

Dawood Public School
Course Outline 2015-16
Computer Science
Class XI

Study Guide

Text book: Computer Course book by Chris Lead better

Reference Book: Cambridge IG CSE Computer Science by David Watson and Helen Williams

Web links: www.teach-ict.com

August	1.3.2 Computer Architecture 1.3.3 Instruction cycle 1.5 Computer Ethics Revision: 2.2.1 Problem solving and programming concepts
September	1.3.4 Input devices 1.3.5 Output devices 1.3.6 Storage devices Revision: 2.2.2 Arrays
October	Revision: 1.1.1 Binary data Revision: 1.1.2 Hexadecimal data Revision: 1.1.3 Data formats Revision: 2.2.2 Arrays
November	Revision: 1.3.1 Logic gates Revision: 1.3.2 Computer Architecture Revision: 1.3.3 Instruction cycle Revision: 1.4 Internet Security Revision: 2.2.1 Problem solving and programming
December	MID YEAR EXAM
January	Revision: 1.2.1 Serial and Parallel data transmission Revision: 1.2.2 Data security Revision: 1.2.3 Internet principles of operation Revision: 2.2.2 Arrays
February	Revision: 1.1.1 Binary Data Revision: 1.1.2 Hexadecimal Revision: 1.1.3 Data formats Revision 1.4 Internet security Revision 1.5 Ethics Revision: 2.1 Problem solving and programming Revision 2.2 Programming concepts 2.3 Database
March	MOCK EXAM

Month-Wise Distribution of Topics

August

1.3.2 Computer Architecture

1.3.3 Instruction cycle

1.5 Computer Ethics

Revision: 2.2.1 Problem solving and programming concepts

Contents	Activities or Learning resources
<p><u>COMPUTER ARCHITECTURE AND THE FETCH EXECUTE CYCLE:</u></p> <ul style="list-style-type: none"> ▪ Show understanding of the basic VonNeumann model for a computer system and the stored program concept. ▪ Describe the stages of the fetch-execute cycle. <p><u>COMPUTER ETHICS</u></p> <ul style="list-style-type: none"> ▪ Show understanding of ethical issues raised by the spread of electronic communication and computer systems including hacking ,cracking and production of malware ▪ Understand copyright and plagiarism issues ▪ Distinguish between software, freeware and shareware <p>Understand the implications and ways of preventing each issue</p> <p><u>REVISION OF PROBLEM-SOLVING AND PROGRAMMING CONCEPTS</u></p>	<p><u>Online quiz Activity:</u></p> <p>http://quizlet.co/subject/computer-ethics/</p>

September:

1.3.4 Input devices

1.3.5 Output devices

1.3.6 Storage devices

Revision: 2.2.2 Arrays

Contents	Activities or Learning resources
<p><u>INPUT DEVICES</u></p> <ul style="list-style-type: none"> ▪ Describe the principles of operation of a range of input devices including; scanners, barcode readers, digital cameras, keyboards, mice, touch screens, microphones. ▪ Describe how these principles are applied to real-life scenarios, ▪ Describe how a range of sensors can be used to input data into a computer system, including light, temperature, magnetic field, gas, pressure, moisture, humidity, pH/acidity/alkalinity and motion/infra-red. <p>Describe how these sensors are used in real-life scenarios</p> <p><u>OUTPUT DEVICES</u></p> <ul style="list-style-type: none"> ▪ Describe the principles of operation of a range of output devices, including: inkjet, laser and 3D printers; 2D and 3D cutters; speakers and headphones; actuators; flat-panel display 	<p><u>Book Reference:</u> Unit#11,Pg 274 (from Chris Leadbetter)</p> <p><u>Resource:</u> A handout based on the questions from past exams will be shared with the students.</p> <p><u>Book Reference:</u> ‘Unit# 3-Hardware’ Pg49-70</p> <p><u>Book Reference:</u> ‘Unit# 3-Hardware’ Pg71-78</p>

<p>screens.</p> <p>STORAGE DEVICES</p> <ul style="list-style-type: none"> ▪ Show understanding of the difference between: primary, secondary and off-line storage. ▪ Describe the principles of operation of a range of types of storage devices and media including magnetic, optical and solid state. ▪ Describe how these principles are applied to currently available storage solutions, such as SSDs, hard disk drives, USB flash memory, DVDs, CDs and Blu-ray. <p>Calculate the storage requirement of a file.</p> <p>REVISION OF ARRAYS</p>	<p><u>Book Reference:</u> 'Unit# 3-Hardware' Pg79-88</p>
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October:

Revision: 1.1.1 Binary data

Revision: 1.1.2 Hexadecimal data

Revision: 1.1.3 Data formats

Revision: 2.2.2 Arrays

Contents	Activities or Learning resources
<p><u>BINARY AND HEXADECIMAL NOTATION</u></p> <ul style="list-style-type: none"> ▪ Perform conversions of binary and hexadecimal number to and from denary system ▪ Identify the use of Hexadecimal in representing colors in HTML, MAC address. ▪ Explain the use of binary notation for IP addressing of resources. <p><u>DATA FORMATS</u></p> <ul style="list-style-type: none"> ▪ Identify common file standards: JPG, GIF, PDF, MP3, MPEG, and MIDI. ▪ Understand the ways to detect and then correct errors: Parity check, check digits, checksums, ARQ(Automatic Repeat Request) ▪ Lossless and lossy compression applied to music/video, photos, and text files ▪ Differentiate between lossless & lossy compression <p><u>ARRAYS</u></p> <ul style="list-style-type: none"> ▪ Declare and initialize arrays ▪ Read values into arrays. Calculate average, highest and lowest value from an array 	<p><u>For Practice:</u> Past paper questions on Binary data: Q15: 7010_s12_qp_11 Q11:7010_w11_qp_11</p> <p>Practice questions to convert to and from GB,MB,KB</p> <p><u>Book Reference:</u> Unit 2</p>

