HARDWARE AND NETWORKING SERVICE LEVEL – I

Based on March 2022, Curriculum Version 1



Module Title: Installing Software Application

Module code: EIS HNS1 M05 0322

Nominal duration: 30 hours

Prepared by: Ministry of Labor and Skill

August, 2022

Addis Ababa, Ethiopia

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Acronyms

OS- Operating System

Gb—Gigabit

GB—Gigabyte

ICT—Information and Communication Technology

Mb—Megabit

HDD—Hard Disk Drive

IPv4—Internet Protocol version 4

IPv6—Internet Protocol version 6

IPX—Internetwork Packet Exchange

AI—Artificial Intelligence

OS—Occupation standard

Acknowledgment

Ministry of Labor and Skills wish to extend a great thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

Introduction to the Module

In Hardware and Networking Service level one, installing application software is a crucial skill and knowledge for the ICT industry expert. This module is designed to meet the industry requirement under the hard ware and Network Servicing occupational standard, to deal with to allow you to demonstrate an understanding of the installation and/or upgrade of software. This includes having an understanding of the reasons why upgrades/installations are required and the factors to be considered when carrying out an installation or upgrade.

Unit of competency: Installing Software Application

This module covers the units:

- Application software and upgrade requirements
- Obtain Application software or software upgrade
- Install or upgrade Application software

Learning Objective of the Module

At the end of this Module trainees will be able to:-

- Determine the software Requirements and to upgrade
- Obtaining required software
- Install the Application software
- Determine the software upgrade

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercise

Unit one: Determine software and upgrade requirements

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Introduction to Computer Software
- System Requirement to Install Application software
- Determining Client software Requirements
- Verifying client requirements

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Describe the System Requirement to Install Application software
- Determine Client Application software Requirements
- Verify client Application software requirements

1.1. Introduction to Computer Software

Computer software is a collection of computer programs and related data that provide the instructions for telling a computer what to do and how to do it.

In other words, software is a conceptual entity which is a set of computer programs, procedures, and associated documentation concerned with the operation of a data processing system.

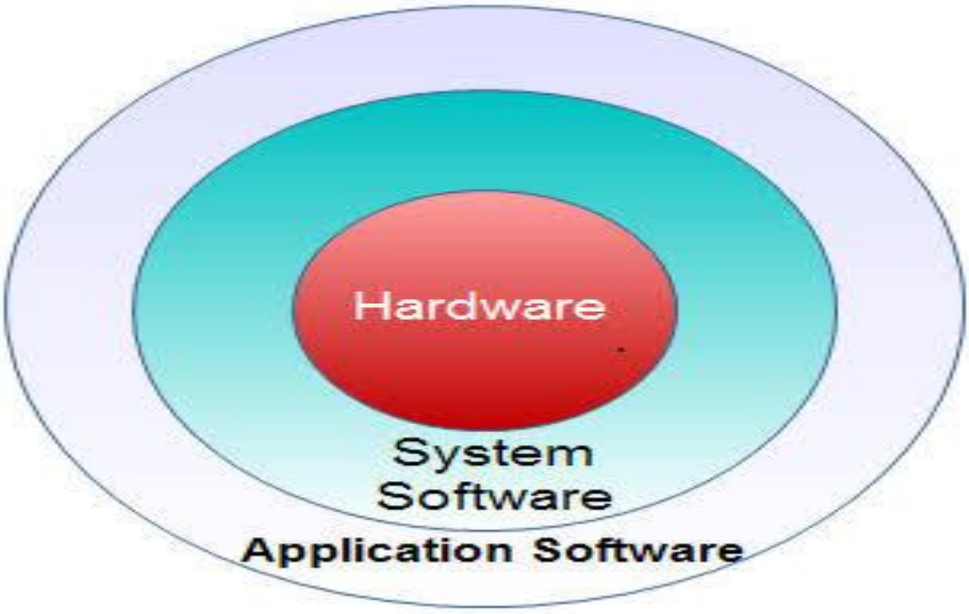


Fig. 1 The Full flow of computer

We can also say software refers to one or more computer programs and data held in the storage of the computer for some purposes. In other words software is a set of programs, procedures, algorithms and its documentation.

Computer software has facilitated the interaction between human beings and computers.

What are the different kinds of software?

Software refers to the computer programs, procedures and documentation that perform certain tasks on a computer system.

Following is an extensive list of examples of the different kinds of software.

a. **Application Software:** Application software is that, which is designed for the end-users and hence known as end-user programs. It employs the capabilities of a computer to execute the tasks that the user wishes to perform on a computer system. Look at the various examples of application software.

b. **Educational Software:** They are used to deliver tests and track progress. They are used for educational purposes. Training management and classroom management software are some examples of educational software. The software used for

purposes of edutainment, a form of entertainment that aims at educating the masses, is also a form of educational software.

c. **Enterprise Software:** It caters to the needs of organization processes and data flow. Customer relationship management and supply chain management software are the well-known examples of enterprise software. Enterprise infrastructure software supports the enterprise software systems.

d. **Information Worker Software:** It caters to the needs of an individual to manage information pertaining to a project or a single department. Resource management software and documentation tools are some of the popularly used information worker software.

e. **Media Development Software:** They are used for the generation of print and electronic media in the educational and commercial sector. Image organizers and image editing software, animation software like Flash, audio and video editors as well as the web development software are some well-known examples of media development software.

f. **Product Engineering Software:** This software is used in the development of hardware and software products. Application programming interfaces and integrated development environments are the well-known examples of product engineering software. Program testing tools, debuggers, compilers and CAD are some of the other instances of product engineering software.

g. **Simulation Software:** They are used for the simulation of physical and abstract systems. Computer simulators that are used for simulating scientific concepts and social ideas, battlefield, vehicle and flight simulators are some of the popular examples of simulation software.

h. **Programming Software:** Programming Languages are used to write programs that control the functioning of a computer system. They are the building blocks of computer applications. Go through the complete list of the different programming languages.

i. **System Software:** It is computer software that manages and controls hardware in order to enable application software to perform its tasks. System software performs the functions like transferring data from memory to the disk or delivering text onto a display device.

j. **Device Drivers:** They are computer programs, which facilitate the interaction of high-level computer programs with the hardware devices. Drivers also provide interrupt-handling mechanisms.

k. **Network Managers:** They check computer networks, data transfers and log events.

l. **Virus Scanners:** They scan for viruses on a computer system. They are widely known as antivirus software.

m. **Content-Control Software:** It refers to the software designed for controlling the content that is permitted for the user to access. It can determine what content will be available on a particular machine or network. Content-control software is commonly used at homes and in schools to restrict the content that can be accessed over the net by the students.

n. **Data Recovery Software:** Apart from the facilities of copying of data files, data recovery software supports the user needs of backing up important computer data. It allows the user to specify what is to be backed up and when.



Fig 2.1 Application software

1.1Types of Computer Software

The two major types the computer software

- **System Software**: It helps in running the computer hardware and the computer system. System software is a collection of operating systems; device drivers, servers, windowing systems and utilities. System software helps an application

- Programmer in abstracting away from hardware, memory and other internal complexities of a computer.
- **Application Software**: It enables the end users to accomplish certain specific tasks. Business software, databases and educational software are some forms of application software. Different word processors, which are dedicated for specialized tasks to be performed by the user, are other examples of application software.

a) Types of Application Software

What is application software? What are the different types of application software? Know it all along with some interesting examples of application software.

Application software utilizes the capacities of a computer directly to a dedicated task. Application software is able to manipulate text, numbers and graphics. It can be in the form of software focused on a certain single task like word processing, spreadsheet or playing of audio and video files.

