Computer Ethics
Definition of Computer Ethics

Ethics is a set of moral principles that govern the behavior of a group or individual.

Computer ethics can be defined as the set of moral principles that regulate the use of computers.

RESPONSIBLE USE OF COMPUTER AND INTERNET

The following are the basic security measures taken to prevent damage to computer system.

1. There must be adequate ventilation.
2. Adequate space must be allowed between each system unit.
3. Avoid dust by using cover.
4. Avoid moisture.
5. Provision of air conditioners and fans or other cooling machines.
6. Provision of UPS (Uninterruptible Power Supply) and other electrical appliances to avoid loss of information and electrical damage to the system.
7. Adequate care must be taken to storage devices like diskettes, flash drive, CD/DVD writer drive, etc.
8. Disallow an unauthorized user from having access to your computer.
9. Ensure maximum security to files and information on the computer.
10. Provide computer with anti-virus program to avoid viruses.
11. Avoiding food particles dropping into the system.
12. Unplug the system when not in use for a long time.
13. Check your e-mail regularly.
14. Give prompt and polite response to mails.

REASONS FOR TAKING CARE OF THE COMPUTER

a. To avoid damage to files
b. To protect the system
c. To prolong the life of the system
d. To make the user comfortable for maximum efficiency.

AREAS OF ABUSE AND MISUSE OF THE COMPUTER

The following are areas in which computer can be misused.

1. **Invasion of privacy (hacking)**
2. **Computer virus**
3. **Fraud**
4. **Stealing**
5. **Software piracy**
6. **Cyber war**
7. **Plagiarism**
8. **Pornography**

1. **Invasion of privacy (hacking)**: through the internet, a lot of information can be passed to several places and among people. To this end, the privacy of information cannot be guaranteed; hence someone can have access to another person's information. People who gain unauthorized access to a computer system or data belonging to somebody else are called a hacker. They invade computer database to steal the identities of other people by obtaining private information about them

2. **Computer virus**: This can affect the computer through the internet where unsolicited information is sent to destroy files in other computers. Computer virus can also occur where diskette, CDs, DVDs, flash drives that have been corrupted are used in another computer. It is therefore necessary to that anti-virus programs are installed in our computers to detect and clean any virus that may want to attack our computers.

3. **Fraud**: Through the internet and computer networks a lot of deception and scam can be perpetrated by dubious people

4. **Stealing**: people can steal very important documents, information and money through the misuse of computer and the internet.

5. **Software piracy**: This is the situation where programs written by people are used without their permission.

6. **Cyber war**: this is the use of computer and the internet in conducting warfare in cyberspace. The type of attacks include web vandalism, propaganda, where political messages can be spread through or to anyone with access to the internet, equipment destruction, where military activities that use computers and satellites for coordination are at risk and their communications and orders intercepted or replaced thereby putting soldier at risk.

7. **Plagiarism:** This is the situation where the original works of people especially books and other works are copied verbatim (word for word). Without due acknowledgement of the owner. All this can happen on the internet.

8. **Pornography**: Children and adults misuse the computer by watching pornographic films and pictures on the internet. These are pictures of nude people and obscene sexual acts on the internet.

COMPUTER SAFETY MEASURES

Computer Safety Measures are very important and should be given consideration in any computing environment. These measures ensure that no harm is done to the computer user, the computer users or others around.

TYPES OF COMPUTER SAFETY MEASURES

There are two major types of computer safety measures. They are:

1. The Physical or Computer Safety Measures
2. The Operational or User's Safety Measures

1. THE PHYSICAL OR COMPUTER SAFETY MEASURES RELATING TO THE COMPUTER ARE:

i. Computers must be located in a secure environment to prevent theft.
ii. Prevent unauthorized access to the computer with use of password or passphrase.
iii. Backup your data on the computer to prevent loss.
iv. Ensure the use of password or passphrase to protect sensitive data on your computer.
v. Do not spill liquid on the computer.
vi. Ensure you use good and current anti-virus software in your computers.
vii. Do not use carpets or rugs on the floors of computer rooms.
viii. Ensure the use of good surge protectors.
ix. Ensure the use of Uninterruptible Power Supply (UPS)

