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Detail Syllabus for
Bachelor of Vocation
(B.Voc)
Skill Development Component
Software Development

(Faculty of Science & Technology)

(WITH EFFECT FROM 2020-2021 ONWARDS)

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(Semester I)
Paper – I
Computer Fundamentals & Networking

NSQF : LEVEL - 4

JOB ROLE: JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Individuals in this job are assigned one of the many entry level roles in the software industry including support and help desk, testing, user interaction design, maintenance, enhancement, development and documentation. They are responsible for assisting in performing the key activities and tasks involved in the assigned role.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template.6. be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.

UNIT - I:

Basic Components of Digital Computers: Block Diagram, Types: Digital, Analog, Hybrid. Generation of Computers.

Number Systems: Binary, Octal, Decimal, Hexa Decimal, their Conversions, Binary Arithmetic, ASCII, BCD, EBCDIC.

Generation of Languages: Machine, Assembly, High Level Languages.

Translators: Compiler, Interpreter and Assembler, Source and Object Program.

UNIT - II:

Memory: Static & dynamic, RAM, ROM, PROM, EPROM, EEPROM, flash and Cache.

Storage Devices: Hard Disk, Zip Disk and Optical Disk, Pen Drive, Blu Ray.

Input Devices: Light Pen, Touch Screen, Voice Input, MICR, OCR, OMR, Barcode Reader and Flatbed Scanner.

Output Devices: VDU, Printers: Dot Matrix, Laser and Inkjet.

Plotters: Drum, Flat-Bed and Inkjet.

UNIT - III:

DOS and WINDOWS OPERATING SYSTEMS:

Introduction to OS: Functions and Classification,

DOS: warm booting & cold booting, Types of commands: Internal & External, command format, directory, file management, disk management and general commands, file naming conventions, dos editor, batch file.

WINDOWS OS: Introduction & features

MODULES : Program, File and Print Managers, Control Panel, Icons, switching between applications, running MS Dos application , Help and Recycle bin.

Windows accessories : Notepad, Paint and Calculator.

UNIT - IV:

Network: Network terminology, Topologies: Linear, Circular, Tree and Mesh.

Types of Networks: LAN, WAN, MAN. Repeaters, Bridge, Routers, Brouters and Gateway. Modem for Communication between pc's, wi-fi network, Introduction of Bluetooth and Infrared devices.

Network Protocol Architecture : OSI Model & their layers ,TCP/IP Model & their layers, Addressing in TCP/IP

Internet: Brief history of internet, World Wide Web, Websites, URL, Browsers, Email & its features.

Reference Books:

1. Information technology concepts by Dr. Madhulika Jain, Shashank & Satish Jain, [BPB Publication, New Delhi.]
2. Fundamentals of Information Technology by Alexis And Mathews Leon [Leon Press, Chennai & Vikas Publishing House Pvt. Ltd., New Delhi]
3. Computer Fundamentals by P. K. Sinha.
4. Data Communications & Networking by B. A. Forouzan.
5. Data & Computer Communications by William Stallings.

List of Practical's:

Sr. No.	List of Practical's
1	Demonstrate the working of following General Purpose commands in Disk Operating System <ol style="list-style-type: none"> 1. CLS 2. VER 3. VOL 4. DATE 5. TIME
2	Demonstrate the working of DIR commands along with the switches used with the command in Disk Operating System
3	Demonstrate the working of following File Management Commands in Disk Operating System <ol style="list-style-type: none"> 1. COPY CON 2. TYPE 3. COPY 4. REN 5. DEL
4	Demonstrate the working of following Directory Management Commands in Disk Operating System <ol style="list-style-type: none"> 1. MD 2. CD 3. RD
5	Demonstrate the working of following External commands in Disk Operating System <ol style="list-style-type: none"> 1. MORE 2. MEM 3. SYS 4. XCOPY 5. MOVE 6. FC 7. CHKDSK 8. SORT 9. FIND 10. DISKCOPY
6	Demonstrate the Working of Recycle Bin in Windows Operating System <ol style="list-style-type: none"> a) Restore a Single deleted file from recycle Bin b) Restore all deleted files from Recycle Bin c) Empty recycle bin d) Resizing Recycle Bin
7	Demonstrate the use of wildcard Character in DOS.
8	Demonstrate Calculator Facilities in Windows Accessories. <ol style="list-style-type: none"> a) Using Simple Calculator b) Using Scientific Calculator.
9	Demonstrate Notepad Facilities in Windows Accessories. <ol style="list-style-type: none"> a) Creating Simple Text file b) Creating Batch file.
10	Demonstrate Paint Facilities in Windows Accessories. Draw a picture using all the tools in the tool box.
11	Demonstrate the Display Properties of Control Panel. <ol style="list-style-type: none"> a) Change The Wallpaper of the desktop to image sunset.jpeg b) Set The Screen Saver of the desktop to time duration 1 min.
12	Demonstrate the Search Option in Windows Operating System.
13	Demonstrate the use of shortcut facility in Windows Operating System.

	a)Creating Shortcut b)Renaming Shortcut c) Deleting Shortcut.
14	Demonstrate the Disk Clean up utility in Windows Accessories.
15	Demonstrate the MS-editor of Disk operating System. a) Create a BAT file using Editor and run that file through command prompt.
16	Demonstrate Backup Status and Configuration Utility of Windows Accesories.
17	Demonstrate the use of add or remove hardware utility of control panel. A CD is provided for printer installation. Install printer using control panel.
18	Demonstrate user account facility of control panel. a) Create an account name "Students" b) Assign limited privileges to user "Students"
19	Set the home page of default browser to "http:\\www.dbscience.org" Using network and internet connection facility of control panel.
20	Demonstrate user account facility of control panel. a)Create an account name "Admin" b) Assign system administrator privileges to user "Admin" c) Create a password "dbsciorg" for user "Admin"
21	Explain Network Devices in detail a) Repeater b) Bridge c) Router d) Gateway
22	To study Bluetooth technology

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(Semester I)
Paper – II
C Programming

NSQF : LEVEL - 4

JOB ROLE : JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Individuals in this job are assigned one of the many entry level roles in the software industry including support and help desk, testing, user interaction design, maintenance, enhancement, development and documentation. They are responsible for assisting in performing the key activities and tasks involved in the assigned role.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template.6. be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.