Different Types of Application Software are:

a. **Word Processing Software:**
   This software enables the users to create and edit documents. The most popular examples of this type of software are MS-Word, Word-pad, Notepad and some other text editors.

b. **Database Software:**
   Database is a structured collection of data. A computer database relies on database software to organize the data and enable the database users to achieve database operations. Database software allows the users to store and retrieve data from databases. Examples are Oracle, MS Access, etc.

c. **Spreadsheet Software:**
   Spreadsheet software allows users to perform calculations. They simulate paper worksheets by displaying multiple cells that make up a grid. Excel, Lotus 1-2-3 and Apple Numbers are some examples of spreadsheet software.

d. **Multimedia Software:**
   They allow the users to create and play audio and video media. They are capable of playing media files. Audio converters, players, burners, video encoders and decoders are some forms of multimedia software. Examples of this type of software include Real Player and Media Player.

e. **Presentation Software:**
   The software that is used to display information in the form of a slide show is known as presentation software. This type of software includes three functions, namely, editing that allows insertion and formatting of text, methods to include graphics in the text and a functionality of executing the slide shows. Microsoft PowerPoint is the best example of presentation software.



Fig .2.2 Application software

System Requirements for Software Installation

To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer. These per-requisites are known as system requirements and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended.

- **Minimum specifications** are the absolute minimum requirements for hardware you should have in your system in order to install and run the OS you have chosen.
- **Recommended hardware specifications** are what you should have in your system to realize usable performance.
- Always try to have the recommended hardware (or better) in your system. If you don't, you may have to upgrade your hardware before you upgrade your OS.
- Make sure you have a good margin between your system's performance and the minimum requirements.
- Always run Windows on *more* hardware, rather than less!
- **Recommended requirements** are almost always of a significantly higher level than the minimum requirements, and represent the ideal situation in which to run the software. Generally speaking this is a better guideline than minimum system requirements in order to have a fully usable and enjoyable experience with software.

Hardware Requirements

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a Hardware Compatibility List (HCL), especially in case of operating systems. A hardware compatibility list is a database of hardware models and their compatibility with a certain operating system. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application.

The following sub-sections discuss the various aspects of hardware requirements.

Architecture

All computer operating systems are designed for particular computer architecture. Most software applications are limited to particular operating systems running on particular architectures. Although architecture-independent operating systems and applications exist, most need to be recompiled to run on a new architecture.

I. Processing Power

The power of the Central Processing Unit (CPU) is a fundamental system requirement for any software. Most software running on x86 architecture define processing power as the model and the clock speed of the CPU. Many other features of a CPU that influence its speed and power, like bus speed, cache, and MIPS are often ignored. This definition of power is often erroneous, as AMD Athlon and Intel Pentium CPUs at similar clock speed often have different throughput speeds.

II. Memory

All software, when run, resides in the Random Access Memory (RAM) of a computer. Memory requirements are defined after considering demands of the application, operating system, supporting software and files, and other running processes. Optimal performance of other unrelated software running on a multi-tasking computer system is also considered when defining this requirement.

III. Secondary Storage

Hard-disk requirements vary, depending on the size of software installation, temporary files created and maintained while installing or running the software, and possible use of swap space (if RAM is insufficient).

IV. Display Adapter

Software requiring a better than average computer graphics display, like graphics editors and high-end games, often define high-end display adapters in the system requirements.

V. Peripherals

Some software applications need to make extensive and/or special use of some peripherals, demanding the higher performance or functionality of such peripherals. Such peripherals include CD-ROM drives, keyboards, pointing devices, network devices, etc.



Fig .2.3 Hard ware device

Software Requirements

Software requirements deal with defining software resource requirements and per-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or per-requisites are generally not included in the software installation package and need to be installed separately before the software is installed.

a. Platform

In computing, a platform describes some sort of framework, either in hardware or software, which allows software to run. Typical platforms include a computer's architecture, operating system, or programming languages and their runtime libraries.

Operating system is one of the first requirements mentioned when defining system requirements (software). Software may not be compatible with different versions of same line of operating systems, although some measure of backward compatibility is often maintained. For example, most software designed for Microsoft Windows XP does not run on Microsoft Windows 98, although the converse is not always true.

b. APIs and Drivers

Software making extensive use of special hardware devices, like high-end display adapters, needs special API or newer device drivers. A good example is DirectX, which is a collection of API s for handling tasks related to multimedia, especially game programming, on Microsoft platforms.

c. **Web Browser**

Most web applications and software depending heavily on Internet technologies make use of the default browser installed on system. Microsoft Internet Explorer is a frequent choice of software running on Microsoft Windows, which makes use of ActiveX controls, despite their vulnerabilities.

1.2. Determining Client Requirements

The installation of new software or a software upgrade involves a number of carefully planned activities and people who specialize in the installation of computer applications. These activities begin with the initial request from the client for new software or a software upgrade. Once the client's request has been evaluated, the computer supports person first analyses:

- The system components including the capabilities of the client's computer
- The processes that manipulate the data
- The current system deficiencies
- The system constraints
- The specific objectives and the performance requirements of the new system
- The corporate desktop software used by the organization.

The next step is to determine and recommend hardware and software components that will satisfy the client's information needs and comply with the stated constraints. There are two questions that you must answer before any recommendations can be made.

- Is it possible to solve the problem?
- Can the organization afford to solve the problem?

Other things that need to be considered include time frame, cost, technical, legal, environmental, hardware, software, human, organizational and operational implications.

Every client has different needs and therefore there will be considerable variation in the factors which go towards installing new software or software upgrade. Among these variations are software, licensing and organizational considerations.

A. Software

Variables for new software and upgrade requirements includes software versions, commercial software applications, organization-specific software, operating systems, network operating systems, stand-alone PC systems, word processing, spreadsheets, database, graphics, communication packages, software installation instructions and manuals and the range of suppliers. The relationship between you and the client, and ease of access to them, will vary; often it will be easier to work with another department within an organization than with a client.

B. **Licensing**

A supplier of software does not sell you the software; you receive a license to use the software only. Therefore you must determine if the client has a current valid license to use the software. In some cases the organization may have a site license, where any computer belonging to the organization may use the software. In other cases there may be a limited number of licenses for specific computers.



Fig 3. Product key

C. **Organizational Requirements**

Variables include contracting arrangements relating to information technology, purchasing procedures, licensing requirements and supplier options, storage and retrieval of product licenses, storage of information technology equipment and documentation and retrieval of product licenses. In addition:
Development methods and tools will vary from very simple procedures to very advanced computer-assisted software engineering (CASE) tools
Hardware variables common to personal computers and networks include disk space, RAM, CPU and the operating system.

Occupational health and safety standards will vary according to company, government and vendor requirements. Ergonomic and environmental factors must be considered.
Organizational standards may be based upon formal, well-documented methodologies

Budget constraints will limit the options available for new software.

Before you can determine new software or software upgrade requirements for a client, you need to examine their current software and hardware environment.

2.1The Main Participants in the Installation of Software

There are a number of different people involved in the installation of software, whether it is a new license or upgrades to existing licenses. The degree of their involvement will depend on the complexity and extent of software applications being installed.

The main participants in the installation of new software include:

- **Clients or End-Users** - the people or group of people for whom the software is being installed. You interview them in order to find out what software they currently have, and their information needs.
- **Supervisor**- the person concerned with the overall management and allocation of support resources, and of all the technical staff working on the project. They communicate with the clients and make sure that they are happy with the service being provided. They are kept informed of the client's requirements.
- **Computer Support Officer** - the person who receives a technology-free statement of user requirements from the client and transforms it into a working computer system that will fulfill the client's computer and business needs. Their role is to install and thoroughly test the software and hardware before handing it over to the client.

- **Staff Trainer** - responsible for training all the staff in the use of the new software and for providing documentation for users to support them with the ongoing use of the software
- **Help Desk Staff** - their main task is to provide timely advice (usually over the telephone) to users in the operation of the hardware and software in use
- **Network Specialist** - the person involved with implementing and maintaining the network.

