Keys

2.5 Entity Relationship Diagram and reducing it to tables

2.6 Generalizations and Specialization

2.7 Aggregation

3. Relational Model

3.1 Structure of relational database

3.2 Relational Algebra

4. Relational Database Design

4.1 Functional Dependencies

4.2 Referential Integrity

4.3 Need for Normalization

4.4 Normal Forms

4.5 Data Dictionary

4.6 Tables, Tables spaces & Data files, Views

5. Crash Recovery

Failure Classification

Transactions

Incremental log with deferred and immediate updates

Checkpoints

Buffer Management

Shadow Paging

6. Security Control and Integrity

6.1 Security and Integrity violation

6.2 Authorization and Views

6.3 Encryption

7. PL/SQL

7.1 Overview of SQL

7.2 Various types of data, conversions and terminology

7.3 Retrieval of information from tables: Making a query, SELECT command, column reordering, Use of relational operators, Use of Boolean operators, Operations like IN, BETWEEN, LIKE, NULL, NOT etc., Aggregate functions, COUNT, GROUP By clause, HAVING clause

7.4 Formatting Query output: Strings and Expressions, Ordering output by fields, multiple columns, Aggregate Group, Column number, ORDER BY, with NULL

7.5 Querying multiple tables: Joining tables through Referential Integrity, Equi joins and other kinds of joins, joins of more than two tables, Joining a table to itself

- 7.6 Sub queries: DISTINCT with sub queries, Predicates with sub queries, Aggregate Functions in sub queries, Correlated sub queries, Correlating tables to itself, Correlated sub queries in HAVING, Correlated sub queries and joins EXISTS operator, using EXISTS with Correlated sub queries, combining EXISTS and joins, special operator ANY or SOME, ALL, UNION classes.
- 7.7 Entering Deleting and Changing Field Values: DML update command, UPDATE with multiple columns, UPDATIng to NULL values, INSERT command, using sub queries with UPDATE commands
- 7.8 CREATE TABLE Command: Indexing, Altering a table, Dropping a table, Constraining a table, Declaring Constraints, PRIMARY KEY constraints, Foreign and Parent keys, Multicolumn Foreign keys, FOREIGN KEY constraint, Foreign key restrictions.
- 7.9 CREATE VIEW Command: Updating views, Group views and Joins, Views and sub queries, Changing Values through views , Grant command, using ALL and PUBLIC arguments, GRANT OPTION.
- 7.10
 - 7.10.1 Using Variables, Constants & Data types
 - 7.10.2 User-Defined RECORD and TABLE data types
 - 7.10.3 Assigning Database Values to variables
SELECT.....INTO.....CURSORS
 - 7.10.4 Using Flow Control Statements
THE IF...THEN Statement, The LOOP statement
WHILE loops, the GOTO statement
 - 7.10.5 Error handling Built in PL/SQL Exceptions,
User-Defined Exceptions, unhandled Exceptions
 - 7.10.6 PL/SQL Programs
Anonymous PL/SQL Blocks, procedures, Functions,
Packages, Triggers

References Books :

1. Henry Korth & Silbershats, Database System Concepts
2. C.J. Date, Introduction to Database Design, Addition Welsey , Nasora Martin Gruber , Understanding SQL, BPB Pub, New Delhi
3. Ivan Bayross , SQL, PL/SQL The Programming Language of ORACLE , BPB Pub, New Delhi
4. James Martin, Computer Database Organisation, PHI , New Delhi
5. J Ullman, Principles of Database Systems, Galgotia.,NewDelhi
6. ORACLE Manuals
7. SQL Manuals
8. George Koch and Kevin Loney< ORACLE & The Complete Reference, ORACLE Press, TMH, Delhi
9. Oracle PL/SQL programming- Oracle press – Tata McGraw Hill, New Delhi
10. Microsoft SQL server – PHI publication.

NOTE: - Practical Shall Be Based On Syllabus of all three papers. A small project based on the syllabus of Paper VI and V