UNIT- I:

Problem Solving: Problem Identification, Analysis, Flowcharts, algorithms and Pseudocode, Flowcharting symbols, Converting algorithms to flowcharts.

Control structures : Sequence, Selection, Iteration & Modular.

UNIT- II :

Introduction to C: Character set, C Tokens, Identifier, Keywords, Variables, Data types, Constants, Operators and Expressions, Character Strings, Enumerated Data Types, Operator Precedence and Associativity.

Decision making & Branching: if, if..else, nesting of if..else if..else ladder, switch statement, goto statement.

Decision making & Looping: while loop, do while, for loop, Nested loops.

UNIT- III:

Arrays: Single and Two Dimensional Array.

Strings: Strings Manipulation, Arrays of Strings.

Functions: Definition, Return values & their types, function call, recursion, passing Arrays to Functions, Storage classes.

UNIT- IV:

Structure: Declaration, Accessing structure members, Structure initialization, Structure & Functions, Array of Structures.

Union: Unions, Differences between Structure and Union.

Pointer: Introduction, accessing the address of variable, declaring & initializing pointer variables, accessing variables through pointers, void pointers.

File management in C: Introduction, Defining & Opening a file , closing a file, Input/Output operations on file, Random Access to files, Command Line arguments.

Reference Books:

1. The Art of programming through flowcharts & algorithm by Anil B. Chaudhari Firewall Media, Laxmi publication, New Publication.
2. Programming in C by E. Balagurusamy TMH Publications.
3. C Programming - Kernighen and Ritchie.
4. Let us C – Y. Kanetkar.
5. C Programming – Holzner, PHI Publication.
6. Programming in C – Ravichandran.
7. Programming in C by Kamthane Ashok.

List of Practical's:

Sr. No.	List of Practical's
1	A five digit number is input through a keyboard. Write a program in C to reverse the number and to determine whether the original and reversed numbers are equal or not.
2	WAP in C to determine whether the pressed key is upper case letter or lower case letter or digits or any special symbol by using following table. <div style="display: flex; justify-content: space-around;"> <div>Character</div> <div>ASCII Values</div> </div> <div style="display: flex; justify-content: space-around;"> <div>A-Z</div> <div>65-95</div> </div> <div style="display: flex; justify-content: space-around;"> <div>a-z</div> <div>97-120</div> </div> <div style="display: flex; justify-content: space-around;"> <div>0-9</div> <div>48-57</div> </div>
3	Program to compute Sine and cosine series : $\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$
4	WAP in C to find if a given no. is prime or not
5	WAP in C to compute Fibonacci series
6	WAP in C to insert an element in one dimensional array at a given position
7	WAP in C to delete an element from one dimensional array
8	WAP in C to search the element in an array of N element using Linear search.
9	WAP in C to search the element in an array of N element using Binary search.
10	WAP in C to multiply a 3*3 matrix.
11	WAP in C to find largest element in TDA(3*3)
12	WAP in C to check if given string is palindrome or not.
13	WAP in C using function to find sum of two numbers with no argument & no return value
14	WAP in C using function to find sum of two numbers with argument & return value
15	WAP in C to factorial of a given number using recursive function
16	WAP in C to swap values of two variables by passing pointers.
17	WAP in C to add two complex no. By passing structure to a function.
18	Program to Read two integers and determine bigger of the two with the help of function big() returning an integer pointer.
19	WAP in C to create a sequential file and perform the following operation fields are Roll No., Name, M1, M2, M3. a) Process & display output.
20	WAP to accept Marks of 'N' Students in three subjects and print average and Grade of each student
21	Write a C Program to reverse the entered string from command line arguments

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(Semester II)
Paper –I
OPERATING SYSTEM CONCEPTS & LINUX

NSQF : LEVEL - 5
JOB ROLE: WEB DEVELOPER

Title	Details
Brief Job Role Description	After completing this programme, participants will be able to: Contribute to the design of software products and applications Develop media content and graphic designs for software products and Applications
Knowledge Description	To be competent, you must be able in: <ol style="list-style-type: none">1. Programming for the Web2. Analysis and Design of Web based Applications3. Media Content and Graphics Design

UNIT- I:

Operating system: Introduction, computer system organisation and architecture, operating system structure and functions.

Management: Process, Memory and Storage.

System structures: Operating system Services, system calls & Types of system call.

Process scheduling: Introduction, Scheduling algorithms- First Come First served scheduling, Shortest job first scheduling, Priority scheduling, Round Robin scheduling

Unit- II:

Memory management: Introduction, swapping, contiguous memory allocation, paging, segmentation, Segmentation with paging.

I/O Management: I/O hardware, I/O Buffering, Disk I/O, Raid, Disk Cache.

File Management: File Management system, File Accessing Methods, File Directories, File Allocation Methods, File Space Management, Disk Space Management.

UNIT- III :

Linux OS : Introduction, Logging In and Logging Out, Anatomy of Linux OS, Directory Structure, /usr Directory, File Types.

Commands: Basic Syntax for a command, Home Directory, ls, mkdir, rmdir, stat, cat, rm, mv, cp.

Editor: Vi editor.

System: Simple Backup, gzip, gunzip, tar.

UNIT- IV:

Working with Processes: Types of processes, ps Command, Creating process, killing process, free command and top utility.


Managing Disk Space: df, du commands, Creating Additional Free Disk Space, Locating Unused Files, Setting System Clock.

Communication Utilities: who, who am i, finger, mesg, write, wall, talk.

