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SUBJECT: DATA PROCESSING **2ND TERM** **CLASS: SSS2**

SCHEME OF WORK

WEEK S	**TOPICS**
1.	REVIEW OF FIRST TERM
2.	COMPUTER DATA CONVERSION
3.	CONCEPT OF COMPUTER FILES
4.	HANDLING COMPUTER FILES
5.	WORD PROCESSING 2
6	SYSTEM DEVELOPMENT CYCLE 1
7.	SYSTEM DEVELOPMENT CYCLE 2
8.	PROGRAM DEVELOPMENT
9.	ALGORITHMS AND FLOW CHART
10.	INTRODUCTION TO BASIC PROGRAMMING
11.	REVISION
12	EXAMINATION

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WEEK 2 **Date……..**

COMPUTER DATA CONVERSION

Register

This is a special high-speed storage area within the CPU. All data must be represented in a register before it can be processed, for example, if two numbers are to be multiplied, both numbers must be in registers, and the result must be placed in register. (The register can contain the address of a memory location where data is stored rather than the actual data itself.)

Address

An address is used to reference a storage location in main memory. You can think of computer memory as an array of storage boxes, each of them has an address (a unique number) assigned to it.

Bus

A collection of wires through which data is transmitted from one part of a computer to another. You can think of a bus as a highway on which data travels within a computer. When used in reference to personal computers, the term bus usually refers to internal bus. This is a bus that connects all the internal computer components to the CPU and main memory

Types of Registers

The types of registers are Memory data register (MDR) and Current instruction Register (CIR)

The types of registers can be explained better by their functions.

MDR

- The memory data register is used to hold data or the memory address that contains either the next piece of data or an instruction that is to be used.
- The memory data register acts like a buffer and holds data that is transferred from the memory to the processor.
- The memory data register is used whenever data is being transferred between central processing unit and main memory.

CIR

- Current instruction register is the register, usually in the control unit, that contains the instruction that is being executed by the CPU.

- The CIR stores the instruction currently being executed. In simple processors each instruction to be executed is loaded into the instruction register which holds it while it is decoded, prepared and ultimately executed.

Differences between Register and Main Memory:

Factor considered: storage, speed, storage capacity and relative cost.

Storage devices	Speed	Storage capacity	Relative cost
Register	Fast	Very low	Very high
Main memory	Very fast	Low and moderate	High speed

DATA-FETCH-EXECUTE CYCLE

Fetch execute cycle is the very basic way a computer works. All commands are executed through the running of this cycle. The cycle itself has very few commands, however when linked up together it is possible to create a large program, or even an operating system.

The cycle contains 3 main parts

1. Fetch the instruction
2. Decode the instruction
3. Execute the instruction

OPERATING PROCEDURE OF COMPUTER DATA PROCESSING

Data processing consists of all activities which are necessary to transform data into information.

Computer data processing is grouped under five basic categories as shown below;

CONVERSION

MANIPULATION

STORAGE

COMMUNICATION

The following are factors affecting Speed of Data Transfer

i. Bus Speed
ii. Bus Width
iii. Medium of Storage
iv. Data transfer medium

Evaluation

1. Define the following;

i. Register
ii. Bus
iii. Address

2. List and explain types of register

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 85 - 88.

WEEK ONE (1) WEEKEND ASSIGNMENT

OBJECTIVE

1. A collection of wires through which data is transmitted from one part of a computer to another is known as _____
   A. Address B. Bus C. Register

2. Computer data processing is grouped into the following EXCEPT one.
   A. Conversion B. Manipulation C. Register
3. The following are types of register EXCEPT _____
   A. CMR B. CIR C. MDR
4. _____ register acts like a buffer and holds data that is transferred from the memory to the processor.
   A. MDR B. CIR C. CPU
5. All data must be represented in a register before it can be processed.
   A. TRUE B. FALSE

THEORY

1. State two differences between register and main memory.

2. List and explain the factors affecting speed of data transfer.

WEEK 2 **Date……..**

CONCEPT OF COMPUTER FILES

Computer files: Computer files are the most basic unit of data that users can store on a disk. Every program, image, video, song employee numbers, a 3-digit, and document is stored as a file

Record: A record is a collection of related data items or fields. Each record normally corresponds to a specific unit of information. For example, employee number, employee's name, basic salary and house rent allowance.

Field: Data items are physically arranged as fields in a computer file. Their length may be fixed or variable. Since all individuals have 3 digits field is required to store the particular data. Hence, it is a fixed field. In contrast, since customer's name varies considerably from one customer to another, a variable amount of space must be available to store this element. This can be called variable field.

Data item: Data item is the smallest unit of information stored in computer file. It is a single element used to represent a fact such as an employee's name, item price and so on.

TYPES OF DATA ITEMS

Numeric: this type of data item consists of numbers 0-9.

Alphabet: this type of data item consists of letters A-Z.

Alphanumeric: also known as alphameric is a combination of alphabetic and numeric characters, and is used to describe the collection of Latin letters and Arabic digits or a text construct from this collection. There are either 36 (single case) or 62(case-sensitive) alphanumeric characters. The alphanumeric character set consists of the numbers 0-9 and letters A-Z.

File structure:

Data
Field
Record
file

Data: a data item is the smallest unit of information stored in computer file.

Field: is a collection of related items.

Record: is a collection of related fields.