2. OPERATIONAL OR USER'S SAFETY MEASURES TO BE OBSERVED ARE:

i. maintain good sitting position when using the computer.
ii. Use anti-glare screen protector for your computer monitors.

iii. Operate the computer in a well illuminated room or environment.
iv. Blink your eyes frequently to reduce dryness.
v.   Shake your hands periodically after typing for a long period.
vi. take frequent short break when performing repetitive task.
vii. Do not always stay too long on the computer.

Computer Room

Computer room is a place where computers and its accessories are kept for use by students or staff of the organization.

Computer Room Management Ethics

A computer room must be managed properly. Unlike our homes we need to keep a computer room in a good condition always by:

1. **Making it free of dust**
2. **Maintaining appropriate lighting**
3. **Maintaining adequate and appropriate ventilation**
4. **Proper setup of computer system**
5. **Avoid eating and drinking in computer room**
6. **Avoid noise making in a computer room**
7. **A maintenance officer should check all computers before and after use.**

1. **Making it free of dust:** we should endeavor to dust our computers every day after sweeping the room. After sometime, a computer engineer should use a blower to blow off dust from within the computer.

2. **Maintaining appropriate lighting**: a computer room must not be dark while computers are being used. Steady flow of electricity and a device called uninterruptible power supply (UPS) should be

used. A UPS is a device used to store electricity for the computer in case of power failure.

3. **Maintaining adequate and appropriate ventilation**. A cooling system is very necessary all the time for our computers. Fans and air conditioners should be used always to avoid computers being damaged because of heat.

4. **Proper setup of computer system**: all connections should be done before usage.

5. Eating and drinking should be avoided while in computer room.

6. Noise should be avoided in a computer room.

7. A maintenance officer should check all computers before and after use.

8. Power points should be attached to the wall close to each computer.

9. A computer laboratory should be out of bound for non-computer users.

10. Keep the computer away from direct sunlight and sources of heat.

Laboratory Rules and Regulations

In a computer laboratory, certain rules and regulations should be observed. They include:

1. Chairs and tables should be arranged in a comfortable manner so as to ease movement within the computer laboratory.

2. Power points should be attached to the wall close to each computer.

3. The system unit and peripherals such as monitors, keyboard, mouse etc should be arranged in an orderly manner.

4. A computer laboratory should be out of bound for non-computer users.

5. Computers should be booted properly before use and shut down properly after use to avoid damage to the memory files of the computer.

6. There should be no smoking, eating or drinking in the computer laboratory.

7. Keep the computer away from direct sunlight and sources of heat.

8. Be careful about using diskettes or external storage devices from unknown sources as the computer could easily get infected with a virus.

COMPUTER SOFTWARE

Definition of Software

Software is a set of instructions and procedures passed to the computer to perform certain activities or task.

It can also be defined as a set of instructions that direct the activities of the computer system in order to undertake a specific task.

Unlike the hardware, software cannot be seen or touched.

Types of Software

Software is divided into two broad groups, these are:

1. System Software

2. Application software

1. **System Software:** These are software that control the way the different computer components communicate with one another. It can also be defined as programs that help run the computer hardware and software. The system software consists of programs, written by manufacturers,

which contributes to the proper control and good performance of the computer system.

System software generally comprises of three groups. These are: i. Operating system

ii. Utility software

iii. Translators

i. **Operating system:** Operating (OS) is software program that manages the hardware and software resources of the computer. Examples Disk Operating System (DOS), Microsoft windows, UNIX, LINUX, MAC etc

ii. **Utility software:** utility software (service programs) are used for general housekeeping of the computer such as repairing the computer, backing up files, copying, sorting and printing. Examples of utility programs include: window explorer, Antivirus, Network manager, Registry cleaner, data compression utilities, etc

iii. **Translators:** Translators are programs for converting programs in other languages into machine language instruction so that the computer can execute them. Examples include assembler, compiler and interpreter.