Reference Books:

1. Operating Systems by P. Balakrishna Prasad [Scitech Publication]
2. Operating System Concepts : Silberschatz, Galvin, Gagne (Addison Education)
3. Operating Systems - H.M. Deitel - Addison Wesley.
4. Operating Systems- John J. Donovan.
5. Modern Operating Systems : Tenenbaum. (Pearson Education)
6. SAMS Teach Yourself Linux by Craig and Coletta Witherspoon.[Techmedia]
7. LINUX complete reference by Richard Peterson.

List of Practice's

SR. NO.	NAME OF PRACTICALS
1.	Create a directory called stud. Change to the stud directory. Verify you have actually changed to stud directory. Return to your original directory. Also create a file called top. Display the first three and last three lines of the file top in the same directory.
2.	Change to stud directory. Create a directory under stud directory called "marks". Copy any two files from home directory to "marks". Delete the directory marks using - rption. Change to home directory copy any two files from current directory to stud directory. create additional names for them.
3.	Create a directory called Target .Move any two files to directory Target. Display the contents of the above mentioned file .Remove the file .List the contents of the directory and change to home directory.
4.	Redirect the contents of ls -p to a file called dir. Give the command to redirect the output of long listing files and append it to the file dir. Change the mode of those file which begin with "s" in such a way that the owner has read and execute permission ,the group has read and write permission and others only read permission (use octadecimal representation).
5.	What command will display the list of all files starting from our current directory? Display the names of all ordinary files from the current directory and all its sub directories whose name ends in "ing" and which have been modified within last 3 days
6.	Display the details (including permission of read/write/execute) of the files /directories whose names begin with "s".Also display the contents of directories at home directory
7.	List the names of the files according to their last access time along with their creation date and time. Also give the command to extract the links, file owner and the file name only in the current directory/
8.	What is the command to display the entire text of file into uppercase and vice versa.
9.	Write Script to see current date, time, username, and current directory
10.	Write shell script to display the following details in a payslip PAY SLIP DETAILS 1.House Rent Allowance 2.Dearness Allowance 3.Provident Fund HRA is to be calculated at the rate of 20% of the basic. DAIs to be calculated 40% of the basic and PF is calculated 40% of the basic echo "Please enter your basic"
11.	How to write shell script that will add two nos, which are supplied as command line argument, and if this two nos are not given show error and its usage
12.	Write Script to find out biggest number from given three nos
13.	Write script to print given numbers sum of all digit, For eg. If no is 123 it's sum of all digit will be 1+2+3 = 6.
14.	Write script to determine whether given file exist or not, file name is supplied as command line argument, also check for sufficient number of command line argument
15.	Write shell script using for loop to print the following patterns on screen  Write script to print nos as 5,4,3,2,1 using while loop.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(SEMESTER-II)
Paper – II
Programming in ‘C++’

NSQF : LEVEL - 5

JOB ROLE: WEB DEVELOPER

Title	Details
Brief Job Role Description	After completing this programme, participants will be able to: Contribute to the design of software products and applications Develop media content and graphic designs for software products and Applications
Knowledge Description	To be competent, you must be able in: <ol style="list-style-type: none">1. Programming for the Web2. Analysis and Design of Web based Applications3. Media Content and Graphics Design

Unit - I:

OBJECT ORIENTED PROGRAMMING: Object-Oriented Programming Paradigm, Basic concepts of OOPS and Benefits of OOPS.

CLASSES AND OBJECTS: Specifying a Class, Creating Objects, Accessing Class members, Defining member function, Outside Member Functions as inline, Accessing Member Functions within the class, Static data member, Array of objects, friendly function .

ACCESS SPECIFIERS: Private, Protected and Public Members.

UNIT - II:

CONSTRUCTORS & DESTRUCTORS: Introduction, Parameterized Constructors, Constructor Overloading, Constructors with Default Arguments, Copy Constructor, Dynamic Constructor, Destructor.

OPERATOR OVERLOADING: Definition, Overloadable Operators, Overloading Unary Operator, Overloading Binary Operator, Rules for Operators Overloading.

UNIT - III:

INHERITANCE: Defining derived classes, Single, Multilevel, Multiple, Hierarchical, Hybrid Inheritance, virtual base class, Abstract classes, Constructor and Destructor in Derived Classes.

DYNAMIC OBJECTS: Introduction, Pointers to Objects, this Pointer, Creating and Deleting Dynamic Objects, New and Delete operators.

UNIT - IV:

VIRTUAL FUNCTIONS: Need for Virtual Functions, definition, Pure Virtual Functions, Abstract Classes, Rules for Virtual Functions.

EXCEPTION HANDLING: Exception Handling Model, List of Exceptions, Handling Uncaught Exceptions, Fault Tolerant Design Techniques, Memory Allocation Failure Exception, Rules for Handling Exception Successfully.

Reference books:

1. Mastering C++ by K R Venugopal Tata McGraw-Hill , New Delhi.
2. The C++ Programming Language –Bjarne Stroustrup
3. Programming with C++ - Ravichandran
4. Object Oriented Programming with C++ by E. Balagurusamy, McGraw Hill
5. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, Pearson