File: the collection of records is called a file

Types of file organization method

Serial: A serial file is one which the records have been stored in the order in which they have arisen. They have not been sorted into any particular order. An example of a serial file is an unsorted transaction file. A shopping list is an example of a non-computerized serial file. Serial files can be stored on tape, disc or in memory. Sequential: in sequential file organization, records are organized in the sequence by which they were added. A sequential file contains records organized in the order they were entered. The order of the records is fixed. The records are stored and sorted in physical, contiguous blocks within each block the records are in sequence. Records in these files can only be read or written sequentially.

Indexed: An indexed file organization contains reference numbers, like employee numbers, that identify a record in relation to other records. These references are called the primary keys that are unique to a particular record. Alternate keys can also be defined to allow alternate methods of accessing the record. For example, instead of accessing an employee's record using employee numbers, you can use an alternate key that reference employees by departments. This allows greater flexibility for users to randomly search through thousands of records in a file. However, it employs complex programming in order to be implemented.

Random file: This is the file organized via an index. Also called a "direct file" or "direct access file,'' it enables quick access to specific records or other elements within the file rather than having to read the file sequentially. The index points to a specific location within the file, and the file is read from the that point.

Methods of accessing files:

Serial files: To access a serially organized file is serially.

Sequential files: the method of access used is still serial but of course the files are now in sequence, and for this reason the term sequential is often used in describing serial access of a sequential tape file. It is important to note that to process (e.g. update) a sequential master tape file, the transaction file must also be in the sequence of the master file. Access is achieved by first reading the transaction file and then reading master file until the matching record (using the record keys) is found. Note therefore that if the record required is the twentieth record on the file, in order to get it into storage to process it the computer will first have to read in all nineteen proceeding records.

Random files: Generally speaking the method of accessing random files is RANDOM. The transaction record keys will be put through the same mathematical formula as were the keys of the master records, thus creating the appropriate bucket address. The transactions in random order are then processed against the master file, the bucket address providing the address of the record required.

Computer files classification:

Master file: there are files of a fairly permanent nature, e.g. customer ledger, payroll, inventory, and so on. A feature to know is the regular updating of these files to show a current position. For example,

customer's order will be processed, increasing the "balance owing "figure on a customer ledger record. It is seen therefore that master records will contain both data of a static nature, e.g. a customer name, address, and data that, by its nature will change each time a transaction occurs, e.g. the" balance" figure already mentioned.

Transaction file: This is also known as movement file. This is made up of various transactions created from the source documents. In a sales ledger application the file will contain all the orders received at a particular time. This file will be used to update the master file. As soon as it had been used for this purpose it is no longer required. It will therefore have a very short life, because it will be replace by a file containing the next batch of orders.

Reference files: A file with a reasonable amount of permanency. Examples of data used for reference purposes are price lists, tables of rates of pay, names and addresses.

Criteria for classifying computer files: Criteria for classifying computer files are:

- By nature of content: it refers to the nature of file content.
- By organization method: it refers to the way files are arranged e.g. . Serial, sequential, random and so on.
- By storage medium: it refers to storage devices in which a file's' could only be stored such as magnetic or optical disk and magnetic tape and so on.

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 89 - 91.

EVALUATION

1. Define the following terms;
   i. Computer files
   ii. Record
   iii. Field
   iv. Data Item
2. Explain the classification of computer file.

WEEK TWO (2) WEEKEND ASSIGNMENT

OBJECTIVE

1. One of the following are NOT a computer file classification
   a. Reference file b. Random file c. Master file d. Transaction file
2. _____ is a collection of related fields
   a. Data b. Field c. Record d. file
3. The smallest unit of information stored in computer file is called _____
   a. Files b. Data item c. Record d. Indexed

4. The following are types of file organization method EXCEPT _____
   a. Serial b. Sequential c. Transaction d. Indexed
5. A file with reasonable amount of permanency is known as_____ file.
   a. Reference files b. Master file c. Transaction file d. serial file

THEORY

1. State the criteria for classifying computer files.
1b Draw a sample of file structure
2. List and explain the different method of accessing files.
2b List and explain types of file organization method.

WEEK 3 **Date……..**

HANDLING COMPUTER FILES

BASIC OPERATIONS OF COMPUTER FILES:

Create: Creating a file with a given name.

Delete: Deleting a file that are unwanted.

Retrieve: Retrieving a stored file or lost file.

Copy: Copying a created file to either an external or in-built storage device.

View: Viewing a created file or granting privilege of viewing.

Open: Opening a file to use its contents.

Update: Reading or updating the contents.

Close: Closing the file, thereby losing access until it is opened again.

STEPS IN CREATING SEQUENTIAL FILE:

The OPEN statement is used in writing information to a file. In general, the open statement follows this pattern;

OPEN file FOR OUTPUT AS 1

The file determine the filename to use

The FOR portion indicates how the file will be accessed or operated; it may be APPEND, BINARY, INPUT, OUTPUT, and RANDOM

The AS is the identifier used for the file handle in question.

The following opens a file, using mode OUTPUT and number 1, and then saves the text.

```
10      CLS
20      OPEN "textfile.dat" FOR OUTPUT AS 1
30      PRINT 1, "Hello World"
40      CLOSE 1
50      END
```

CODE

The combination of all these records forms a file. Thus, a file is a group of related records.

To facilitate the retrieval of specific records from a file, at least one field in each record is chosen as record key. Usually, the key is unique to every record to avoid duplication of records in a file.