2.2Report client requirements

Client Involvement

It is a common belief among experienced systems analysts that the biggest single factor which determines the success or failure of a system is the amount of client involvement that occurred when determining the users' requirements. Input by the users does not stop at the initial investigative phase. Users need to be involved in all stages of installation and they serve as a reliable information source. Successful projects have strong and well communicated commitment on the part of the users. User involvement should ensure that:

- All the user's requirements are met in the initial investigative phases. These requirements include the information to be produced by an information system for their everyday work. For example, the system must be easy to use and produce the required information within acceptable time frames.
- Users, including the organization’s management, review the software documents and other relevant reports during installation. Management requires progress reports, business goals and estimates of resource usage, costs and completion times. Management must be convinced that their funds and resources are utilized in the best possible way. This will ensure that the users will accept the software once it is operational.
- The users are adequately trained with the new software before it is installed. This means that they must be familiar with the software to a level which allows them to independently use it in their everyday work in order to fulfill their information needs.

I. Management Levels

Clients from different levels of management have different interests in software applications. Strong client support and involvement and wise user decisions are essential to successful installation and use of software applications. Users should be involved to different degrees and in different ways depending on the managerial hierarchy.

Top-level management is involved with:

- Providing initiative and support for the installation of new software
- The appointment of a supervisor
- Ensuring compatibility of the new systems functions and objectives with the business objectives for the organization
- The allocation of resources and approval of budgets
- The monitoring of progress by review at major checkpoints
- Making decisions from alternatives, making trade-offs and considering relative costs and benefits

- Satisfaction with the system on the part of all other types of users
- Ensuring that organizational guidelines on purchasing hardware and software are followed.

II. Middle-level management is involved with:

- Receipt of regular progress reports so that they can monitor progress and make decision: to abort or continue
- Appointing a contact person to deal with the needs of the vendor
- Ensuring that software purchased is of appropriate scope for correct and detailed support of operations and meets the organization's guidelines
- Advising on managerial requirements that will ultimately assist in effective decision making
- Approving the purchase of software licenses and indicating the account from which the money will come
- Ensuring the smooth integration of manual and automated procedures
- Ensuring adequate training and documentation for hands-on users.

III. **Lower-level management is involved with**:

- Providing relevant information during the data-gathering phases concerned with the functions that the software application will perform
- Reviewing various user interface designs such as screen forms and reports
- Assisting system testing and conducting acceptance testing when requested to do so
- Receiving training when required and reading all appropriate user manuals
- Ensuring that the supplied documentation is available and kept up-to-date
- Reporting all problems once the system is operational
- Making valid suggestions for enhancements and modifications to the new system.

2.3Documenting and Reporting

There are many documents that need to be produced and exchanged between clients and suppliers of software applications. Two important documents that are exchanged at the initial stages are the Project Request form and the Feasibility Report. The Project Request form outlines the general requirements of the client. The Feasibility Report determines if the client's needs can be met. Included in the Feasibility Report are possible software applications, their costs, benefits and impact on the organization.

Although the initial request for change may be verbal, it is formalized using a Project Request form. This is the first official item of documentation that the user must submit to the organization installing the software. Below is a description and an example of the Project Request Form.

a) Software Requirements

Software requirements and some issues surrounding them, a software requirement is, including the different types of requirements. And deal with changing requirements and

control project scope, as well as how requirements affect design. These lessons will give you the knowledge you need to move on to eliciting and creating good quality requirements in the next modules.

Factors that affect the software requirements:-

b) User Interaction

A major duty of a software installation person is eliciting and expressing requirements from your client. to create the best product for your end users, how to conduct productive client meetings, and various ways of expressing requirements. These techniques will provide you with the tools you will need to confidently interact with your client as well as satisfy them with the “right product”

c) Quality Requirements and Writing Requirements

Explore the many ways in which software requirements can be represented. the most popular means of expressing requirements in the industry today: the user story. You will learn how acceptance tests help to verify the stories which they accompany, and how to create a robust product backlog. At the end of the module, you will learn how story maps are used to organize user stories, so that you’re always putting your effort into the tasks which makes the most impact. Analyzing creates clear, actionable, requirements which result in high quality software with fewer errors.

1.3. Verify the client requirement

Before the any installation began the following supposed to be considered and verified if the need of a client are going to be meet

1.3.1Define the software Purpose

Your first step is to create an outline for your software requirements specification. This may be something you create yourself. Or you may use an existing request.

- Purpose, Intended
- Audience, Intended Use,
- Overall Description User Needs,
- Assumptions and dependence,
- System Features and Requirements
- Functional Requirements,
- External Interface Requirement,
- System Feature,
- Nonfunctional Requirements

This is a basic outline and yours may contain more (or fewer) items. Now that you have an outline, let's fill in the blanks

a) **Intended Audience and Intended Use**

Define who in your organization will have access the software and how they should use it. . It could also include stakeholders in other departments, including leadership teams, sales, and marketing.
Defining this now will lead to less work in the future.

b) **Product Scope**

What are the benefits, objectives, and goals we intend to have for this product? This should relate to overall purpose and goal.
Describe What You Will Build?
Your next step is to give a description of what you're going to build. Is it a new product? Is it an add-on to a product you've already created? Is this going to integrate with another product?
Why is this needed? Who is it for?
Understanding these questions on the front end makes creating the product much easier for all involved.

c) **User Needs**

Describe who will use the product and how. Understanding the user of the product and their needs is a critical part of the process.
Who will be using the product? Are they a primary or secondary user? Do you need to know about the purchaser of the product as well as the end user? In medical devices, you will also need to know the needs of the patient.

d) **Assumptions and Dependencies**

What are we assuming will be true? Understating and laying out these assumptions ahead of time will help with headaches later. Are we assuming current technology? Are we basing this on a Windows framework? We need to take stock of these assumptions to better understand when our product would fail or not operate perfectly.
Finally, you should note if your project is dependent on any external factors. Are we reusing a bit of software from a previous project? This new project would then depend on that operating correctly and should be included.

e) **Detail Your Specific Requirements**

In order for your development team to meet the requirements properly, we MUST include as much detail as possible. This can feel overwhelming but becomes easier as you break down your requirements into categories. Some common categories are:

f) **Functional Requirements**

Functional requirements are essential to your product because, as they state, they provide some sort of functionality..
You may also have requirements that outline how your software will interact with other tools, which brings us to external interface requirements.

g) **External Interface Requirements**

External interface requirements are specific types of functional requirements. These are especially important when working with embedded systems. They outline how your product will interface with other components.
There are several types of interfaces you may have requirements for, including:

- User
- Hardware
- Software
- Communications

h) System Features

System features are types of functional requirements. These are features that are required in order for a system to function.

i) **Other Nonfunctional Requirements**

Nonfunctional requirements can be just as important as functional ones.
These include:

- Performance
- Safety
- Security

- Quality

The importance of this type of requirement may vary depending on your industry. In the medical device industry, there are often regulations that require the tracking and accounting of safety.

j) Deliver for Approval

Once you analyses the requirements, you can easily manage them throughout your development process.

Self-Check –1	Test

Name: _____ Date: _____

Instruction: 1 Answer all the questions listed below. Use the Answer sheet provided in the next page:

(1 point each)

1. _____ . The main participants in the installation of new software include:
   A. Clients or End-Users C. Supervisor
   B. Computer Support Officer D. All
2. _____ . Their main task is to provide timely advice (usually over the telephone) to users in the operation of the hardware and software in use.
   A. Supervisor C. Network Specialist
   B. Clients or End-Users D. Help Desk Staff
3. _____ are the people or group of people for whom the software is being installed. You interview them in order to find out what software they currently have, and their information needs.
   A. Clients or End-Users C. Supervisor
   B. Computer Support Officer D. All
4. _____ .What is the recommended requirement of Processor (CPU) for installing Windows 10?
   A. 233 GHz B. 1 GHz C. 233 MHz D. 1 MHz
5. _____ .What is the minimum requirement of Memory (RAM) for installing Windows 10(32-bit)?
   A. 64 MB B. 128 MB C. 1 GB D. 2 GB
6. _____ . Which one of the following is an example of computer software?
   A. Educational Software B. Enterprise Software
   B. C. Simulation Software D. All
7. _____ . Which one of the following is NOT an example of application software?
   A. Word Processor B. Spreadsheet
   C. Database D. Operating System
8. _____ . Which one of the following is an example of system software?
   A. MS Excel B. MS Word
   B. C. Operating System D. Media Player

Instruction*:2* Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

1. What is computer software? ***(****1 point)*
2. What is the use of database software? *(1 point)*
3. What are the different types of software? *(2points)*
4. State the system requirement for installing window 10? (5 points)
5. What is application software? (1 point)

Unit Two: Obtain software or software upgrade

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

Obtain software or software upgrade

- Investigate and selecting application program
- Obtain application program
- licensing requirements and record
- Type of license and Cost of license
- Application software Support

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Investigate and select application program
- Obtain application program
- Identify licensing requirements and record
- Identify the different Type of license and the Cost estimations
- Explain software Support provider

2.1Application Software

Once a need for software has been identified a requirement specification should be created to specify what software is required.