List of Practical's

Sr. No.	List of Practical's
1.	WAP to find average of two number
2.	WAP to find no. is prime or not and factorial of a no.
3.	WAP to accept the distance between city 1 st &2 nd ,city 2 nd &3 rd . Calculate the distance between city 1 st &3 rd . Define a class road with private data member km,m,d1,d2,d3 containing member function getdata to accept values of d1,d2 and calculate for calculating distance
4.	WAP to demonstrate nesting of member function.
5.	WAP to demonstrate static class member.
6.	WAP to demonstrate object as argument.
7.	WAP to demonstrate Class with constructors
8.	WAP to demonstrate the usage of constructor and destructor. 1) Define a class data with data member acct-no., balance constructor data to initialize data member and a member function display for output.
9.	WAP demonstrate usage of a constructor and destructor function. Declare a class with public data member count. The class containing one constructor and destructor to maintain update information about active objects i.e. 1.No. of object created. 2.No. of objects destroyed.
10.	WAP to demonstrate copy constructor
11.	WAP using function to find the sum of two no. with argument and return value
12.	WAP to demonstrate overloading Binary operators.
13.	WAP to demonstrate overloading unary minus.
14.	WAP to illustrate array of objects in classes
15.	WAP for pointer to object, pointing to dynamically created objects.
16.	WAP to implement Hierarchical inheritance using parameterized constructor in classes..
17.	WAP to illustrate hybrid inheritance.
18.	WAP to find out square and cube of given no. using multilevel inheritance
19.	WAP for Student details using multiple inheritance
20.	WAP to demonstrate a pure virtual function, and invoked from the object of derived class through the pointer of the base class.
21.	WAP to find out maximum number using This pointer.
22.	WAP to demonstrate use of virtual functions .
23.	WAP for payroll system using single inheritance
24.	WAP to perform exception handling with multiple catch.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(SEMESTER-III)
Paper – I
DATA STRUCTURES

NSQF : LEVEL – 6

JOB ROLE : MASTER TRAINER FOR JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Master Trainer for Junior Software Developer will be accountable to train and equip students of 0 to 2 years' experience. Major responsibility being to prepare trainees and enable them to procure, and perform to a reasonable extent, at entry level jobs that exist in the IT Services Industry.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template. <p>be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.</p>

Unit I:

INTRODUCTION: Basic principle of Data structure ,Abstract data type.

ALGORITHMS: Complexity, Time space Trade-offs.

SEARCHING TECHNIQUES: Linear search, Binary search.

SORTING TECHNIQUES: Bubble sort, Insertion sort, Selection sort, Merge sort.

HASHING : Hash Tables, Hashing Technique, Collision Resolution Technique.

Unit II:

LINKED LIST: Introduction, Representation of Linked list in memory, All possible operations on Single and Double linked List using Dynamic representation, Header linked lists.

Unit III:

STACKS : Stacks terminology, Representation of Stacks in Memory, Operation on Stacks, Polish Notations, Quick Sort-an application of stacks

RECURSION: Problems on Recursion and Tower of Hanoi Problem.

QUEUE: Introduction to queue, Linked Representation of Queue, Circular Queue, Dequeue and Priority Queues in Memory.

Unit IV:

TREES: Basic Terminologies, Representation of Binary Trees in Memory, Traversing of Binary tree, Binary Search Tree, Operation on Binary Search Tree: Searching, inserting & deleting, Heap Tree, Operation on Heap Tree, Heap Sort Method.

GRAPHS : Graph theory terminologies, Sequential representation of Graphs : Adjacency & Path Matrix, Shortest Path algorithm: Warshall's Algorithm, Linked representation of graph, Traversing graphs : BSF, DFS Method.

Reference books:

1. Classical Data Structures : D. Samanta. PHI, New Delhi.
2. DATA STRUCTURE : LIPSCTUZ SCHUM OUTLINE SERIES.
3. Data structure Using C++ : Y. Kanetkar.
4. Data Structures Using C++: Tennenbaum.
5. Handbook of Data Structures and Applications by Dinesh mehta and Sartaj sahni.

List of Practical's

Sr. No.	List of Practical's
1.	Program to insert a node at the beginning, at the end and in the middle of the given linked list.
2.	Program to delete a node at the beginning, at the end and in the middle of the given linked list.
3.	Program to create a linked list of customer names and their telephone numbers. (Using Menu Driven and include features of adding a new Customer and deleting an existing Customer.)
4.	Program to reverse a linked list.
5.	Program to search a value in the given linked list.
6.	Program to insert a node at the beginning, at the end or in the middle of a given doubly linked list.
7.	Program to delete a node from the beginning, at the end or in the middle of a given doubly linked list.
8.	Prog. to create, insert & delete a node in Circular linked list.
9.	Program to push and pop an element into / from a stack implemented using linked list.
10.	Program to push and pop an element into / from a stack implemented using Array.
11.	Program to evaluate postfix expression.
12.	Program to sort an array using quick sort.
13.	Program to solve Towers of Hanoi problems using recursion.
14.	Program to perform insertion and deletion operation in linear queues.
15.	Program to perform insertion and deletion operation on circular queues.
16.	Program to sort an array using Insertion sort.
17.	Program to sort an array using Selection sort.
18.	Program to insert an element in a binary search tree.
19.	Program to traverse inorder of a binary tree.
20.	Program to traverse preorder of a binary tree.
21.	Program to traverse postorder of a binary tree.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
Semester III
Paper – II
Web Designing

NSQF : LEVEL – 6

JOB ROLE : MASTER TRAINER FOR JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Master Trainer for Junior Software Developer will be accountable to train and equip students of 0 to 2 years' experience. Major responsibility being to prepare trainees and enable them to procure, and perform to a reasonable extent, at entry level jobs that exist in the IT Services Industry.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template. <p>be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.</p>

UNIT - I :

HTML: Introduction, Objective, HTML Browsers, Windows Switching, HTML Command Tags, URLs, links, new web page creation, main body of the text, putting headers, adding paragraph , formatting text in HTML and font mechanism, Color settings, superscripts and subscripts and other manipulations on text and paragraphs, using directory and menu lists, creation of links, inserting graphics, using images, all manipulations on tables and its display, Detailed working with forms, allowing visitors to upload files, active images ,working with frames & framesets, Frames handling, scroll bars, alternatives to frames

UNIT - II :

HTML5: Introduction, Media, Audio, Video.

DHTML: using DHTML in internet explorer, heading and horizontal line, hidden message, the message at the center of the page, moving boxes ,changeable box. Introduction to browsers, Working with e-mail, Parts of e-mail text, working with messages.