BASIC File Processing statement to read and display files

The table below would be used in a BASIC program. The table would be stored in a file named "EXAMFILE.TXT" the content would be retrieved from the file and output to the screen

	MATHEMATICS	**ENGLISH**	**TOTAL SCORE**
01234	50	90	140
01235	70	40	110
01236	80	70	150

Example

```
10      CLS
20      OPEN "EXAMFILE.TXT" FOR INPUT AS 1
30      PRINT 1 "MATRIC NO.        MATHS        ENG. LANG
        TOTAL SCORE"
40      PRINT 1 "   0001          50           90          140"
50      PRINT 1 "   0002          70           40          110"
60      PRINT 1 "   0003          80           70          150"
```

```
70      CLOSE 1
80      OPEN "EXAMFILE.TXT" FOR OUTPUT AS 1
90      DO WHILE NOT EOF(1)
100     INPUT 1, test
110     PRINT test
120     LOOP
130     CLOSE 1
140     END
```

Note that Free-File function is used to determine the next available file handle to be used in the OPEN statement. However, in a bigger project that uses many files, Free-file ensures that there is no conflicting File Handles used. It's a good practice to use it whenever you're not sure of the number of files your program might need to open.

- OPEN "Examfile.txt" for output AS #File Number
  This is the line that does the physical opening of file and assigns it #FileNumber as its file handle. The 'FOR INPUT' part tells QuickBASIC that you want to open the file in Read mode as you'll be reading the contents of the file later in the example.
  Next is the loop indicate by the DO WHILE NOT EOF (FileNumber) line. In QuickBASIC EOF () means End Of File. There is also BOF () for Beginning of File and LOF () for Length of File Since you can't go backwards on a sequential file, you won't need BOF () at all.
- The first line Gets a line of data

DESCRIBE FILE INSECURITY

Computer file insecurity refers to the concept that a computer system is vulnerable to attack, and that this fact creates a constant battle between those looking to improve security, and those looking to circumvent security.

EFFECT OF INSECIRITY OF FILE

Data loss refers to the unforeseen loss of data or information. An occurrence of data loss can be called Data Loss Event and there are several possible root causes. Backup and recovery schemes are developed to restore lost data.

Overwriting is a process of writing a binary set of data on a memory. Overwriting generally occurs when unused file system clusters are written upon with new data. In simple terms, it writes over the previous data.

METHODS FOR FILES SECURITY

Backup

Backup or the process of backing up a file refers to making copies of files so that these additional copies may be used to restore the original after the data loss event.

Backup has two distinct purposes. The primary purpose is to recover data as a reaction to data loss, be it by data deletion or corrupted data. The secondary purpose of backups it is recover data from historical period of time within the constraints of a user-defined data retention policy.

Antivirus

An anti-virus program protects a computer file from malicious virus attack, detects and heals files that have been attacked. Usually it consists of a firewall, a virus scanner and remover and sometimes other tools as well.

Password

It is a chosen secret string of characters that allows access to a computer, interface, files etc. The use of password is at user's discretion and caution must be exercised by the user to remember the password always.

Differences between computer files and manual files

Manual is using old method without the help of the technology or maybe less to perform certain task or work while; computerized file system is using latest technology of ICT to carry out various tasks that is more effective when compared with manual system in terms of the productivity and time usage.

EVALUATION

1. State three advantages of computer files over manual files
   b. State five limitation of computerize file system
2. List five operation that can be performed

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 92 - 95.

WEEK THREE (3) WEEKEND ASSIGNMENT

OBJECTIVE

1. _____ refers to the unforeseen loss of data or information.
   a. Backup b. Data loss c. Overwriting d. Antivirus
2. _____ is the process of making copies of files, so that the additional copies may be used to restore the original after data loss event.
   a. Manipulating b. Data Loss Event c. Backup d. Duplication
3. An occurrence of data loss can be called _____
   a. Data Loss Event b. Data Loss Occurrence c. Data Loss Show d. Data Loss occasion
4. The following are limitations of computerized file system EXCEPT one.
   a. Vulnerable to virus attacks b. Incompatible data file c. Cheap to set it up d. Data are often duplicated
5. The following are advantages of computer files over manual files EXCEPT one
   a. Slow and inefficient in processing of information b. Accurate information and faster decision making c. Takes less space d. More timely information can be produced

THEORY

1. Outline steps to be taken when creating a sequential file
2. List and explain the three methods for files security

WEEK 4 **Date……..**

WORD PROCESSING 2

What is word processing?

Word processing is the use of computer software to create, edit. View, store, retrieve and print text documents. A text document is a written communication like letters reports, memo and so on. The software that is used for word processing is called a word processor.

Examples of word processors

Microsoft word

WordStar

WordPerfect

Word pro

Corel WordPerfect

Lotus notes

Perfect writer

MultiMate advantage

Professional write

Word processors are used in place of typewriters because of the quality of outputs, ability to replicate copies without having to retype or photocopies.

Application areas of word Processing

Word processing is used in the following areas:

In offices

In publishing

In journalism

In education

For writing articles

Version:

Microsoft Word Versions: MS office 2000, 2003, 2007, 2010.

Facilities available in a word processor:

Typing document

Editing document

Storing or saving documents

Move, copy and paste

Insert, remove words, sentences, paragraph etc.

Type, using different fonts types and sizes.

