Department of Information Technology

Gist of lectures as per syllabus

Session 2017 – 2018

Honors Paper CC2 - PROGRAMMING IN C

KANCHAN BALA

Asst. Professor, Department of I.T

Topic 1: C language fundamentals

Every language has a reason to evolution from its predecessor language and the person who developed with the requirement at that time. C is procedural language with Keywords, Identifiers, Constants, data types etc.

Topic 2: Control Statements and Loop

Decision making gives optionson given situation by end user with the help of if, if…else, if…else if ….else, switch case in C. Repetition certain statements can be done by either entry controlled or exit controlled loop depend on the requirements.

Topic 3:Arrays and Functions

Matrices are not only used in mathematics but also if we entered any information in tabular format are matrices. Array in C give the option to solve and store, retrieve data in single and multiple dimension array. Repeating certain statements in thousand lines of coding will increase redundancy, to minimize this and efficiently call that statements we use functions.

Topic 4: File Management

Reading n numbers of input from a file and storing n numbers of output, we use file management.

Department of Information Technology

Gist of lectures as per syllabus

Session 2017 – 2018

Honors Paper CC3 – DIGITAL ELECTRONICS

Topic 1: Binary Systems

Each digital device store data in binary forms (1s and 0s). The most commonly used number system, called base-ten, uses ten digits: 0-9. By comparison, the binary number system, or base-two, is a counting technique that uses two digits: 0 and 1.Hexadecimal and Octal representation is also there. Number Conversion, Complements, Signed number etc.

Topic 2: Boolean algebra and Logic Gates

Boolean algebra is used to minimize the expression. Logic gate is the circuit or component which take digital inputs and depending on the nature (truth table) produces output. It is elementary building block of digital circuit. Most logic gates (except Inverter) have two input and one output terminal.

Topic 3: Gate - Level Minimization

We use K-Map for level minimization. A Karnaugh map (K-map) is a pictorial method used to minimize Boolean expressions without having to use Boolean algebra theorems and equation manipulations. A K-map can be thought of as a special version of a truth table.

Topic 4: Combinational Logic

In digital circuit theory, combinational logic is a type of digital logic which is implemented by Boolean circuits, where the output is a pure function of the present input only. Combinational logic is used in computer circuits to perform Boolean algebra on input signals and on stored data.

**Topic 5: Memory and Programmable Logic**

There are two types of memory in digital systems: RAM and ROM.

Programmable logic device may have hundreds to millions of gates interconnected through hundreds to thousands of internal paths.

Department of Information Technology

Gist of lectures as per syllabus

Session 2017 – 2018

Honors Paper V - Networking &Data Communication

Topic 1:Network concept

Every day we are not sharing data, image, video etc not only in our city but also in states and other countries, it’s possible only because of network, which now become our daily necessity.

Topic 2: Introduction to OSI and TCP/IP

OSI model which was the base of protocol to communication in the world helps to develop TCP/IP protocol, through which we are able to send and receive the data.

Topic 3: Data transmission

Data transmitted to the medium either in analog or digital signal depend on medium the data is converted to analog to digital or digital to analog.

Topic 4: Guided transmission media

There are basically three guided medium: twisted pair –signals in electrical form, co-axial cable-signals in electrical form and optical fiber-signals in optical form.

In wired network, these are the mediums through which data is transmitted.

Topic 5: Data link control

It is a layer between physical and network layer. This layer is responsible to provide flow control in which data send from source to destination in sucha way that it does not overwhelms the destination and provides error control which detect and correct errors.

Topic 6: Multiplexing

Multiplexing is a concept through which channel capacity is utilized so that more signals can pass through that channel and demultiplxed as required.

Topic 7:Switching Network

Switching is process to forward packets coming in from one port to a port leading towards the destination. There are three techniques – Circuit switch, Packet switch and Message switch.

Topic 8: Network Security

Today with we are moving towards digitization, we are more focused on security of our data which is done through encryption and digital signature.

Topic 9: XML

Extended Markup Language(XML) is used toparse the data and through Document Type Defination (DTD) describe the structure of XML are defined so that validation of XML is done while creating XML file.

Topic 10: CSS

Cascading Style Sheet is used to design the documents like color, font-size, width, height etc which is always need while making web pages.