For example a business identifies that they need some office productivity software that will do word processing and spreadsheets. The requirements specification will detail all relevant information as to how word processing and spreadsheets need to work for the business. Once you have this information you can then start looking for software.



Fig.4 Office Application software

Once your supervisor has checked and approved the client's software requirements you will need to obtain the software.

1.1Investigating and selecting application program

Information available on software products can be accessed from many sources. These sources have varying degrees of objectivity ranging from the authoritative to the informal. Some of common sources of information for searching a product are:

- Computer magazines
- Newspapers
- The Internet
- IT consultants
- IT department
- Computer suppliers

Other sources of information may include industry colleagues, contacts and organization similar to your own.

Depending on the size and the type of your organization, you will choose one of several different ways of collecting the software. For example, large organizations usually have a section or a department which controls purchases and deals only with a selected number of

suppliers. In such cases, you will be provided with a catalogue of available products from which to choose.

Such organizations also use a Purchase Requisition document (usually called a PR book) provided by the administrative department. You will need to fill in and submit a Purchase Order which also needs to be signed by your supervisor.

If an organization allows purchases to be made from any supplier, then you will be expected to obtain two quotations from different suppliers and attach them to your purchase order.

Smaller organizations may require some additional tasks. For example, you may be asked to create a Purchase Order form using a word processor and then submit it to a supplier. Therefore, it is essential that you know the organizational guidelines regarding the purchase of software.

Every piece of software installed in a computer has clearly specified system requirements. These requirements define an environment for correct operation of the software. In general, features which describe such an environment may include:

- Operating system requirements (whether Windows or Macintosh or Unix/Linux or other)
- Minimum size of RAM required
- Minimum size of free disk space on a hard disk required
- Depending on the type of software, there could be a list of additional requirements such as CDROM, sound card, specified screen resolution and so forth.

Note: Before you proceed with software installation, you need to ensure that the client's computer satisfies all system requirements.

1.2 Obtaining application programed under instruction

To help determine if the new software is suitable we will need to research the technical specifications and functionality.

1.2.1 Software Prerequisites

Prerequisites are conditions that will ensure the correct running of a software application.

Software prerequisites may include:

- Specific system requirements such as hardware or operating systems [but these are listed as system requirements]
- The prior installation of another software package
- Services such as security and access systems, networks, Internet connections, and so on.

Here are some examples of software prerequisites:
'To browse the World Wide Web using Netscape or other Web browsers, you must have a connection to an ISP (Internet service provider).'

1.2.1.1 System Requirements

To ensure the correct operation of their software, most software manufacturers will specify preconditions to the functioning of their software by recommending a minimum system configuration. The system requirements may include:

- The hardware platform
- The operating system
- Resource requirements (CPU, memory)
- Storage capacity for the software and data
- Hardware devices such as a mouse, CD ROM drive, printer, backup device, modem.
- Minimum specifications for hardware such as screen resolution

These system requirements ensure that software is installed and run in an appropriate environment. Many software applications can run in many different environments, but usually software manufacturers will only guarantee their software in a limited range of environments.

1.2.1.2 System Incompatibilities

System incompatibilities are mismatches between the software and the system configuration and or other installed software. System incompatibilities may prevent the software being installed or prevent the software from operating as expected. .

During your investigation of minimum system requirements and prerequisites, it is important to recognize any incompatibilities with your target systems.

2.2. License type and requirement

There are two general types of software licenses that differ based on how they are viewed under copyright law

A. Types of software licenses

Free and open source software (FOSS) licenses are often referred to as open source. FOSS source code is available to the customer along with the software product. The customer is usually allowed to use the source code to change the software.

Proprietary licenses are often referred to as closed source. They provide customers with operational code. Users cannot freely alter this software. These licenses also usually restrict reverse engineering the software's code to obtain the source code.

An open source contributor license agreement is different from a software license agreement. See how. A more detailed list includes five types of software licenses. It makes finer distinctions among various types of open source licenses and proprietary licenses. This list includes the following:

A. **Public domain**. This software is freely available. Anyone can use and change it or incorporate code from this software into an application. However, businesses should use caution as altered code may not meet enterprise quality and security standards. Companies should be wary of ambiguous licenses that appear to be public domain but do not explicitly say so.
B. **Lesser general public license**. Developers can link to open source libraries within their software and use any licensing type for the code.
C. **Permissive.** This type of license will establish some requirements for distribution or modification of the software. It also has requirements for preserving license notices, copyrights or trademarks. There are several variations of permissive licenses, including Apache, BSD (Berkeley Source Distribution) and MIT licenses.
D. **Copyleft.** Licensed code may be distributed or modified as part of a software application or project if all code involved is distributed under the same license. New products containing old code with a copy left license must comply with the restrictions laid out in the old code's license.
E. **Proprietary.** This is the most restrictive license type. Proprietary software licenses make it illegal to copy, modify or distribute the software. These licenses provide the software owners with the most protection from unauthorized use of the software.

Different software licenses enforce different levels of restrictions on users' ability to copy, modify and distribute code. See the five most common types.

B. Software license cost

The cost of a software license depends on the type of license, the type of software and the pricing model. There may be a one-time fee that gives the user ownership rights to the software program. This approach is considered the traditional way of owning software -- buying the license up front and gaining the rights to use the software indefinitely. This type of purchase agreement is known as a perpetual license.

Alternatively, the user may pay an initial fee followed by a subscription plan where payment is made at regular intervals.

License costs are often based on the number of users and devices that use the software. They may also depend on the software deployment method. Costs can increase with add-ons, upgrades, maintenance fees and other fees. Depending on these factors, software license costs can vary from free or nearly so, to many thousands of dollars.

Tracking software licenses and costs can be particularly difficult across virtualized servers, mobile devices and the cloud operations.

C. Software license agreement

End-user license agreements typically include basic information about the parties entering the agreement, such as full names of the parties' involved, contact information and address of the parties. It also likely includes information on the following:

When the conditions of the agreement go into effect (i.e., the moment the user accepts the terms and conditions); charges owed per user; the duration of the agreement; terms of cancellation and terms for recovery of charges if cancelled during the period covered by the original agreement.

Self-Check –2	Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

_____1. _____are conditions that will ensure the correct running of a software application.

A. Prerequisites B. Software condition C. Software Control D. All

_____2. To ensure the correct operation of their software, most software manufacturers will specify preconditions to the functioning of their software by recommending _____.

A. Business Requirement B. minimum system configuration

C. Feasibility Requirement D. All

_____3. _____ are mismatches between the software and the system configuration and or other installed software.

A. Business Requirement B. Minimum system configuration

C. Feasibility Requirement D. System incompatibilities

_____4.Information required from vendors will include

A. A list of prerequisites for installation and operation of the product
B. A list of system requirements
C. Support and maintenance services, requirements or arrangements
D. All

Instruction*:* Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

Say TRUE or FALSE

1. Information available on software products can be accessed from many sources
2. Code that doesn't have an explicit license is not de facto in the public domain
3. To protect code and the organization, you need to understand the software licenses that govern the use of any code.
4. Security is one the Application software.
5. Microsoft Windows (7, 8, and 10) Professional versions Microsoft Office (Word, Excel, PowerPoint, and Outlook) are not application software.