Editing features of a word processor

Editing features in MS word include:

Copy, cut and paste

Format painter

Find and replace

Goto

Spelling and grammar

Thesaurus

Word count

Copy, cut and paste

You can use word's cut feature to remove information from a document. You can use the **Paste** feature to place the information you cut anywhere in the same or another document. In other words, you can move information from one place in a document to another in the same or different document by using the **Cut** and **Paste** features. The office clipboard is a temporary storage area where copied and cut files are kept. When you copy or cut, word stores the data you copied/cut on the Clipboard. You can paste the information that is stored on the Clipboard as often as you like. When you copy/cut a document, the copied/cut data can be pasted into a new location.

Copying a document

Copying a document or portion of a document means duplicating the document. The original document will still remain while the duplicate of it will be found in a new location. To copy a document five major methods are involved and they are:

Shortcut method

Keyboard method

Drag and drop method

Ribbon bar method

Right click mouse method

Shortcut method

Highlight the portion of a document to be copied

Right-click on the highlighted text

Select Copy

Position the insertion point in a new location

Right-click in an empty space

Select paste

Keyboard method

Highlight the document to be copied.

Press the keys **CTRL + C** to copy.

Position the cursor on the insertion point

Press the keys **CTRL + V** to paste.

Drag and drop method

Highlight the document to be copied.

Hold down the **CTRL** key as you drag the highlight to a new location.

Release the mouse button.

Ribbon bar method

Highlight the document to be copied.

Click copy on the Home Ribbon.

Position the insertion point in a new location

Click Paste from the Home Ribbon.

Right click mouse method

Highlight the document to cut.

Right click on the highlights and select cut

Position the insertion point in a new location

Right click on an empty space.

Click on paste.

FIND and REPLACE

When a mistake is made all over a document, for example, you mistakenly typed fred instead of fried, the find and replace feature helps to locate the errors and quickly replace them with the expected text. To apply the find and replace feature in a document:

Click on Home Ribbon

Click on the Find icon and drop down arrow and click find

Click on the Replace Tab

Type the error text in the **FIND WHAT** text box and the corrected in the **REPLACE** if you want it one after another.

Click cancel button to abort the operations.

Spelling and Grammar

They check whether a document is error free both in spelling and grammar. To confirm if a document is error free using the spelling and grammar tool:

Click on Review ribbon

Click on the Spelling & Grammar icon

It selects a sentence and asks you to ignore or click on its suggestion and click change. Select the one that applies.

Click Next Sentence to move to next error.

Click close if you don't want to continue.

When a spelling and grammar action is completed a dialog box as shown is displayed,

Click ok

Formatting a document

Formatting a document makes the document presentable. Formatting entails the following:

Font

Font Face: the text outlook format of a document: Microsoft has embedded the fo;;owing font face: Arial, Times New Romans, Tahoma, Elephant, Freestyle Script, Imprint MT, Shadow, and so on.

To set a font face for your text, do the following

Type the text

Highlight the text

From the home Ribbon click on the font face (ctrl + shift + F)

Click the drop down arrow and select a font face of your choice.

Font Size: This displays text sizes of your choice: Microsoft has embedded font sizes ranging from 8-72.

To select a font size for your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the Font size (ctrl + shift + F)

Click the drop down arrow and select a font size of your choice.

Font style: This displays effects on text such as bold, italic, regular, bold italic.

BOLD

To select a bold font style for your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the **B**

ITALIC

To select a bold font style for your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the ***I***

UNDERLINE

To select an underline font style for your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the **U**

To select the different underline font style for your text, do the following:

From the Home Ribbon, click on the drop down arrow

Click on the desired underline style.

Font Color: This displays color for your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the **A icon** drop down arrow.

Click on the desired color of your choice.

Font Effect: This displays other effects on your text such as strike through, subscript, superscript

Strikethrough

To apply Strikethrough effect on your text, do the following:

Type the text

Highlight the text

From the Home Ribbon, click on the" **~~Abc"~~ icon** drop down arrow.

Double Strikethrough

Type the text

Highlight the text

From the Home Ribbon, click on the **icon** beside font.

Subscript

Type the text

Highlight the text

From the Home Ribbon, click on the"$\mathbf{X_2}$" icon.

Superscript

Type the text

Highlight the text

From the Home Ribbon, click on the "$\mathbf{X^2}$"icon.

Change case

Type the text

Highlight the text

From the Home Ribbon, click on the "**Aa" icon**.

Character spacing: This displays different characteristics of spacing that can be applied on a text they include: Expanded or condensed, kerning, and so on

Paragraph:

Indent and spacing: This feature creates a text with spacing before and after. The effects here are : alignment , indentation , spacing , tabs.

Alignment

Right click the white space on a document and select paragraph.

Click on indent and spacing tab. In the general options in the alignment drop down menu, select your desired choice.

Click ok to apply to the document.

Indentation

Type the text

Highlight the text

Right click on the text and select paragraph

Click on indent and spacing tab. In the indentation options, select your desired choice as shown in the dialog box.

Click ok to apply to the document.

Features of word processing

A good word processor should have the ability to create, save and retrieve documents.

It should have the ability to find and replace words in a document.

It should be capable of wrapping your text.

Generate multiple copies of a document with the aid of the printer.

Every word processor should have the ability to manage files in the computer.

Ability to display graphics

A good word processor should have the ability to spell check your document.

Ability to mail merge documents

To format a document and apply headers and footers

EVALUATION

1. Define Word Processing and Word Processor
2. List five (5) examples of Word Processor

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 96-100.