2. **Application Software** These are software that allows humans to accomplish one or more specific (non-computer) task. There are different types of application software, they include:

a. **Word processing software:** These are software used for creating, editing and printing document. Example include: Microsoft Word, Notepad, Corel WordPerfect, WordPad, etc.

b. **Spreadsheet software:** These are software for performing accounting and statistical calculations. Examples are: Microsoft Excel, Lotus 1-2-3, etc.

c. **Graphics software:** These are software that are used for drawing and designing purposes, examples CorelDraw, Paint, Photoshop, Instant Artist, etc.

d. **Database Application:** Database software allows you to enter, retrieve and update data in an organized and efficient manner. Commonly used database programs include Microsoft Access and Lotus 1-2-3

e. **Presentation:** A presentation program is a computer software package used to display information, normally in the form of a slide show. Examples are MS power point, Corel Presentations, Open Office.org Impress, SlideSlider, SlideRocket SlideWiki, Audience (software), Ease, Emaze, WPS presentation, etc Operating System

OPERATING SYSTEM
What are operating systems?
An operating system is a type of software interface between the user and the device hardware. It allows users to communicate with the device and perform the desired functions.
Every computer, smartphone or similar electronic device comes with special software called an operating system. It is also known as an OS, is the engine behind the utility value of computers and smartphones. It uses a graphic user interface (GUI), a combination of graphics and text that allows you to interact with the computer or device.
Operating systems use two components to manage computer programs and applications. The kernel is the core inner component that processes data at the hardware level.

FUNCTIONS OF AN OPERATING SYSTEM
1. **Booting:** it manages the startup of a device.
2. **Memory management:** it coordinates computer applications and allocates space to different programs installed in the computer.
3. **Data security:** it protects your data from cyber-attacks.
4. **Loading and execution:** it starts and executes a program.
5. **Drive/disk management:** it manages computer drives and divides disks.
6. **Device control:** it enables you to allow or block access to devices.
7. **User interface**: it allows users to enter and receive information.
8. **Process Management:** it allocates space to enable computer processes, such as storing and sharing information.

Note: Most operating systems come pre-installed on the device. However, users can change their OS or upgrade to a newer version of the operating system for better device performance.

IMPORTANCE OF OPERATING SYSTEMS

Knowledge of operating systems is important for the following reasons:

1. It allows you to understand the inner workings of a device.
2. It enables you to fix minor issues with the device.
3. It allows you to improve your coding skills.
4. It allows you to determine what operating system is best for you.

TYPES OF OPERATING SYSTEMS

There are different types of operating systems depending on:

i. The Device,
ii. The Manufacturer and
iii. The User Preference,

Here are some of the different types of operating systems you need to know:

1. **Batch operating systems**
2. **Timing sharing operating system**
3. **Simple batch system**
4. **Multiprogramming batch system**
5. **Multi-processor system**
6. **Desktop system**
7. **Distributed operating system**
8. **Clustered system**
9. **Real time operating system**
10. **Handheld system**

1. **Batch operating systems:** This is an operating system that does not have a direct link with the computer.

ADVANTAGES

1. It can be shared by many users.
2. There is little idle time.
3. It is easy to manage large workloads.
4. It save time.

DISADVANTAGES

1. It is challenging to debug.
2. Its failure creates backlog.
3. It is costly to install and maintain.
2. It is used majorly by financial institutions

2. **TIME-SHARING OR MULTITASKING OPERATING SYSTEMS:** This is a time-sharing or Multitasking operating system that works by allocating time to a particular task and switching between tasks frequently.

ADVANTAGES

1. It response quickly during task performance.
2. It minimizes the idle time of the processor
3. It allocate equal time task.
4. It reduces chances of software duplication.

DISADVANTAGES
1. The user's data is unsecured.
2. System failure can lead to widespread failures.
3. It leads to data communication Problems.
4. Users data integrity not assured.