Unit Three: Install or upgrade software

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

Install or upgrade software

- Installing or upgrading application software
- Completing and testing Installation process
- Analyzing a possible impact on other systems

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Install or upgrade application software
- Complete and test Installation process
- Ensure client requirements are satisfied
- complete Installation process
- Test and acceptance Application software
- Analyze client issues

3. Installing or upgrading application software

3.1Upgrading Software

The term upgrade refers to the replacement of a product with a newer version of the same product. It is most often used in computing and consumer electronics, generally meaning a replacement of hardware, software or firmware with a newer or better version, in order to bring the system up to date. Common software upgrades include changing the version of an operating system, of an office suite, of an anti-virus program, or of various other tools.

- **Risks of Upgrading**

  Although developers produce upgrades in order to improve a product, there are risks involved—including the possibility that the upgrade will worsen the product.

  Upgrades of hardware involve a risk that new hardware will not be compatible with other pieces of hardware in a system. For example, an upgrade of RAM may not be compatible with existing RAM in a computer. Other hardware components may not be compatible after either an upgrade or downgrade, due to the non-availability of compatible *drivers* for the hardware with a specific *operating system*. Conversely, there is the same risk of non-compatibility when software is upgraded or downgraded for previously functioning hardware to no longer function.

  Upgrades of software introduce the risk that the new version (or patch) will contain a bug, causing the program to malfunction in some way or not to function at all Upgrades can also worsen a product subjectively. A user may prefer an older version even if a newer version functions perfectly as designed.

- **When Should You Upgrade Your PC Software?**

  With new versions of the software being released regularly; one of the questions we get often is how someone should decide whether they should upgrade their software to the current version. In addition to the cost of the upgrade, which seems to be rising steadily, there is the hassle factor in using new software - learning the new features or interface, the bugs that inevitably there and the resulting temporary loss of productivity. When we are talking about software, we are referring to both the software drivers that guide the operation of the computer components as well as the application software, such as a word processor or spreadsheet.

  We generally separate software upgrades into two categories:

- Service releases or bug fixes and
- New software versions.

For service releases or bug fixes, we tend to upgrade as soon as they are released since they usually make the software more stable and reliable.

For new software versions, we should use four criteria to determine whether we want to upgrade:

- **Is our current version no longer supported?**

  As software manufacturers release new software, they no longer support the older versions. Most software companies support the most recent old version and perhaps one

more past version, but rarely more than two old versions. To check if your version is supported, you can go to the software maker's website and check the support area.

- **Does the new version have some features that will make my work more efficient?**

  Almost every software release includes new features designed to make work more efficient or easier. We should examine the list of new or changed features to see if any will really benefit me. Most people never use more than 10-20% of the features of a software package, so new features in that unused 80% are of less interest.

- **Has the software been out long enough to detect any significant problems?**

  We will usually wait 6-12 months after a major new software version is released before upgrading. In the first few months, the software company finds bugs that they didn't find when testing it and they prepare a service release or minor upgrade to fix those problems. Usually wait until that first service release is available until you upgrade. This reduces the risk of upgrading and running into significant problems.

- **Will I run into file format compatibility issues?**

  If a software application has changed the file format that the information is saved in, the new files may not be compatible with the old version of the software. This can cause problems when sharing files with colleagues or partners. If the file format has changed, I will wait longer to upgrade in order to ensure that most of the people I will share files with have upgraded and we will reduce the risk of running into file compatibility problems.

3.1.1Installing Software

Some software can be executed by simply copying it to a computer and executing it with no further argument; no installation procedure as such is required. Other programs are supplied in a form not suitable for immediate execution, and require an installation procedure. Installation may include unpacking of files supplied in a compressed form, copying them to suitable locations, tailoring the software to suit the hardware and the user's preferences, providing information about the program to the operating system, and so on. The installer may test for system suitability and available mass storage space.

Type of Installations

- **Silent Installation**

  Installation that does not display messages or windows during its progress. "Silent installation" is not the same as "unattended installation", though it is often improperly used as such

- **Unattended Installation**

  Installation that is performed without user interaction during its progress or, in a stricter sense, with no user present at all, except eventually for the initial launch of the process. An installation process usually requires a user who "attends" it to make choices at request: accepting an *EULA*, specifying preferences and passwords, etc.

Some unattended installations can be driven by a script providing answers to the various choices such as the *answer file* which can be used when installing Microsoft Windows on a large number of machines.

- **Self-Installation**

  Unattended installation, without the need of initial launch of the process (i.e. *Vodafone Mobile Connect USB* Modem or Huawei E220's *Mobile Partner* software that self-installs from the USB port).

- **Clean Installation**

  Given the complexity of a typical installation there are many factors that may interfere with its successful completion. In particular files that are leftover from old installations of the same program or an unstable situation of the operating system may all act to prevent a given program from installing and working correctly. An installation performed in absence of such interfering factors (which may vary from program to program) is called a clean installation. In particular, a clean operating system installation can be performed by formatting its destination partition before the actual installation process.

- **Flat Installation**

  An installation of a program performed from a copy (called a flat copy) of its original media contents (mostly CDs or DVDs) to a hard drive, rather than directly from the media. This may help in some situations where the target machine isn't able to cope with random access reads from CD/DVD at the same time as performing the CPU-intensive tasks often required by an installation, or where the target machine does not have an appropriate physical drive.

- **Network Installation**

  An installation of program from a shared network drive. This may simply be a copy of the original media (as in a Flat Installation), but frequently, software publishers which offer site licenses for institutional customers provide a version intended for installation over a network.

Install Microsoft Office 2016

What needed?

- A laptop or PC (obviously!) with at least 1GB of storage space.
- A flash drive (1GB as a minimum, 2GB or above recommended).
- DVD/USB flash drive with at least 1GB free space. This drive will be formatted, so make sure it doesn't have any important files on it.
- Technician PC - PC that you'll use to copy the USB flash drive
- Destination PC - A PC that you'll install The Application software.

3.2 Minimal Disruption to the Client

Just like when installing hardware, one important consideration when installing or upgrading software is to try and install the software with minimal disruption to the client.

You could consider the same installation schedule as of hardware maintenance such as:

- quiet periods (for example, during holiday periods)
- before or after normal office hours
- while the client/user is out of the office
- when the client will not be needing their computer

Installation would vary depends on the software to be installed and the hardware speed. You can check your manuals or documented procedures on how much time it would take to install specific software for a specific hardware. You can also check the web on how much time your software installation would take given your hardware.

Once you have known the how much time it would take for the software installation, you can now arranged a suitable time, make sure you adhere to it or give advanced notice if you will be delayed. Remember that clients may have scheduled their daily workload around the installation.

The use of cloning software would be another option when installing the same software's to several computers that needs to obtain the same software's. Just make a clean installation of all software's on one computer then you can clone the other computers to obtain the same software's at a minimum time. It would be advisable for new computers having the same hardware specifications.

After completing essential verification of suitability of hardware and software according to supervisor's instructions, you have to work out when will be the most suitable time to install the software. The major point which you need to consider is to ensure that the installation process will minimize client disruption.
To achieve that, it is recommended you approach the software installation process in a structured way. That is:

- Establish the approximate time for the installation (include time to resolve problems which may arise during installation)
- Discuss with your client when the projected time for installation will cause minimal disruption to the organization's operation
- Organize resources required to record:
  - ✓ any problems which may arise during installation
  - ✓ a specific options or customized configurations implemented during installation
- Organize resources required during installation process e.g. troubleshooting disks, startup disks, backup disks, license number and registration number

Once the software installation or upgrade has been done, make necessary update on the software inventory for that particular hardware. Update also the operational procedures on how to install the new version of the software being installed.

3.2.1Verify Client Requirements and Client Satisfaction

The last step which you have to do to complete the software installation process is to verify client requirements.

Your client has invested in the software you installed, so you have to demonstrate to your client that the program indeed does what it is supposed to do. Such a demonstration will strongly depend on the type of software you install.