WEEK FOUR (4) WEEKEND ASSIGNMENT

OBJECTIVE

THEORY

1. Write out the steps to carry out the following; (i) Change Case (ii) Subscript (iii) Superscript (iv) Strikethrough (v) Double Strikethrough
2. List and explain the different methods in copying a document

WEEK 5 **Date……..**

SYSTEM DEVELOPMENT CYCLE 1

INTRODUCTION

Information systems are important for the success of any modern business for organization. Every many information systems are being developed to make them more competitive and improve the productivity and profit.

The two keys required for a successful development of information system are:

- Thorough Systems analysis and design
- Understand what the Business or organization requires.

Definition of terms

Systems analysis is the process of understanding in detail what a system should accomplish, how it will accomplish it required to accomplish it.

Systems design is the process of specifying in detail how components of an information system should be implemented physically.

Systems analyst is a person that uses analysis and design techniques to solve business problems using information technology.

Skills of a systems analyst

To be a good and successful systems analyst, the person must have the following skills:

- Information technology knowledge and programming expertise.
- Understand business problems.
- Use logical methods for solving problems.
- Ability to find facts about the problem and develop how it should be solved.
- Always wanting the improvement of the system.
- People management knowledge and skills.

Systems Analyst Problem solving Approach

The steps taken by a system analyst to solve problems are stated below:

1. Study and understand the problem: The analyst must identify that there is a problem to be solved and specify that it is feasible to solve the problem.

2. Define the requirements for solving the problem: The analyst will identify the facts or data that are required to solve the problem.
3. Develop a set of possible or alternative solutions: If there are alternative solutions, the systems analyst must develop them and decide on the best solution to use. However, in most cases, there may be only one solution which is chosen.
4. Define the details of the chosen solution: All the facts and method need to solve the problem are specified in detail.
5. Solve the problem: The problem is solved using the chosen solution method.
6. Monitor to ensure that desired result or outcome is accomplished: Here, the analyst will make sure that the formula is not miscalculated.
   Example: let us apply this process in solving a simple interest (SI) problem: A man invested the sum of N500, 000.00 for 5 years at an interest rate of 12% per annum. Calculate the amount at the end of the period.

   Solution:
   Step1: Study and understand the problem: the simple interest is understood as defined.
   Step 2: verify that the benefits of solving the problem outweigh the cost: The SI can be solved with our current knowledge and the resources that we have like four figure tables, calculator and so on. We do not need to hire anybody.
   Step3: Define the requirements for solving the problem: the requirements for solving the SI problem are Principal (N500, 000.00), rate (12%) and Time (5years).
   Step4: Develop a set of possible or alternative solutions: The problem can be solved in two ways: First calculating the SI using the formula (I=P*R*T/100) and then calculate the amount as A=Principal + Interest. Secondly, another way is calculating the Amount using the formula that A=P (1+(R*T/100))
   Note that *means multiplication.
   Step 5: Decide which solution is best and recommended: We decide to use the first method because it is simpler than the second.
   Step 6: Define the details of the chosen solution: The variables (facts) that we need to solve this problem are as stated in step 3 above and the procedure are as stated on step 4(1) above.
   Step 7: Implement the solution: The problem is solved as follow:
   I. I=P*R*T/100
   = 500,000*12*5/100= N300, 000.00

   ii. Amount= P+I= N500, 000+ 300,000 =800,000

   Step 8: Monitor to ensure that desired result is accomplished. To make sure that the formula procedure and calculations are correct.

CONCEPT OF SYSTEMS

What is a system?

A system is a collection of interrelated components that function together to form a whole and achieved outcome. Examples:

What is an information system?

An information system is a collection of interrelated components that collect, process, store and provide as an output the information needed to complete a (business) task.

In systems development, application systems are referred to as information systems. Therefore, an information System can also be defined as a collection of programs running on computers which interact with one another as well as humans to provide the necessary information needed to make decisions within an organization.

What is a subsystem?

A subsystem is a part of a larger system that can function on its own to perform a task. It can be a system having subsystems or it may just be a single system. The components that make up the overall computer system can be described as sub-systems. These are mainly hardware and software subsystems. The process of dividing a system into subsystems and components is called **Functional Decomposition**.

Information systems and subsystems

A school information system will have the following subsystems: Academic system, Examination Systems, Discipline system, Hostel/Accommodation system, Library system, Fees Billing System, Staff System, Bursary System and so on.

Information Systems and Component Parts

The main components of information systems are:

1. IT i.e. hardware and software
2. Data/information
3. Procedures/policies
4. People
5. Communication Networks

Types of Information Systems

The ‘classical ‘types of Information Systems found organizations are:

1. Transaction processing systems
2. Management information systems
3. Decision support systems
4. Executive information systems

Some new types of information systems that cannot be classified as above are listed below:

1. Data warehouses
2. Enterprise resource planning
3. Enterprise systems
4. Expert systems
5. Geographic information system
6. Global information system
7. Office Automation

EVALUATION

1. Define the System Development Cycle
2. List the stages in SDLC

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 101 - 103.