November

Revision: 1.3.1 Logic gates

Revision: 1.3.2 Computer Architecture

Revision: 1.3.3 Instruction cycle

Revision: 1.4 Internet security

Revision: 2.2.1 Problem solving and programming

Contents

LOGIC GATES

- Use logic gates to create electronic circuits.
- Understand and define the functions of NOT, AND, OR, NAND, NOR and XOR (EOR) gates, including the binary output produced from all the possible binary inputs.
- Draw truth tables and recognize a logic gate from its truth table.
- Produce truth tables for given logic circuits.
- Produce a logic circuit to solve a given problem

COMPUTER ARCHITECTURE AND THE FETCH EXECUTE CYCLE:

- Show understanding of the basic VonNeumann model for a computer system and the stored program concept.
- Describe the stages of the fetch-execute cycle.

INTERNET SECURITY

- Learn safety measures that must be taken in order to keep data safe from malicious actions(including unauthorized viewing ,deleting, copying and corruption)
- Use of anti-virus and other protection software to keep data secure.
 - ✓ Use of passwords(both entered at a keyboard and biometric)
 - ✓ Use of Firewalls(both software and hardware including proxy servers)
 - ✓ Use of Secure Socket Layer(SSL)
- Understand the need to keep system safe from service attacks, phishing, pharming

Use of symmetric encryption

- Know the ways for symmetric encryption
Plain text, Cipher text

- Understanding of the need to keep online systems safe:
 - Denial of service attacks (DoS)
 - Phishing
 - Pharming

PROBLEM SOLVING AND PROGRAMMING

- Top-down design approach
- Definition ,purpose and testing of Algorithms
- Use of standard methods of solution.
- Application of suitable test data and know the basic data types: String,

Activities or Learning resources

Book Reference: Unit#11,Pg 274 (from Chris Leadbetter)

Game Activity: CIA code-breaking game:

<https://www.cia.gov/kids-page/games/break-the-code/code-1.html>

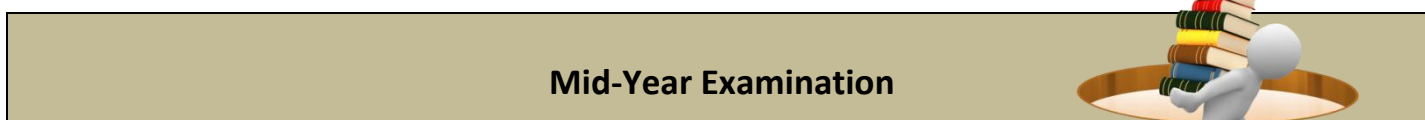
Notes on Encryption:

www.O_Levelict.info/theory/4/secure/index.html



<p>Integer, and Character and Boolean.</p> <ul style="list-style-type: none"> ▪ Explain and apply test data: Normal data. Abnormal and extreme data. ▪ Identify errors in given algorithms and suggest ways of removing these errors. ▪ Dry running of Pseudocodes/flowcharts using trace tables ▪ Understand the need for validation and verification checks: Range check, Length check/Limit check, type check (character, numeric, alphanumeric) Consistency, Format, Presence/Uniqueness, check digits. ▪ Produce an algorithm for a given problem ▪ Comment on the effectiveness of solution 	
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December



January

Revision: 1.2.1 Serial and Parallel data transmission

Revision: 1.2.2 Data security

Revision: 1.2.3 Internet principles of operation

Revision: 2.2.2 Arrays

<p>Contents</p> <ul style="list-style-type: none"> ▪ Understand the concept of transmission of data: serial and parallel ▪ Differentiate between serial and parallel data transmission ▪ Reason for choosing and current uses of serial and parallel data transmission such as Integrated Circuit (IC) and Universal Serial Bus(USB) <p>Error detection techniques</p> <ul style="list-style-type: none"> ▪ Know the need to check for errors. ▪ Use of parity bit <ul style="list-style-type: none"> ▪ Identify the effects of Internet threats; viruses, worms, hacking, spyware. ▪ Define the terms: Network, types of networks (WAN, MAN, LAN), Communication ways & resources shared over the network. ▪ Examination of browser screen to identify key components: comparison of two or more browsers ▪ Explain the need for IP addressing of resources on the Internet ▪ Role of DNS server, MAC address; cookies. ▪ Distinguish between HTML structure and presentation 	<p>Activities or Learning resources</p> <p><u>Making Charts:</u> Make a chart to discuss the pros and cons of serial and parallel data transmission</p> <p><u>Practice Worksheet:</u> A worksheet will be given to the students to work out the parity bit settings during transmission of data.</p>
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Explain the importance of HTML and its derivatives as a standard for the creation of WebPages

ARRAYS

- Declare and initialize arrays
- Read values into arrays. Calculate average, highest and lowest value from an array

February

Revision: 1.1 Binary Data

Revision: 1.2 Hexadecimal

Revision: 1.3 Data formats

Revision: 1.4 Internet security

Revision: 1.5 Ethics

Revision: 2.1 Problem solving and programming

Revision: 2.2 Programming concepts

Revision: 2.3 Databases

Contents

Revision will be done through tests and practicing

March

Mock Exams