3. DISTRIBUTED OPERATING SYSTEMS

This system is based on autonomous but interconnected computers communicating with each other via communication lines or a shared network. Each autonomous system has its own processor that may differ in size and function.

ADVANTAGES

1. They allow remote working.
2. They allow a faster exchange of data among users.
3. Failure in one site may not cause much disruption to the system.
4. They reduce delays in data processing.
5. They minimize the load on the host computer.
6. They enhance scalability since more systems can be added to the network.

DISADVANTAGES

1. If the primary network fails, the entire system shuts down.
2. They're expensive to install.
3. They require a high level of expertise to maintain.
4. It is used for tasks such as telecommunication networks, airline reservation controls and peer-to-peer networks.

4. NETWORK OPERATING SYSTEMS

Network operating systems are installed on a server providing users with the capability to manage data, user groups and applications. Examples includes Microsoft Windows, Linux and macOS X.

ADVANTAGES

1. Centralized servers provide high stability.
2. Security issues are easier to handle through the servers.

3. It's easy to upgrade and integrate new technologies.
4. Remote access to the servers is possible.

DISADVANTAGES

1. They require regular updates and maintenance.
2. Servers are expensive to buy and maintain.
3. Users' reliance on a central server might be detrimental to workflows.

5. REAL-TIME OPERATING SYSTEMS

Real-time operating systems provide support to real-time systems that require observance of strict time requirements.

Real-time operating systems may either be:

i. Hard real-time systems
ii. Soft real-time systems

Hard real-time systems are installed in applications with strict time constraints. The system guarantees the completion of sensitive tasks on time. Hard real-time does not have virtual memory.

Soft real-time systems do not have equally rigid time requirements. A critical task gets priority over other tasks.

ADVANTAGES

1. They use device and systems maximally, hence more output.
2. They allow fast shifting from one task to another.
3. The focus is on current tasks, and less focus is put on the queue.
4. They can be used in embedded systems.
5. Real-time systems are meticulously programmed, hence free of errors.
6. They allow easy allocation of memory.

DISADVANTAGES

1. They have a low capacity to run tasks simultaneously.
2. They use heavy system resources.
3. They run on complex algorithms that are not easy to understand.
4. They're unsuitable for thread priority because of the system's inability to switch tasks.
5. It is used for tasks such as scientific experiments, medical imaging, robotics and air traffic control operations.

6. **MOBILE OPERATING SYSTEMS: these** run exclusively on small devices such as smartphones, tablets and wearables. The system combines the features of a personal computer with additional features useful for a handheld device. Examples of mobile operating systems include Android OS, Apple and Windows mobile OS.

ADVANTAGES

1. It is easy for users to learn and operate.
   al disadvantages of real-time operating systems are:
2. Some mobile OS put a heavy drain on a device's battery, requiring frequent recharging.
3. Some systems are not user-friendly.

COMMON OPERATING SYSTEMS

Here are the most common operating systems in use:

1. Microsoft Windows: it is Created by Microsoft, and it is one of the most popular proprietary operating systems for computers in the world. Most personal computers come preloaded with a version of Microsoft Windows. One downside of Windows is that compatibility with mobile phones has been problematic.
2. Apple iOS: it is from Apple, and is used on smartphones and tablets manufactured by the same company. Users of this system have access to hundreds of applications. It offers strong encryption capabilities to control unauthorized access to users' private data.
3. Google Android: it is the most popular operating system in the world. It's mainly used on tablets and smartphones. It also runs on devices made by other manufacturers. Users have access to numerous mobile applications available on the Google Play Store.
4. Apple macOS: it is Developed by Apple, this proprietary operating system runs on the manufacturer's personal computers and desktops. All Apple and Macintosh computers come equipped with the latest version of macOS, previously known as OS X systems. The ability to prevent bugs and fend off hackers make Apple operating systems popular with their users.
5. Linux: it is Created by the Finnish programmer Linus Torvalds, Linux is today developed by programmer collaborators across the world who submit tweaks to the central kernel software. Linux is popular with programmers and corporate servers. It is available for free online.