WEEK FIVE (5) WEEKEND ASSIGNMENT

OBJECTIVE

1. _____ is a collection of interrelated components that function together to form a whole and achieve an outcome.
   a. Subsystem b. System c. Life cycle d. Development
2. The following are the Water fall Development cycle stage EXCEPT_____
   a. Investigation Stage b. System analysis Stage c. System manufacturing Stage
   d. System design Stage
3. The oldest and classical method of SDLC is called_____ a. Waterfall Mean
   b. Waterfall Model c. Waterfall Median d. Waterfall Mode
4. One of the following is NOT an information system component part. a. People
   b. Communication Network c. IT room d. Data/ Information
5. The following are classical types of information system EXCEPT one.
   a. Transaction Processing System b. Development Processing System
   c. Management information System d. Executive information system

THEORY

1. Define the following; **I**. System Development Life Cycle **II**. System Analysis **III**. System Design **IV**. System Analyst
2. Explain the following; **I**. System **II**. Information System **III**. Subsystem

WEEK 6 **Date……..**

SYSTEM DEVELOPMENT CYCLE 2

Systems Development Life Cycle (SDLC)

Systems development is a planned undertaking with a fixed beginning and end that produces the desired result or product. It may be a large job that involves many people working for a long period or it can also be a small assignment that one person can finish in a day. The SDLC PROVIDES AN OVERALL FORMALISED METHOD FOR managing the systems development processes and activities. It represents a detailed and specific set of procedures, steps, and documents that are required for the development of an information system development.

The SDLC believes that the development of information systems should follow a structured and methodical way, requiring each stage of the life cycle from inception of the idea to delivery of the final system, to be carried out in rigid and sequential order.

Definition of SDLC: The systems development life cycle is the process of understanding how an information system (IS) can support the business needs of an organization, designing the system, building it and delivering it to the users.

Objectives of SDLC

The objectives of SDLC are:

1. To ensure high quality systems are delivered.
2. To provide strong controls over the system development
3. To maximize the productivity of the systems staff

STAGES IN SYSTEMS DEVELOPMENT LIFE CYCLE

However, there are methods for developing information systems. The oldest and classical method of systems development life cycle (SDLC) is called the **Waterfall Model.** The waterfall SDLC is a sequence of stages that must be followed one after the other. Stage 2(two) can only begin when stage one is completed. Therefore the output of each stage becomes the input for the next. These stages can be characterized and divided up in different ways, including the following:

1. Investigation stage
2. Systems Analysis stage
3. Systems Design Stage
4. Systems Implementation stage
5. Systems Deployment
6. Systems maintenance Stage

1. Investigation stage: this stage involves the investigation of the existing system. The existing system is studied and evaluated to identify its problems and deficiencies. It involves gathering information about the existing systems. The information could be gathered through Observation(observing the system), Questionnaire(preparing questionnaires based on the existing system and give to the users to fill) and Interviewing(asking the users verbal questions about the system). The information gathered is used in a feasibility study. The aim of the feasibility study is to identify the problems and proffer feasible solution through a feasibility report. It also identifies how this problem is to be solved(either manually or computerized), when it is to be solved and why it should be solved. It defines the objectives and goals that the new system to be developed will achieve. The feasibility report is the main output of the investigation.

2. Systems Analysis stage: This stage starts with a more detailed investigation into the existing system. The same facts finding methods of observation, questionnaire and interview are used to gather end-users information such as data and procedures and processes. The data and procedures are analyzed to define the new system requirements. The new system requirements are defined addressing the deficiency in the existing system with specific proposals for improvement. The output of the analysis stage is the users' requirements.
3. Systems Design Stage: At this stage the proposed system is designed. It involves layout plans for the physical construction, hardware requirements, operating systems, programming, communication, and security. The design describes the desired features and operations of the proposed system in detail, including screen layouts, business rules, process diagrams, flow charts, pseudo-code and other documentation such as data dictionary and so on. The system design stage produces the Systems Specification.
4. Systems Implementation stage: This stage is the stage where programs of the new system are written in the specified programming language in line with the systems specifications. It involves testing of all the new system and adjustments and corrections are made where necessary.
5. Systems Deployment: Here the system that was developed in stage 4(four) is put into use. It involves bringing all the different parts the proposed system together. All parts of the system is integrated and tested for errors, bugs and how they operate. It includes the installation and deployment. This is the stage where the software is put into use and runs the actual business.
6. Systems maintenance Stage: once the new system is deployed and running, it is subjected to exhaustive evaluation on how it is able to achieve its setup goals. Areas for improvement will be modified and enhanced. Sometimes the mistakes or errors can be detected. Procedures and processes

may change. Thus the remaining life of the system is subject to changes, correction, additions, moves to a different computing platform and more. The system maintenance stage involves all the activities, processes and procedures required by the system to exist forever.

7.

ADVANTAGES OF SDLC

1. Simple and easy to use
2. Easy to manage due to the rigidity of the model.
3. Phases are processed and completed one at a time works well for the development of smaller information systems where requirements are very well understood.
4. Provides guidelines for systems development as all the stages and activities are clearly outlined
5. Promotes consistency among systems development projects.
6. Reduces cost of managing different systems at different stages.
7. Helps in efficient allocation of resources to systems development projects.

DISADVANTAGES OF SDLC

1. Adjusting scope during the life cycle can kill a project.
2. No working software is produces until during the life cycle
3. High amounts of risk and uncertainty.
4. Poor model for complex and object-oriented projects.
5. Poor model for long and ongoing projects
6. Poor model where requirements are at a moderate to high risk of changing.
7. If followed slavishly. It can result in the generation of unnecessary documents.
8. It takes time to go through the whole long development cycle.