UNIT - III :

Cascading style sheets: Introduction to CSS, creating style sheets, common tasks with CSS, Colors, the font -family, font metrics ,length units ,absolute units ,relative units ,the pixel unit ,percentages as values, keywords as values, various properties such as the font -size property, font -size property etc, Assigning classes ,tags and attributes for applying classes, applying classes to an HTML tag, applying classes to other document parts ,the layer tag, CSS Tags.

UNIT IV:

JavaScript: Variables, Operators, Functions, Conditional Statements, Looping, Built-in objects: String, Arrays, Date, Math. Document Object, Method of document object, Handling events in Javascript. Introduction to JQuery

Graphic Design :Introduction to Adobe Photoshop and Adobe Dreamweaver

Reference Books:

1. JavaScript & jQuery: The Missing Manual, 2nd Edition By David Sawyer McFarland Publisher: O'Reilly Media.
2. Javascript : the definitive guide ,By David Flanagan.
3. Internet and web designing by ITELS (Macmillan).
4. Web Enabled Commercial Application Development Using HTML, DHTML, JS, Perl by Ivan Bayross.
5. Deitel, Deitel & Nieto, Internet and Worldwide Web how to Program, Pearson Education, PHI.
6. Internet Programming with VBScript and Java Script. Kathhleen Kalata (Thomson Publication)
7. Programming the World Wide Web by Robert W. Sebesta. (Pearson)
8. Internet and web design by R Bangia, Second edition , firewall media.
9. Multimedia and Web technology by R Bangia.
10. Adobe Photoshop CS6 : Classroom in a Book by Brie Gyncild
11. Adobe Dreamweaver CS6 : Classroom in a book by James J. Maivald

List of Practical's

SR.NO	List of Practical's
1.	Write a Program to demonstrate the use of heading tag in html.
2.	Write a Program to demonstrate the use of table in html document and also explain their various related table tags (TD, TR and TH).
3.	Write a Program to demonstrate the use of table with different style using id in html.
4.	Write a Program to demonstrate the use of horizontal and vertical table heading in html.
5.	Write a Program to demonstrate to create hyperlink on a web page using client side image mapping in html.
6.	Write a Program to demonstrate to show image height and width using both in html.
7.	Write a Program to demonstrate the use of form in html.
8.	Write a Program to demonstrate the use of FRAMESET in html.
9.	Write a Program to demonstrate the use of horizontal list Menu in html.
10.	Write a Program to demonstrate the use of send Email for a form in html.
11.	Write a Program to demonstrate the use of HTML5 audio and video element
12.	Write a Program to demonstrate the CSS using the font in html.
13.	Write a Program to demonstrate the CSS using the class attributes in html.
14.	Write a Program to demonstrate using CSS(Internal) in html.
15.	Write a Program to demonstrate using CSS(External) in html
16.	Write a Program to demonstrate the use of element defines the base URL for all URLs in html.
17.	Write a Program to demonstrate the use of All Arithmetic operation in Javascript
18.	Write a Program to search an element in an array of size "n" in Javascript
19.	Write a program to compute the gcd of 2 numbers using function in javascript
20.	Write a program to illustrate different in-built string functions in javascript
21.	Write a program to demonstrates how to get content with the jQuery text() and html() methods
22.	Write a program to demonstrate how to set content with the jQuery text(), html(), and val() methods

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
Semester IV
Paper- I
Database management system

NSQF : LEVEL – 6

JOB ROLE : MASTER TRAINER FOR JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Master Trainer for Junior Software Developer will be accountable to train and equip students of 0 to 2 years' experience. Major responsibility being to prepare trainees and enable them to procure, and perform to a reasonable extent, at entry level jobs that exist in the IT Services Industry.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template. <p>be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.</p>

Unit-I:

Database concept: what is database, what is database management system, benefit of DBMS, what is relational database management system, Codd's rule for RDBMS, DBMS vs RDBMS, Normalization, introduction to Oracle, introduction to structured query language.

Table fundamentals: Oracle data type, basic data type, DML, DDL, TCL, DRL.

Unit- II:

Interactive SQL- I : Create command, viewing data in the tables, eliminating duplicate rows when using a select statement, creating a table from a Table, inserting data into a table from another table, delete operation, update the contents of a table, modifying the structure of a table, rename table, truncate table, destroying table, data constraints, types of data constraint, the primary key constraint, the foreign key constraint, the unique constraint, business rule constraint, dropping constraint.

Unit- III:

Interactive SQL- II : Computation done on table data, Oracle function, group data from table, subqueries, joins using the union, intersect and minus clause, Dynamic SQL, Dynamic SQL statement using DBMS SQL, Indexes, views, clusters, sequence.

Unit- IV:

Introduction to PL SQL: Advantage of PL/ SQL, the generic PL/SQL block, the PL/ SQL execution environment, control structure.

PL/ SQL database object: Database triggers, types of triggers, deleting a triggers.

Reference books:

1. Understanding ORACLE By Ivan Bayross [BPB Publication]
2. Database System Using Oracle: A Simplified Guide to SQL & PL-SQL: Nilesh Shah, PHI Publication.
3. Database Management Systems (Complete practical approach) by Sharad Maheshwari & Ruchin Jain, Firewall media.
4. Dr. P.S.Deshpande SQL & PL/SQL for Oracle 10g Black Book.
5. Scott Urman Programming PL/SQL TMH