Graphic Packages

Definition of Graphic Package

Graphics packages are application software that can be used to create and manipulate images on a computer.

Examples of Graphic Packages

Examples of graphic packages include:

- ➢ Microsoft Paint
- ➢ Adobe Photoshop
- ➢ Instant artist
- ➢ Harvard graphic

➤ CorelDraw.

General Features of Graphic Packages

Most of the graphic packages possess the following features and tools.

1. Title bar

2. Menu bar

3. Tool bar

4. Toolbox

5. Printable/working area

6. Scroll bar

7. Status bar

1. Title bar: this is the bar that comes before the menu bar, it carries the application name and title of the work you are doing at that particular time.
2. Menu bar: The menu bar can be used to activate commands of graphic packages and operations. Depending on the graphic package you are using, some packages contain the following. File, edit, view, text, tools, window, help, etc.

3. Toolbar: The tool bar is a bar that contains short cuts to menu and other command. For example you can use the "open" icon to open an existing document by clicking on it. Others are save, print, cut, copy, paste, alignment, bold, italics, underline etc
4. Toolbox: A toolbox is a box with tools for creating, filling and modifying objects in the drawing

5. Printable area/Working Area:
 Printable area can be referred to as the work space inside the drawing window, which you can place your work on.
6. Colour palette: It is a bar that allows you to fill desired objects or texts with any colour you want.
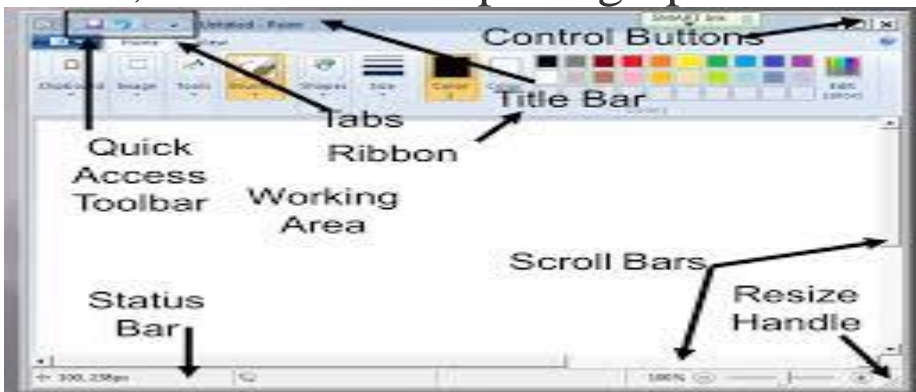
Starting Paint Program
To start a point program the following steps are to be followed:
1. Click on Start Menu
2. Click on all Applications
3. Click window accessories
4. Move to paint program and Click on it

Features of the Paint Environment
Paint is a software from Microsoft Incorporation. It allows one to create, customize and paint graphics or images.

Tools in the Toolbox
The paint toolbox has sixteen tools. The names of the different tools are shown in the diagram below:

| Free From Select | | | Select |
Eraser			Fill With Color
Pick Color			Magnifier
Pencil			Brush
Air Brush			Text
Line			Curve
Rectangle			Polygon
Ellipse			Rounded Rectangle

Functions of Toolbox Tools

1. **Free-form select:** The free-select tool is a tool used to select objects that have been drawn in the drawing area

2. **Rectangle Select tool:** The Rectangle select tool is also used to select objects in the drawing area.

3. **The eraser tool**: It is used to remove mistakes that have been made in a drawing. The size of the eraser can be adjusted to remove either big or small areas of a drawing

4. **Fill colour tool**: This is a tool also known as paint bucket tool. It is used to fill objects that have been drawn with any colour of your choice.

5. **Pick colour tool**: The pick colour is used to pick or select colour from pictures.

6. **Magnifier tool:** The magnifier tool is used to make objects in the drawing area appear bigger or smaller.