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 104 -105

WEEKEND ASSIGNMENT

OBJECTIVE

1. One of the following is NOT an objective of SDLC
   a. To minimize the productivity of the system staff
   b. To ensure that high quality system is delivered
   c. To maximize the productivity of the system staff
   d. To provide strong control over the system development
2. _____is the person that uses analysis and design techniques to solve business problem using information technology.
   a. Programmer b. Data Entry Staff c. System Analyst d. Computer Engineer

3. The following are skills of a system Analyst EXCEPT one
   a. Information Technology knowledge and programming expertise
   b. Solving the problem using figures
   c. People Management knowledge and skill
   d. Understanding business problem
4. _____is the process of understanding in details what a system should accomplish it and what is required to accomplish it.
   a. System Design b. System Analyst c. System Analysis d. SDLC
5. The following are advantages of System Development Life Cycle EXCEPT one
   a. Help in inefficient allocation of resources to systems development project
   b. Promotes consistency among systems development project
   c. Simple and easy to use
   d. Easy to manage due to the rigidity of the model

THEORY

1. Define the system development cycle.
   b. List five stages in system development cycle
   c. Explain at least five (5) systems Analyst problem solving Approach
2. Describe the first stage in system development cycle
   b. Draw a simple sketch of system development cycle.
   c. State the objectives of SDLC

WEEK 7 **Date……..**

PROGRAM DEVELOPMENT

Definition of a Program

A computer program can be defined as a list of instruction issued to the computer to perform a particular task. Programs are written in computer programming languages.

Characteristics of a good program

Every good program must have the following characteristics:

1. Accuracy
2 Readability
3 Maintainability
4 Efficiency
5 Generality
6 Clarity
7 Reliability

1. Accuracy: every good program must be error free.
2. Readability: the program should be easy for any programmer to read and understand.
3. Maintainability: a careful written program should be very easy to amend and maintain if need be.
4. Efficiency: Should have the ability to solve a particular problem skillfully.
5. Generality: should be able to solve all similar problems.
6. Clarity: should be straight forward and easy to understand.
7. Reliability: should be depended upon at all times.

Precaution

Do not rush. Be careful, stable and patient when writing programs.
No step should be skipped.
The order of execution must be followed sequentially.

Steps in Program Development

Problem definition: the programmer is expected first of all to understand the problem and know exactly what the problem entails. The definition of the problem must be unambiguous.
Problem analysis: The programmer is expected to analyze the problem to determine how it will be solved, the required inputs and output
Planning the solution: before a program is written, the algorithm or flowchart for that program must be drawn and tested before the actual coding of the program and this is called dry running a program. The flowchart therefore, is a diagrammatical representation of the steps involved in writing a given program.
Program coding: This is the actual writing or coding of the program in a particular programming language e.g. BASIC, VBASIC, FORTRAN, Pascal, COBOL and so on.
Disk checking: This is used to check or verify that the design represents a correct solution to a problem and it is very important to follow through the design using suitable test data.
Problem compilation: when the coding process is completed, the program will be compiled if it is necessary. It is necessary to compile if the programming language allows it.
Program testing: this is similar to proofreading. The written program is tested and errors corrected to check the program is able to solve the problem it is expected to solve
Program documentation: this involves writing a detailed description about the program and some specific facts pertaining to the usage and maintenance of the program.
Program running: this is the actual running or execution of the program with the compiler or interpreter so as to check if the desired output is generated.
Maintenance:
It is the process of updating or amending previously written program for current use.

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 106 - 107.

WEEK SEVEN (7) WEEKEND ASSIGNMENT

OBJECTIVE

1. The actual writing or coding of program in a particular programming language is known as_____
   a. Debugging b. Program Coding c. Program Executing d. Program Decoding

2. The following are characteristics of a good program EXCEPT one.
   a. Accuracy b. Clarity c. Compatible d. Readability

3. The following are characteristic of an interpreter EXCEPT one
   a. Execution is fast b. The resulting code is some sort of intermediate code c. The resulting code is interpreted by another program d. relatively little time is spent analyzing and processing the program

4. _____ is a list of instruction issued to the computer to perform a particular task.
   a. Algorithm b. Computer program c. Hardware d. Peripherals

5. One of the following is NOT a precaution be taken when writing a program.
   a. No step should be skipped b. The order of execution must be followed sequentially c. Do not rush d. The use of a step by step approach should not be followed

THEORY

1. Define a program
   a. State four characteristics of a program
2. List the steps involved in program development
   b. State two precautions to be taken when writing a program.

WEEK 8 **Date……..**

ALGORITMS AND FLOWCHARTS

Algorithm is the step by step procedure of solving a particular problem. It is simply a sequence of clear and precise instructions for solving a particular problem. Algorithms are usually written in English and some few mathematical notations (signs, symbols)

Characteristics of Algorithms

1. They are written in sequence.
2. They are written in English like statements.
3. Finite, it must have a beginning and an end.
4. Should be effective
5. Should not be ambiguous. Should be consistent.

Example

An algorithm to calculate average of three numbers:
Step1: Enter the first number N1
Step2: Enter the second number N2
Step3: Enter the third number N3
Step4: Calculate the total (N1+N2+N3)
Step5: Calculate the average (N1+N2+N3)/3
Step6: Print total
Step7: Print Average
Step8: End

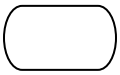
Flowcharts

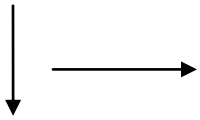
The flowchart is the diagrammatic representation of an algorithm. It shows the steps involved in solving a particular task.