You also have to consider the level of customer's skills in operating the software. For a beginner, you will demonstrate the very basic steps, such as how to get started and close the software. It is also recommended that you provide some information about the appropriate training for beginners. Some companies may provide staff trainer.

Staff Trainer

- *Responsible for training all staff in the use of the new software.*
- *Provides documentation for users and ongoing support.*

For more advanced users, your demonstration should display the use of features matching the client's initial requirements.

Any demonstration which you wish to do should be planned, prepared and tested in advance, prior to installation of the software. Performing an unplanned demonstration may lead to basic errors which may make your customer question the quality of your work.

You should also be aware that some software programs are very complex or may contain many components (e.g. integrated software). In such cases, conducting a demonstration covering every element of the client's requirement would not be practical because it may take very long time. If such programs contain some kind of built-in demonstration, you should make your customer aware of this feature.

The last, and probably the most important way of ensuring client satisfaction is to provide immediate help or support in a case of emergency (Using the Help Desk Staff or Computer Support Officer).

Unfortunately, problems with software happen quite frequently. The most frequent problems with software are generated by inappropriate usage.

Sometimes problems with software may arise due to hardware malfunction, and occasionally problems can be generated by incorrectly written software (software bugs). However, since you installed the software most customers will assume that you are responsible for all problems they experience. If you (and your organization) value a customer and wish to continue providing service, you have to ensure that your client can contact you and report any problems. You also have to respond to these problems and provide a solution as soon as you can.

3.2.2 Installation documentation and report

Installation guide is a technical communication document intended to assist people on how to install a particular program. An installation guide may include the following information: The first part of a guide may give general instructions.
An installation report is a document that describes in detail the correct installation procedures. This can involve a machine, a device or an appliance. When you write an installation report, it must be kept organized and detailed. While there is no proper format required for an installation report, you should include the basic installation steps, safety concerns and installation checklists sections to help the reader understand what the installation requires and why. Organize the sections in the order they are needed, so give an introduction of the device being installed and the safety precautions before the installation process.

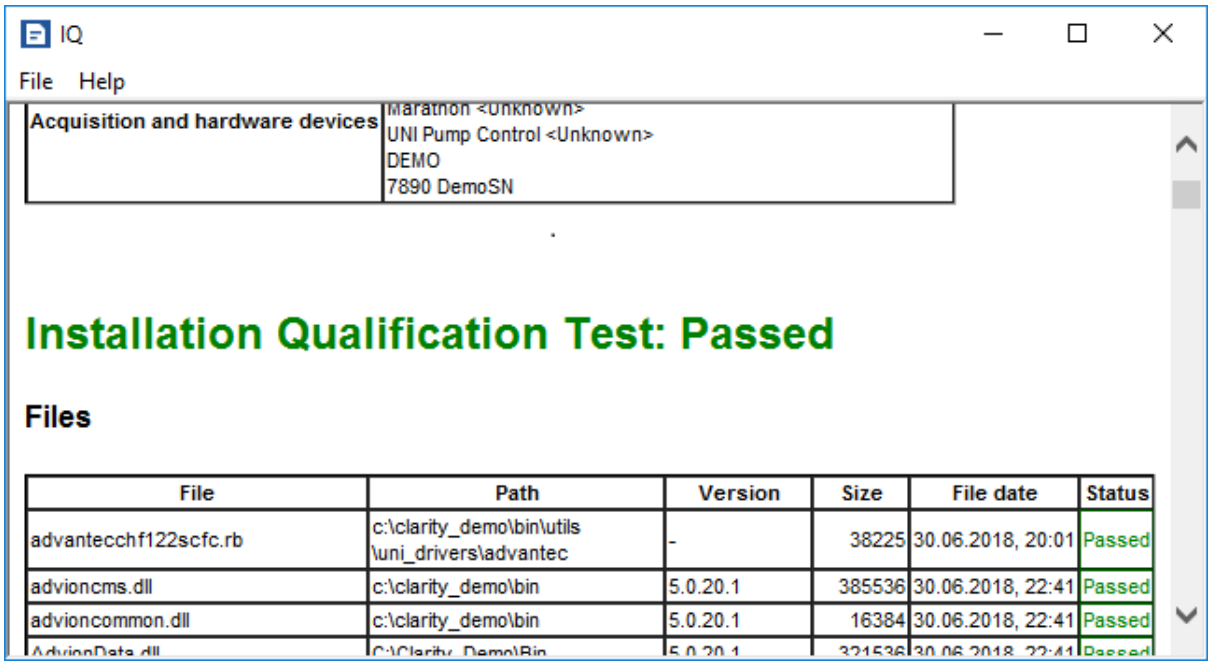


Fig .6 sample installation form

- Write an introduction to your installation report. This should include a description of the item being installed, its function and why it is important to install it correctly. For example, for an oven explain how it is an appliance for the kitchen used to cook warm meals. Explain that proper installation is necessary to avoid fires or gas leaks.
- Provide a list of safety icons or images the person may encounter during the installation process. This can include electrical dangers, possibility of gas leak or sharp edges. Explain each danger and what picture accompanies what safety issue.
- List all of the potential dangers that emerge during the installation process. This can be electrical sparks when installing an electrical box, for example.
- Create a checklist that gives the user the ability to inspect the item for installation to ensure everything is intact prior to the installation process. Inform the reader that if something is broken on the device, installation should not be attempted.

- Write a step-by-step instructional manual that guides the reader through the entire installation process. The manual must be detailed, so the user knows exactly what he is doing at all time. For example, write "Unpack the device from the box and remove all of the packaging and protective paper." Write for beginners and do not take any knowledge for granted.
- Provide detailed sketches or images of the item being installed. If the installation requires assembly, images can be quite helpful to show the reader how pieces are attached to one another.
- Create illustrations to show the reader how specific levels, such as water or battery levels, should appear after installation, if applicable. Illustrations can help show the reader whether the installation is done correctly. If there is a possibility that the water or battery levels can alter during or directly after installation, let the reader know. For example, the water levels in a toilet bowl can alter after installation as the water needs to run its course in the pipes.
- Write a conclusion that focuses on the importance of item management and maintenance. Indicate improper actions, such as placing heavy items on top of the device that may cause the equipment to break or function inadequately if it is not maintained properly.
- Save the installation report as a PDF file. This will ensure that no one except yourself can change or update report as required.

Installing software from the Web

1. Locate and download an .exe file.
2. Locate and double-click the .exe file. (It will usually be in your Downloads folder.)
3. A dialog box will appear. Follow the instructions to install the software.
4. The software will be installed.

3.2.3 Software Testing and Impact Analysis

Test Procedures

Computer Support Officer – The person who receives a technology-free statement of the user requirements and transforms it into a computer system.

- Installs and tests the software.

Once the software has been installed you need to check out its correct operation. Testing procedures used will depend on the type of software being installed. However, for each type of software there are three basic functions which should be tested:

- **Starting software**
- **Software operation**
- **Closing software**

Starting software may involve provision of instructions on how to start the software. It may also involve creation of shortcuts to simplify access to the software.

Testing software operation will require testing data. Data selected for testing purpose should involve use of fundamental features of the software to demonstrate their correct operations.

Closing software will demonstrate the conclusion of the full cycle software operation. Testing all three stages will confirm that there are no side effects in operation of any part of the software. Such are usually the responsibilities of the Computer Support Officer.

Impact Analysis is defined as analyzing the impact of changes in the deployed product or application. It gives the information about the areas of the system that may be affected due to the change in the particular section or features of the application.

The impact is analyzed on Requirements, Design & Architecture, impact on Test and impact on schedule.

Why Change Impact Analysis is done?

A. It is done to understand the possible outcome of implementing the change. Inducing too much functionality into a product can reduce the overall performance of the product.
B. To identify all the files, documents and models that might have to be modified if a team decides to implement the change in product
C. To estimate the effort needed behind implementing the change
D. To identify the task required to implement the change

What is Impact Analysis Document?