List of Practical's

Sr. No.	List of Practical's
1	Create a table "Route_Header" containing fields. (Route_id number(8), Route_no number(8), Cat_code number(8), Origin varchar2(8), Destination varchar2(8), Distance number(8), Capacity number(8), fare number(8))
2	Insert the data into "Route_Header" table.
3	Write a query to add the field description whose data type is varchar2.
4	Describe structure of Route_Header.
5	Display only distinct category code in descending manner.
6	Alter the table to modify the length of column "distance" in the table to 10.
7	Delete only those rows that have DESTINATION as cochin and ORIGIN as Madurai.
8	Display any those rows whose ORIGIN with 'm%'.
9	Display any those rows fare ranges from 30 and 40.
10	Show the last name job and commission of those employee who earn commission and sort the data by salary in descending order.
11	Show the employee that have an commission with 10% in this salary.
12	Create table emp1 with same structure as the table EMP. Insert row into using select clause.
13	Write a query to display the name of employee who join the organization between 04-dec-14 and 05-dec-15.
14	Write a pl/sql block to display the even and odd numbers starting from 100.
15	Write query to display the following grouping a) DEPARTMENT_ID and JOB_ID b) The query should calculate maximum salary for the above group.
16	Update the table Route_Header set distance of Madurai to mumbai to 2589
17	Display the destination origin starts with 'p%'
18	Show all the data of employees who have been hired before 1997?
19	How many employees have name that end with n.
20	Show the department name, location, job titles, lastname and salary of employees to work in location 1800
21	List maximum, minimum, average and sum of salary.
22	List the maximum salary and number of employees working as Salesman.
23	Create Procedure to swap two values
24	Create Trigger that restricts the user from performing a DML on movie table on 'Monday'
25	Explain Codd's rules for relational database models.
26	Write a PL/SQL program to check number is palindrome or not
27	Write a PL/SQL program to find number is Armstrong or not
28	Write a PL/SQL program to generate Fibonacci series
29	Write a PL/SQL program to find reverse of a string
30	Write a PL/SQL program to calculate total and percentage of marks of the students in four subjects.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
Semester IV
Paper – II
Web development in PHP

NSQF : LEVEL – 6

JOB ROLE : MASTER TRAINER FOR JUNIOR SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	Master Trainer for Junior Software Developer will be accountable to train and equip students of 0 to 2 years' experience. Major responsibility being to prepare trainees and enable them to procure, and perform to a reasonable extent, at entry level jobs that exist in the IT Services Industry.
Knowledge Description	<p>To be competent, you must be able to:</p> <ol style="list-style-type: none">1. demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.2. demonstrate aptitude for analyzing information and making logical conclusions.3. demonstrate knowledge of the foundational mathematical concepts in computing.4. design algorithms to solve problems and convert them into code using the appropriate programming language constructs.5. read and execute a test case and record the outcome in the appropriate template. <p>be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.</p>

Unit I:

Introduction to PHP: PHP Introduction-Installing PHP

Building blocks of PHP: PHP Variables, PHP Data Types, PHP Strings, PHP Constants, PHP Operators, PHP Programming Loops, PHP Functions, PHP Arrays

Control flow functions: if, else, else if, switch, Loops: for, while, do while.

Unit II:

Functions: Definition, Calling function, defining a function, returning Values from User-Defined Functions, Variable Scope, Accessing Variables with the global Statement From, setting default values for arguments, passing variable reference.

Arrays : Definition, Creating Arrays: Associative Arrays & Multidimensional Arrays, Array-Related Constructs and Functions.

Objects: Working with Objects, the basic structure of an object, creating and manipulating objects and the data.

Working with Strings: Formatting Strings, String functions.

Unit III:

Working with Forms: Creating Form, Form elements: Text Box, Text Area, Password, Radio Button, Checkbox, The Combo Box, Hidden Field and image.

Working with Cookies and Sessions: Introducing Cookies, Setting a Cookie with PHP, Deleting a Cookie with PHP, Session Function, Starting a Session, Working with Session Variables.

Unit IV:

PHP with Mysql: Creating PHP Mysql Database, creating new table, putting data into new database, accessing Database in PHP, updating databases, PHP Creating Records, PHP Selecting Records, PHP Deleting Records.

Reference books:

1. Sams teach yourself PHP, MySQL and Apache : all in one by julie C.Meloni.
2. PHP: The Complete Reference by Steven Holzner.
3. Mastering PHP, WebTech Solutions, Khanna Publishing House.
4. Learning PHP, Ramesh Bangia, Khanna Publishing House.

List of Practical's

SR.NO	List of Practical's
1.	Create a PHP program to find odd or even number from given number.
2.	Write a PHP program to swap two numbers with and without using third variable.
3.	Write a PHP program to print Fibonacci series without using recursion and using recursion.
4.	Write a PHP Program to demonstrate the variable function: Gettype()
5.	Write a PHP Program to demonstrate the variable function: Settype()
6.	Write a PHP Program to demonstrate the variable function: isset()
7.	Write a PHP Program to demonstrate the variable function: unset()
8.	Give the example of variable function:strval()
9.	Give the example of variable function:floatval()
10.	Give the example of variable function:intval()
11.	Give the example of variable function: print_r()
12.	Give the example of variable function: var_dump()
13.	Give the example of string function: substr()
14.	Give the example of string function: strcmp()
15.	Give the example of string function: strpos()
16.	Write a PHP program that demonstrate form element(input elements).
17.	Write a PHP program that demonstrate passing variable using URL.
18.	Write a PHP program that demonstrate use of session.
19.	Write a program that demonstrate use of cookies.
20.	Write a PHP program to create a database using MySQL.
21.	Write a PHP program to drop a database using MySQL.
22.	Write a PHP program to create a table in MySQL.
23.	Write a PHP program to insert record into a table using MySQL.
24.	Write a PHP program to drop table using MySQL.
25.	Write a PHP program to update table
26.	Write a PHP program to select data and show into table format.
27.	Create a student Registration in PHP and Save and Display the student Records.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
Semester V
Paper – I
System Analysis & Software Engineering

NSQF : LEVEL – 7

JOB ROLE : SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	After completing this programme, participants will be able to: <ul style="list-style-type: none">• Contribute to the design of software products and applications Develop software code to specification.
Knowledge Description	To be competent, you must be able to: <ol style="list-style-type: none">1. Design basic programming structures to implement functionality in line with requirements defined in BRS/URS, SRS and HLD2. Check the understanding of the Business Requirements Specification (BRS)/User Requirements Specification (URS) with appropriate people3. Check the understanding of the Software Requirements Specification (SRS) with appropriate people4. Check their understanding of High Level Design (HLD) with appropriate people5. Review their designs with appropriate people & Analyse inputs from appropriate people to identify, resolve and record design defects and inform future designs6. Document designs using standard templates and tools Comply with organization's policies, procedures and guidelines when contributing to the design of software products and applications

UNIT - I:

Introduction: System, Types, Components of Computerized Information System, Systems Analysts: Duties, Role. SDLC.