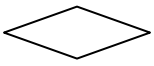
Characteristics of flowchart

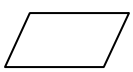
Different flowcharting symbols are used for different operations
Flow lines are used to connect the flowcharting symbols.
Flowcharts are read and drawn from top to bottom.
The start symbol indicates the beginning of a program.
The end symbol signifies the end of a program.
Flowchart symbols:

Process 

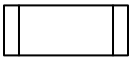
Terminator 

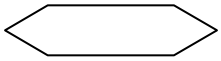
Flow line 

Decision (control) 

Input/output 

Connector ◯

Pre-defined process/declaration 

Preparation 

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pgs 108 - 109

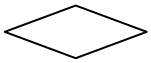
WEEK 8 WEEKEND ASSIGNMENT

OBJECTIVE

1. _____ is the step by step procedure of solving a particular problem.
   a. Problem b. sequence c. algorithm d. symbol

2. _____ is the diagrammatic representation of a step by step procedure of solving a particular problem.
   a. Algorithm b. Program c. Flowchart d. sequential solution

3. The following are characteristic of a flowchart EXCEPT one
   a. Flowcharts are read and drawn from bottom to top b. Flowcharts end symbol signifies the end of a program c. Flow line are used to connect the flowchart symbols
   c. Different flowchart symbols are used for different operation.

4.  The flowchart symbol represents _____
   a. Pre-define b. Decision c. Input d. Processing

5. The following are characteristic of an algorithm EXCEPT one
   a. They are written in sequence b. An algorithm should be effective c. It must be ambiguous and inconsistent d. They are written in English like statement

THEORY

1. Define algorithm and flowchart
   a. State three characteristics of an algorithm
2. Write an algorithm that will compute the average of three numbers a, b, c.
   b. Draw a flow chart to calculate the area of a triangle with base, b and height, h.

WEEK 9 **Date……..**

INTRODUCTION TO BASIC PROGRAMMING

BASIC stands for BEGINNNERS ALL-PURPOSE SYMBOLIC INSTRUCTION CODE. It is a single easy to use language designed also for beginners. It is not only simple but also powerful. It is science oriented. Professor John Kemeny and Thomas Kurtz developed the language in 1964 at Dartmouth College, U.S.A., as a means of teaching students a simple language for programming a computer. The program can be used to solve problem covering a wide range of application on many different types of digital computer. Because the BASIC Language has been designed for ease of use and is readily available on most computers, program development can be achieved in minimum time.

There are different versions of Basic. They include:

- Turbo Basic (T-BASIC)
- BASIC PLUS
- GW BASIC
- QUICK BASIC (Q-BASIC)
- VISUAL BASIC (V-BASIC)

EVALUATION

1. What is BASIC?
2. List FIVE versions of BASIC.

THE BASIC INTERPRETER

For the computer to execute your instructions in order to produce the desired result, the instruction must be first be interpreted to what the computer can understand by another program called the BASIC INTERPRETER (or TRANSLATOR). The BASIC interpreter converts your program into a form that can be executed directly by the computer.

EVALUATION

1. What is a BASIC interpreter?

KEYWORDS IN BASIC

This is also referred to as BASIC statement or a reserved word. It is an instruction in BASIC, which has a specific means to the compiler or interpreter.

1. **REM STATEMENT**
   The REM statement is a remark statement. It is used to insert remarks in the program. Such remarks are used to explain what the program is all about.
   Example:
   10 REM This program finds the average of 5 numbers
2. **LET STATEMENT**
   The LET statement is used to assign (or give) values to variables.
   Examples:
   10 LET A = B + C
3. **INPUT STATEMENT**
   Input is used to assign or give values to variables while program is running. It can be used with both numeric and string variables.
   Examples:
   10 INPUT A, B, C
4. **PRINT STATEMENT**
   The print statement tells your computer to display the output of the executed program on the screen of the monitor (VDU).

Example:
10 PRINT SUMS

5. **END STATEMENT**
   End Statement is an instruction used to terminate the program. One the computer encounters END statement, it automatically terminates the program.
   50 END
6. **RUN STATEMENT**
   The RUN statement is used to execute a program. In Q-BASIC, F5 is used to RUN a program. Note that the program will not RUN if any mistake or error is detected in it.

EVALUATION

1. Write the function of the following BASIC keywords
   (a) LET (b) INPUT (c) PRINT (d) REM (e) RUN

Reading Assignment: **Reading Assignment:**

Hiit @ School, Computer Studies for Senior Secondary Education. Pg 110

WEEK 9 WEEKEND ASSIGNMENT

1. …… converts your program into a form that can be executed directly by the computer
   (a) Software (b) Interpreter (c) Hardware
2. **BASIC** means BEGINNNERS ALL-PURPOSE SYMBOLIC INSTRUCTION ……..
   (a) Code (b) Centre (c) Computer
3. …….. used to assign (or give) values to variables
   (a) REM (b) INPUT (c) LET
4. …… statement is used to execute a program
   (a) INPUT (b) RUN (c) END
5. …….. is used to RUN a program
   (a) F5 (b) F10 (c) F1

THEORY

1. What is BASIC?
2. Write the function of the following BASIC keywords
   (b) LET (b) INPUT (c) PRINT (d) REM (e) RUN