Impact Analysis document can be used as a checklist. It is used to evaluate change request before working on them. The Impact Analysis document should give details like

A. Brief description of an issue
B. Explain or show an example of how the defect is causing failure and/or inefficiency
C. Include an estimate of complexity
D. Include an estimate of cost and time for a fix
E. Functionality to be tested
F. List down the new test cases created for the change
G. Reference document- Mention the reference document, technical specification, etc.

Self-Check – 3	Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

_____ 1. Common **APPLICATION** software upgrades include changing the version of

A. Operating System B. Office Suite C. hardware D. All

_____ 2. _____ refers to the replacement of a product with a newer version of the same product.

A. Install B. Uninstall C. Upgrade D. None

_____ 3. For _____, we tend to upgrade as soon as they are released since they usually make the software more stable and reliable.

A. New software versions

B. Service releases or bug fixes

C. Old software versions

D. All

_____ 4. Which of the following is not software Upgrading Risks?

A. Upgrade will improve the product

B. The risk of incompatibility

C. The new version will contain a bug

D. All

_____ 5. Windows applications that do not require installation are often called____.

A. Portable application

B. Installable application

C. Server-based software

D. None

True or false

1. Before installing Application software a Technician PC - Windows PC that you'll use to format the USB flash drive and a Destination PC
2. Closing software will demonstrate the conclusion of the full cycle software operation.
3. Once the software installation or upgrade has been done, make necessary update on the software inventory for that particular hardware.
4. Impact Analysis is defined as analyzing the impact of changes in the deployed product or application

Explain the following

1. What is Installation document?
2. Define Installation report?

3.1. Installing and Upgrade Application software

Operation Sheet – 1	Installing Application Program

Operation sheet 1.2 Install or Upgrade to Microsoft office 2016 Application software

Operation title: Installing or Upgrading Application software

Purpose: To Run Microsoft office 2016 Application

Instruction: Ask for software and necessary materials from your instructor and implement the following steps

Tools and Equipment: Microsoft office 2016 and Personal Computer/Lap top

Precautions:

1. Connect the USB flash drive to your technician PC.
2. Copy Windows Setup to the USB flash drive
3. Use copy and paste the entire contents to the USB flash drive.
4. check the USB have the Setup of Microsoft Office 2016



Fig 8 Microsoft office 2016

Steps:1

1. First input the setup in (flash or DVD).

Then turn on the computer,

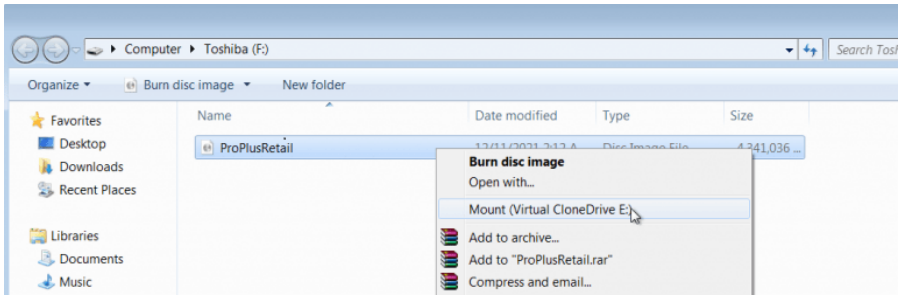


Open the USB drive in File Explorer, and then double-click the setup file.

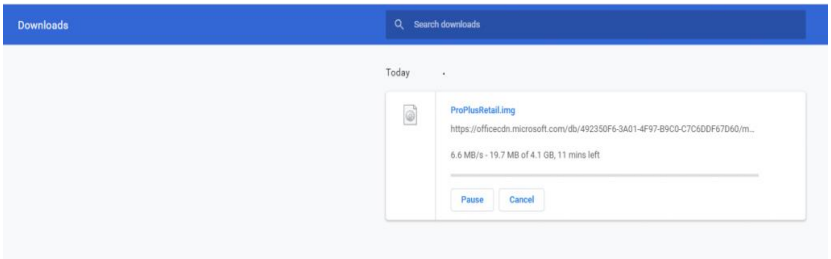
Steps:2



Steps:3



Steps:4



- **Accepting the license terms**, accepting the license terms screen with **Accep**t selected
- In the Choose what to keep window, select what you want to keep, and then **click Next.**
- Then click **Install now.**

Quality criteria : Checking every application integrated in Microsof Office 2016 Properly install

Operation Sheet – 2	Installing Application Program

1.3How to install Acrobat Adobe

Operation title: installing or Application software

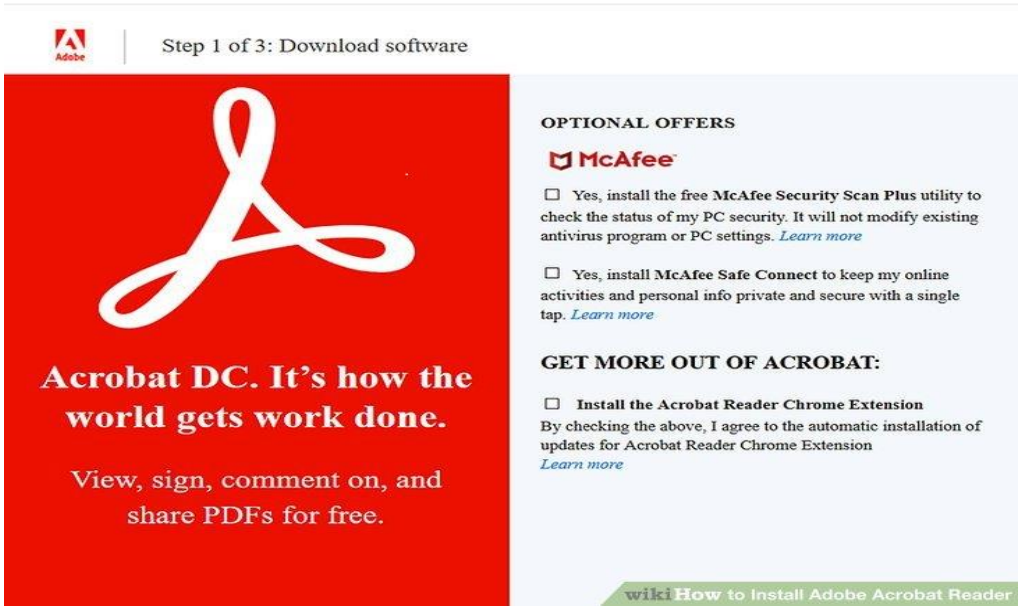
Purpose: To Run Acrobat Adobe
Instruction: Ask for software and necessary materials from your instructor and implement the following steps
Tools and Equipment: Acrobat adobe setup and Personal Computer/Lap top
Precautions:

- Connect the USB flash drive to your technician PC.
- Copy Acrobat Adobe Setup to the USB flash drive
- Use copy and paste the entire contents to the USB flash drive.
- check the USB have the Setup of Adobe Application

To Install a Program from the Internet

Step 1:- In your Web Browser, click the Link to the program.
Do one of the following:

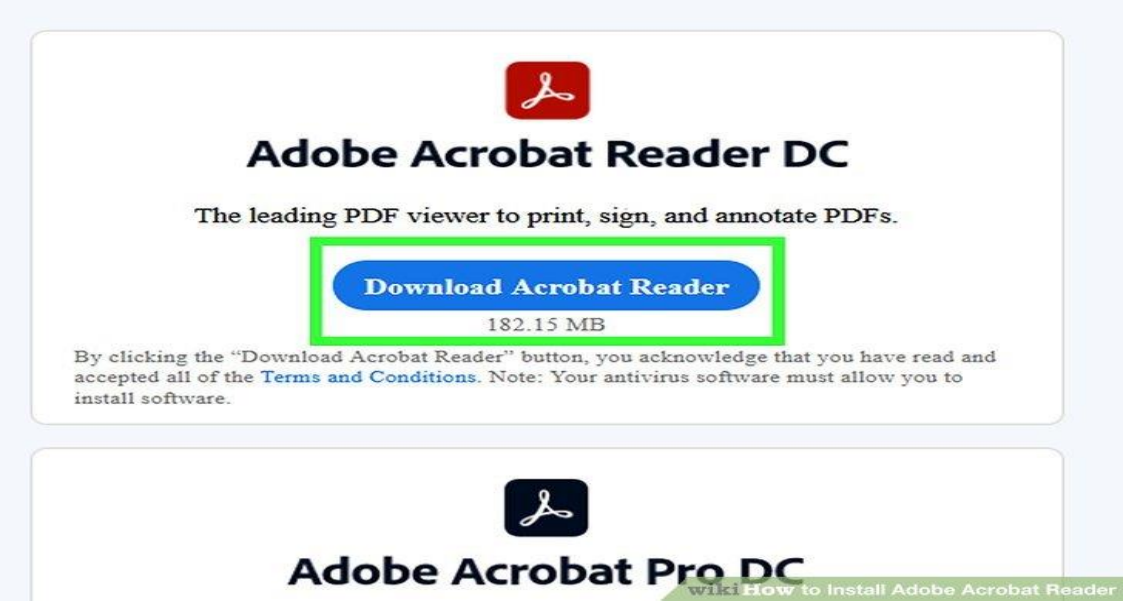
- Click on the searched setup (Download)



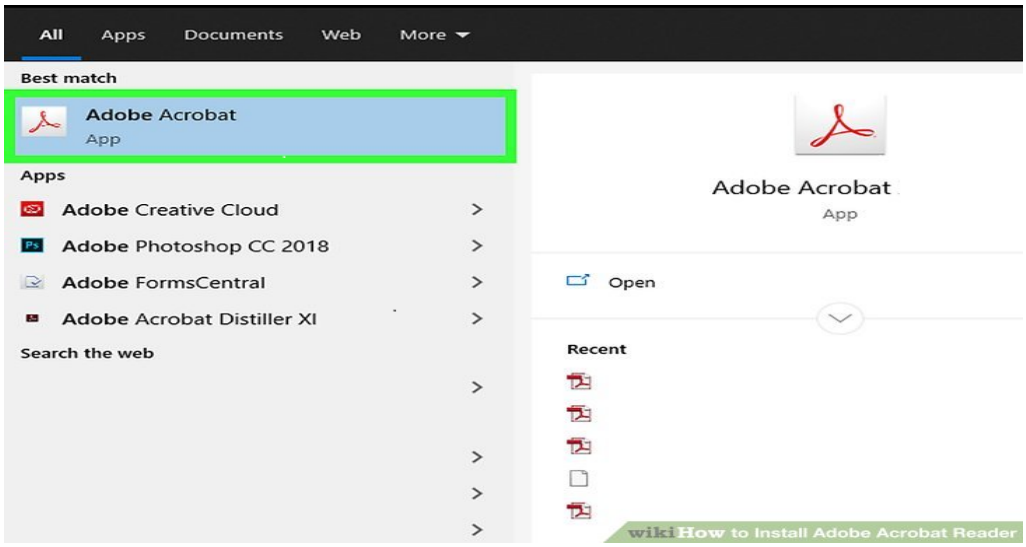
When downloading and installing programs from the Internet, be sure you trust the publisher of the program and the website that is offering the program.

Or

Download Adobe Acrobat Reader.
Image titled Install Adobe Acrobat Reader

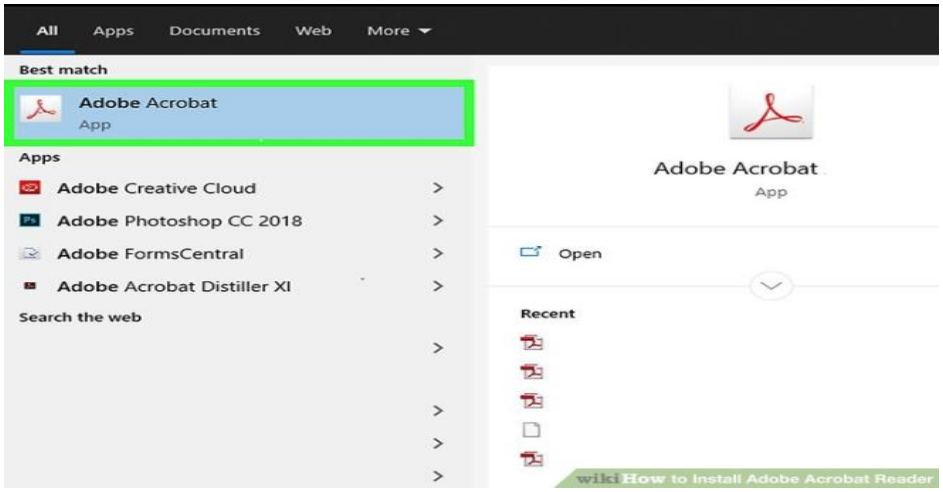


Step 2
Download the Software by clicking on the Download Button.
Image titled Install Adobe Acrobat Reader
Go to the directory, where your downloaded Installation file has been kept, usually Desktop.
Image titled Install Adobe Acrobat Reader



Step 3

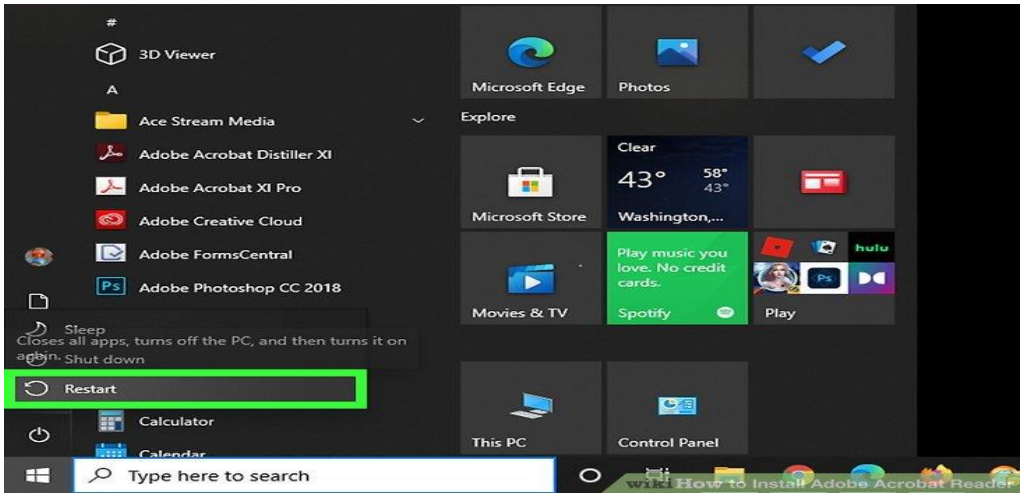
Double-Click the Installation File.
Image titled Install Adobe Acrobat Reader



Step 4

Let the Setup File install Adobe Acrobat Reader on your computer. Image titled Install Adobe Acrobat Reader

Restart your computer. Image titled Install Adobe Acrobat Reader



Quality criteria :

- Checking every application integrated in Microsof Office 2016 Properly install.
- If the program you want to uninstall is not listed, it might not have been written for this version of Windows.
- To uninstall the program, check the information that came with the program.

LAP Test-1	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within -1 hour.

1. You need to successfully Install Power Geez 10 and Google Chrome, Antivirus

2. Uninstall the other browser like opera, edge

3. Using the following condition. Check every application works properly

Instructions: Given necessary templates, tools and materials you are required to perform the following 1- hour.

1. You need to successfully install the following application software's.
   A. Adobe Acrobat Reader
   B. Microsoft Office 2016

2. You need to successfully uninstall tasks within the following application software's.
   A. Adobe Acrobat Reader
   B. Microsoft Office 2016

List of Reference Materials

- software-installation-and-upgrade camberig university).
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- help.adobe.com/ca/acrobat/kb/install-reader-dc-windows.

Participants of this Module (training material) preparation

No	Name	Qual/ (Level)	Field of Study	Organization/ Institution	Mobile number	E-mail
1						
2						
3						
4						
5						
6						
7						