7. **Pencil tool:** The pencil tool is known as the default tool in the paint program. You can use the pencil for drawing just like a real life pencil. You must click and drag the mouse pointer to use the pencil tool.

8. **Brush tool:** The brush tool works like a real life brush. You have different brush options to choose from in the tool box.
9. **Air brush tool:** The air brush tool is used to spray colour over an objects. The airbrush tool works like a spray can. The amount of colour spray over a particular area depends on how long you hold down the mouse button and keep it in the same area.
10. **Text tool:** the text tool is used for inserting text into the drawing.
11. **Line tool:** The line tool is used to draw horizontal, vertical and diagonal lines.
12. **Rectangular tool:** The rectangular tool is used to draw rectangles and squares of different sizes.
13. **Curve tool:** The curve tool is used for drawing curves from a line. To draw curve line, you must first draw a line with the tool, and then click on any part of the line and drag the mouse pointer to create a curve on the line.
14. **Polygon tool:** The polygon tool is used to draw straight line objects with different shapes and sizes. You can use the polygon tool to draw a triangle, star, rhombus and many other polygon.
15. **Ellipse tool:** The ellipse tool is used for drawing ovals and circles of different sizes.
16. **Rounded rectangle tool:** It is used for drawing rectangles and squares of different sizes with rounded edges.

PAINT TOOLS AND THEIR FUNCTIONS
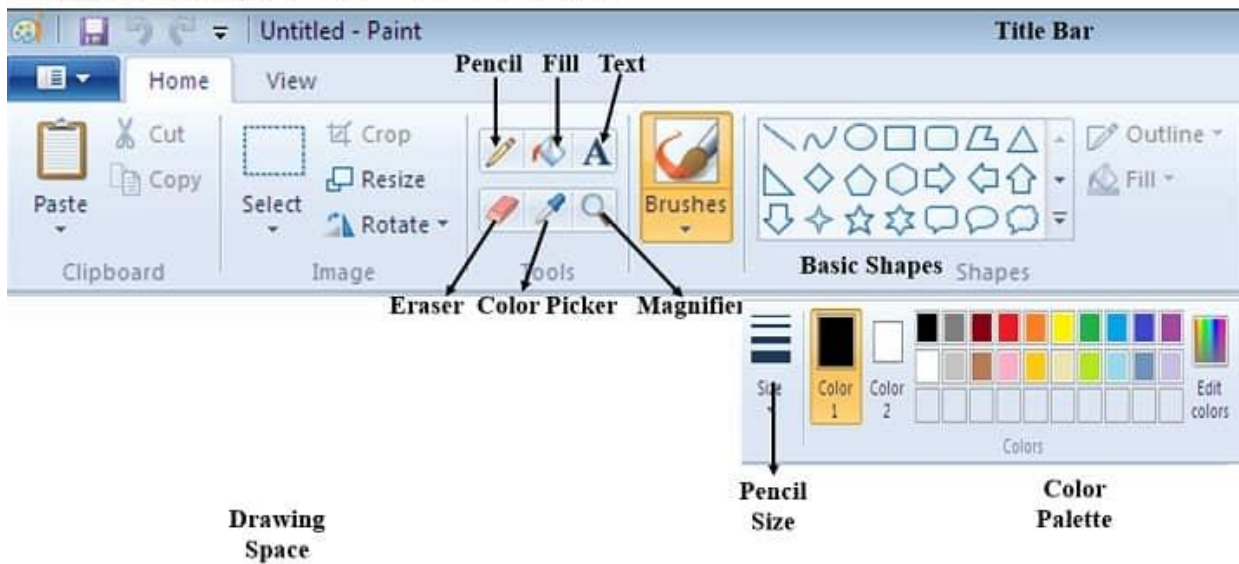
PROJET ASSIGMENT

Draw the following objects and colour it with different colours:

1. SQUARE
2. RECTANGLE
3. CIRCLE
4. TRIANGLE
5. PENCIL