Feasibility Study and Analysis: Identifying Problems, Organizing Feasibility Analysis, Feasibility Decision, Choice of a solution.

Data Collection: Interviews, Brain Storming, Questionnaires, Document Search, Observation.

Structured tools and techniques of Data analysis: Structured English, Decision Tables and Decision Trees, Data Flow Diagram, Data Dictionary.

Unit- II:

THE NATURE OF SOFTWARE: The Nature of Software , The Changing Nature of Software..

SOFTWARE ENGINEERING: Defining the Discipline, The Software Process, Software Engineering Practice, Software Development Myths.

PROCESS MODELS: Prescriptive Process Models, The Unified Process.

AGILE DEVELOPMENT: What is agility? Agility and the Cost of Change, What Is an Agile Process?, Extreme Programming.

Unit -III:

UNDERSTANDING REQUIREMENTS : Requirements Engineering, Developing Use case.

DESIGN CONCEPTS: Design within the Context of Software Engineering, Design Concepts, The Design Model.

ARCHITECTURAL DESIGN: Software Architecture, Architectural Genres, Architectural Styles.

COMPONENT-LEVEL DESIGN: What is a Component?, Designing Class-Based Components.

USER INTERFACE DESIGN : The Golden Rules, User Interface Analysis and Design.

QUALITY CONCEPTS: What Is Quality?, Software Quality.

Unit- IV:

SOFTWARE TESTING STRATEGIES: A Strategic Approach to Software Testing, Test Strategies for Conventional Software, Validation Testing, System Testing, The Art of Debugging.

TESTING CONVENTIONAL APPLICATIONS: Software Testing Fundamentals, Internal and External Views of Testing, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing .

SOFTWARE REENGINEERING: Reengineering, Business Process Reengineering, Reverse Engineering, The CMMI.

Reference books:

1. Software Engineering A Practitioner's Approach eighth edition by Roger Pressman and Bruce R. Maxim.
2. Information Systems Analysis, Design and Implementation by K. M. Hussain, Donna Hussain
[Tata McGraw-Hill Publishing Company Ltd, New Delhi]
3. Fundamentals of Software Engineering by Rajib Mall [PHI Publication]
4. Workbook on Systems Analysis & Design by V. Garg [PHI Publication]

List of Practical's

Sr. No.	List of Practical's
1.	Write note on Structured English.
2.	To buy a computer science book follow the steps and write the Structured English <ol style="list-style-type: none"> Pick out a desirable book. Take it to the sells counter. Pay cash for the book. Collect cash receipt. Collect the book and leave the store.
3.	Write note on decision table.
4.	Draw decision table for an insurance company uses the following rule to determine the eligibility of a driver for insurance. The driver will be insured if: <ol style="list-style-type: none"> The driver lives in the city with population less than 5000 and he is married man. The driver lives in the city with population less than 5000 and he is married and age is over 30 years old. The driver lives in the city with population is 5000 or more and it is married female. The driver is male over 30. The driver is married and under 30.
5.	Draw a decision table for a company with three people A, B, C whose share in the company are 50%, 20%, 30% sequentially. Any low arises in the company will be passed if it is supported by shareholders and whose shareholding exceed $\frac{2}{3}$ of the total shares.
6.	Study following conditions and draw a decision table <p>If product code=A And customer type=1 And the order amount\leq700 Then 5% discount allowed</p> <p>If product code=A And customer type=2 And the order amount\leq700 Then 7.5% discount allowed</p> <p>If product code=A And customer type=1 And the order amount\geq700 Then 7.5% discount allowed</p> <p>If product code=A And customer type=2 And the order amount$>$700 Then 10% discount allowed</p> <p>A flat discount of 5% on product code=B regardless of customer type and the order amount</p>
7.	Write note on Decision Tree.
	Draw a decision tree for policy followed by a company in giving discount to its customers as follows. <ol style="list-style-type: none"> If transaction is on credit and customer's record is good the order will be accepted but do not give any discount.

	<p>If customer's record is not good do not accept any order.</p> <p>2. If transaction is on cash and sells amount is more than 100 rupees discount will be given 20%.</p> <p>3. If transaction is on cash and sells amount is between 50 & 100 rupees than discount will be given 10%.</p> <p>4. If transaction is on cash and sells amount is less than 50 rupees, order is accepted but no discount will be made.</p>																																			
8.	<p>A Co-operating bank xyz granted loan under following conditions draw decision table and tree</p> <p>1. If a customer has a account with the bank and has no loan outstanding (no dues), loan will be granted.</p> <p>2. If a customer has an account is outstanding from previous loan, loan will be granted if special management approval is obtained.</p> <p>3. Reject loan application in all other cases.</p>																																			
9.	Write note on Data Flow Diagram (DFD)																																			
10.	Draw DFD for Food Ordering System.																																			
11.	Write note on Data Dictionary.																																			
12.	Develop Data dictionary for data element Employee code in dictionary																																			
13.	Calculate Overall risk exposure for the software reliability																																			
14.	<p>Write a program using html for implementing online banking system including</p> <p>i) Deposit Funds in Saving Account</p> <p>ii) Withdraw Funds from Saving Account</p>																																			
15.	Write a program using html for implementing online Hotel Management System.																																			
16.	Write a program using html for online Library Management System.																																			
17.	Design a Registration form for workshop on Computer Maintenance web designing(HTML)																																			
18.	<p>Create a decision table using MS-Excel</p> <table><tr><td>ACTIONS:</td><td></td><td></td><td></td><td></td></tr><tr><td>Serve cocktails</td><td></td><td>X</td><td>X</td><td>X</td></tr><tr><td>Charge for cocktails</td><td></td><td>X</td><td></td><td>X</td></tr><tr><td>CONDITIONS:</td><td></td><td></td><td></td><td></td></tr><tr><td>SeatsOccupied > SeatsCapacity / 2</td><td>n</td><td>y</td><td>y</td><td>y</td></tr><tr><td>FlightType = "domestic"</td><td>-</td><td>n</td><td>n</td><td>y</td></tr><tr><td>SeatCost > 350</td><td>-</td><td>n</td><td>y</td><td>-</td></tr></table>	ACTIONS:					Serve cocktails		X	X	X	Charge for cocktails		X		X	CONDITIONS:					SeatsOccupied > SeatsCapacity / 2	n	y	y	y	FlightType = "domestic"	-	n	n	y	SeatCost > 350	-	n	y	-
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19.	<p>Draw the following basic UML Class diagram Notation</p> <p>i. Class</p> <p>ii. Abstract class</p> <p>iii. Object</p> <p>iv. Inheritance (is-a) relationship</p> <p>v. Aggregation and Composition (has-a) relationship</p> <p>vi. Association (uses, interacts-with) relationship</p> <p>vii. Multiplicity in Aggregation, Composition, or Association</p>																																			
20.	Draw Use case diagram for order management system to show actors, use case and relationship																																			
21.	Draw basic UML Sequence Diagram Notation																																			
22.	Draw class diagram for order management system																																			
23.	Draw sequence diagram for order management system																																			