Topic 11: XSLT

It is a language for transforming XML documents into other XML documents, or other formats such as HTML for web pages, plain text

Department of Information Technology

Gist of lectures as per syllabus

Session 2017 – 2018

Honors Paper VIII - Programming in Visual Basic

Topic 1: Visual Basic IDE

Visual Basic Integrated Development Environment provides toolbox, toolbar, menubar, project explorer, immediate window etc which help in developing Visual Basic Applications.

Topic 2: programming the command buttons

We generally put events on button click, double click etc. through which some specified action can be performed.

Topic 3:Variables & their types

Similar with other languages, Visual Basic has data types like integer, double string, boolean and variantetc .we declare variable in VB using keyword dim as dimension. Example: dim num as Integer

Topic 5: Scope & lifetime of a variable

Variable scope in VB can be local that means within a subroutine, if we declare a variable in general section then it would be global for that particular form and if we want global variable that is visible to all forms then it should be declare in module.

Topic 6: subroutines, functions& array

Subroutine and function is similar but there is a difference that subroutine never returns a value but function may or may not return. Array is a collection of similar elements.

Topic 7: Control flow& Loop statements

There is similar control statement like if, if then…else, if then…elseif then…else with different syntax and loop statements in VB are while….wend, do….while, for…next etc.

Topic 9: Forms

Visual Basic is popular for design quick and attractive user interface. There is toolbox consist of many objects or controls like command button, text box, list box etc and we can design Multiple Document Interface (MDI) similar as MS Word and Power point.

Topic 10: OLE

Object Link Embedding (OLE) is used to embed other applications like MS-Word, Power point, pdf, paint etc to our VB application.Drag and drop events can also be triggered through OLE.

Topic 11: Database programming

Visual Basic application is connected with backend like SQL, Ms-Access etc.

There are interfaces like ADO, DAO and RDO which connects VB and database.

We can connect our application through ADODB, ADODC etc with the help of reference variable Connection, RecordSet etc.

Topic 12:Windows API

It is an extensive set of functions, messages and structures that allow programmers to build applications that run on the windows platform.

Department of Information Technology

Gist of lectures as per syllabus

Session 2017 – 2018

Honors Paper X - JAVA Programming

**Topic 1:Introduction to JAVA and jdk tools**

Java is more powerful object oriented programming to develop many applications as we use today like JioTv, irctc sites with jdk tools.

**Topic 2: Data types Variable naming conventions &Type conversion**

Data types in java are similar as of C++ including String as data type and having reserved keywords as well as naming conventions. Type conversion like implicit and explicit is there.

**Topic 3: Decision constructs, Looping construct and Arrays.**

There is decision constructs like if, if…else, switch case for taking decisions.do… while, while, for and for each loop is there in JAVA language for repeating set of statements. Array is declared with keyword new in JAVA.

**Topic 4: Classes and objects**

Java is object oriented programming language so that classes belong to group similar behavior and characteristics and object is instance of a class. Two objects are similar when state of objects is same.

**Topic 5: Access Specifiers**

Java has four access specifiers. Default access specifier allow variables and methods accessible within a package. Public access specifier allow variables and methods to access within and outside the package. Private access specifier allow variables and methods accessible within a class in which they are declared and Protected access specifier allow variables and methods accessible within and outside the package but only to those class which extends that class.

**Topic 6: Applets**

An Applet class does not have any main() method. It is viewed using JVM. The JVM can use either a plug-in of the Web browser or a separate runtime environment to run an applet application.

**Topic 7:Introduction to threads**

A thread is an independent path of execution within a program. Manythreads can run concurrently within a program. Example, browsers tabs are the best example of thread. Threads are light weighted because they share the same memory space.

**Topic 8:Packages**

Packages in JAVA are in two form, first one is built in packages like java.io.\*, java.util.\*, java.lang.\* etc and second one is user defined package, here we can make our own package compile it and import in any classes.

**Topic 9: Data base connectivity**

Like other languages, Java application is also connected with database like mysql, sql and MS-Access etc using Java Database Connectivity (JDBC) application programming interface. Java is a rich of API.

**Topic 10: Collection Framework**

Collection framework provides data structure in java with List, Set and Map interfaces. If we talk about core java then collection is integral part of it.