24.	Draw Activity Diagram for order management system
25.	Study system specifications and report the various bugs of ATM system
26.	Write the test cases for Banking application
27.	Study of Any Testing Tool (Win Runner)

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
(SEMESTER-V)
Paper – II
Java Programming

NSQF : LEVEL – 7

JOB ROLE : SOFTWARE DEVELOPER

Title	Details
Brief Job Role Description	After completing this programme, participants will be able to: <ul style="list-style-type: none">• Contribute to the design of software products and applications Develop software code to specification.
Knowledge Description	To be competent, you must be able to: <ol style="list-style-type: none">1. Design basic programming structures to implement functionality in line with requirements defined in BRS/URS, SRS and HLD2. Check the understanding of the Business Requirements Specification (BRS)/User Requirements Specification (URS) with appropriate people3. Check the understanding of the Software Requirements Specification (SRS) with appropriate people4. Check their understanding of High Level Design (HLD) with appropriate people5. Review their designs with appropriate people & Analyse inputs from appropriate people to identify, resolve and record design defects and inform future designs6. Document designs using standard templates and tools Comply with organization's policies, procedures and guidelines when contributing to the design of software products and applications

UNIT - I :

INTRODUCTION TO JAVA: Java history, Java features, Java environment. Java program structure, Java Tokens, Java Statements, Java virtual machine, Constants, Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting.

UNIT - II :

CLASS & OBJECTS: Defining a Class, field declaration, method declaration, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods.

INHERITANCE: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control.

INTERFACES : Defining interfaces, extending interfaces, implementing interfaces.

UNIT - III :

PACKAGES : Creating Packages, accessing & using a Packages , using System Package, adding a class to packages, hiding Classes.

EXCEPTION HANDLING AND MULTITHREADING: Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface, Types of error, exception handling techniques, using exception for Debugging.

UNIT - IV :

APPLETS: Introduction to Applets , how applets differ from application, writing an applet. Applets life cycle, creating an executable applet, designing a web page, running the applet, applet tags, adding applet to HTML file ,running the applet passing a parameter to applet, , Converting applet to application.

GRAPHIC PROGRAMMING: Introduction to AWT Package, Layout Managers, Handling events on AWT Component, Introduction to swing package, Components & Containers.

Reference Books:

1. Programming with Java a primer II edition by E. Balaguruswamy (Tata McGraw-Hill).
2. Java Programming (For absolute beginners) by Russell PHI.
3. Black Book on Java.
4. Java: A beginner's Guide by Herbert Schildt.
5. Java2- The Complete References by Herbert Schildt.

List of Practical's

Sr. No.	List of Practical's
1.	Write a program that declares a class, object and also it access the data member of it's class.
2.	Write an applet that accepts a value from the user and display it.
3.	Write a program that accept marks of 5 subject, calculate total, percentage and display the grade according to their percentage.
4.	Write a program that will print the multiplication table from 1 to 10.
5.	Write an program to accept a set of values from the user into an array, display the values as well as their average.
6.	Accept string into a text field, sort the characters in the string and display the sorted string in another text field.
7.	Write a program to demonstrate the overloading & constructor.
8.	Write an applet that accepts two numbers from the user and display all the numbers between them.
9.	Write a program to demonstrate the single inheritance.
10.	Write an applet to accept ten numbers into array sort the array and display the sorted array. Accept the ten numbers into the ten different text fields.
11.	Write a program to create a multiple selection list and also display the list of items selected by the user.
12.	Write an applet to demonstrate the user menu Bar.
	Write a sample program that will convert the applet to application.
13.	Write a program to demonstrate the Interfaces.
14.	Write a program for exception handling that accept two no as textfields, the values are added & their sum is displayed. The code traps the error when user could enter text instead of an numbers.
15.	Write a program that would accept it input for the user & store it in a file called Test. java.
16.	Write a program to implement graphic class draw (line, rectangle, fill rectangle, Circle, oval).
17.	Write an applet that display a choice menu of three buttons (Add, Modify, Delete) selecting a choice from the menu should display the appropriate button Use the show () method of the layout Manager.
18.	Write a java program to read & display the information from the file ABC. dat.
19.	Write a program to implement the concept of loading & displaying images.
20.	Write a program to demonstrate the Animation in Java.

Bachelor of Vocation (B. Voc)
Skill Development Component
Software Development
SEMESTER-VI

IT Integrated Industry Based Project

❖ Project Work

❖ Project Seminar
