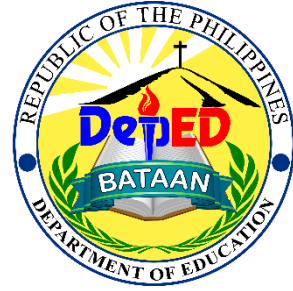


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SCIENCE, TECHNOLOGY AND ENGINEERING (ADVANCE SUBJECT) COMPUTER SCIENCE 2

**Quarter 1 – Module 1:
Basic Concepts and Underlying
Principles of Photo Editing**

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AND ENGINEERING
(ADVANCE SUBJECT)
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Principles of Photo Editing**

INTRODUCTION

Welcome to the first level of your modular training in Computer Science 2. In this course, you will be introduced to different learning activities preparing you to be skillful before you take the plunge into the world of work as a photo editor and to feel more confident while providing support where needed.

The hand is one of the most symbolized part of the human body. It is often used to depict skill, action and purpose. Through our hands we may learn, create and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

So, explore and experience the K to 12 modules and be a step closer to be a photo editor.

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



What I Need to Know

This will give you an idea of the skills or competencies you are expected to learn in the module.



What I Know

This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.



What's In

This is a brief drill or review to help you link the current lesson with the previous one.



What's New

In this portion, the new lesson will be introduced to you in various ways such as a story, a song, a poem, a problem opener, an activity or a situation.



What is It

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



What's More

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.

***What I Have Learned***

This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.

***What I Can Do***

This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.

***Assessment***

This is a task which aims to evaluate your level of mastery in achieving the learning competency.

***Additional Activities***

In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.

***Answer Key***

This contains answers to all activities in the module.

At the end of this module you will also find:

References

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!



What I Need to Know

Objectives

At the end of this module, you are expected to:

- ❖ formulate your learning goals and targets
- ❖ explore and examine the basic concepts and underlying principles of photo editing specifically using the Adobe Photoshop
- ❖ apply the concepts and skills learned in photo editing
- ❖ produce a marketable product or service in photo editing
- ❖ appreciate the relevance of learning the basic concepts and skills of photo editing



What I Know

Activity. How Much Do You Know?

A. Direction: Answer the questions based on your current photo editing ability (in any photo editing program). Use the 4-point Likert Scale below. Write your answer in a separate sheet of paper.

1 – Not at all 2 – Maybe, with some help

3 – Yes, independently 4 – So well that I could help others

Indicators	1	2	3	4
1. I can use the zoom tool to zoom in and out on a photo.				
2. I can define what a pixel is.				
3. I can resize a photo.				
4. I can rotate-flip a photo.				
5. I can crop a photo.				
6. I can turn a photo to black and white and/or sepia.				
7. I can use selection tools to select part of a photo.				
8. I can add special effects to a photo.				
9. I can add text to a photo.				
10. I can put a decorative frame and/or mask around a photo.				
11. I can use the stamp or clone tool.				
12. I can use drawing tools on a photo.				
13. I have used photo editing before.				
14. I can remove red eye on the photo.				
15. I can differentiate the RGB to CYMK.				

PHOTO EDITING – encompasses the processes of altering images, whether they are digital photography, traditional photochemical photographs, or illustration. Traditional analog image editing is known as photo retouching, using tools such as an airbrush to modify photographs, or editing illustrations with any traditional art medium.

BASIC OF PHOTO EDITING

- ✚ **IMAGE EDITING** - is the processes of altering images, whether they are digital photographs, traditional analog photographs or illustrations.
- ✚ **TRADITIONAL ANALOG IMAGE EDITING** – is known as **photo retouching**, using tools such as an airbrush to modify photographs, or editing illustrations with any traditional art medium.
- ✚ **GRAPHIC SOFTWARE PROGRAMS** - which can be broadly grouped into vector graphics editors, raster graphics editors and 3D modelers, are the primary tools with which a user may manipulate, enhance and transform images.
- ✚ Many image editing programs are also used to render or create computer art from scratch.

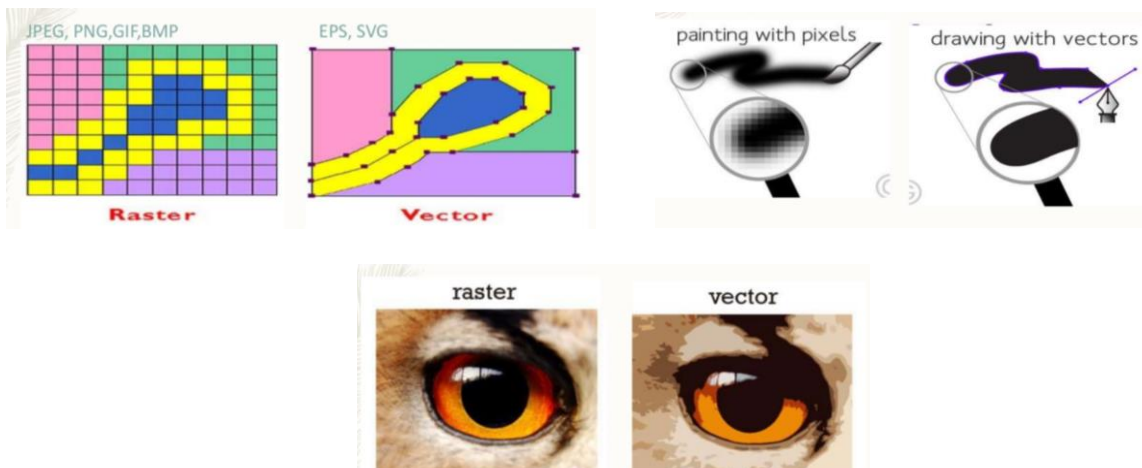
Images are stored in a computer in the form of a grid of picture elements, or pixels. These pixels contain the image's color and brightness information. Image editors can change the pixels to enhance the image in many ways. However, vector graphics software, such as Adobe Illustrator, CorelDRAW, Xara Designer Pro or inkscape are used to create and modify vector images, which are stored as descriptions of lines, Bezier, curves and text instead of pixels.

It is easier to rasterize a vector image than to vectorize a raster image; how to go about vectorizing a raster image is the focus of much research in the field of computer vision. Vector images can be modified more easily, because they contain descriptions of the shapes for easy rearrangement. They are also scalable, being rasterizable at any resolution.

DIFFERENCE BETWEEN RASTER AND VECTOR IMAGES

RASTER – raster images used many colored pixels or individual building blocks to form a complete image. JPEGs, GIFs AND PNGs are common raster image types. Almost all of the photos found on the web and in-print catalogs are raster images.

VECTOR – vector images, alternately, allow for more flexibility. Constructed using mathematical formulas rather than individual colored blocks, vector file types such as EPS, A1 and PDF are excellent for creating graphics that frequently require resizing.



3D MODELING – in 3D computer graphics, 3D modeling is the process of developing a mathematical representation of any three-dimensional surface of an object (either inanimate or living) via specialized software. The product is called a 3D model. It can be displayed as a two-dimensional image through a process called 3D rendering or used in a computer simulation of physical phenomena. The model can also be physically crated using 3D printing devices.



IMAGE FORMATS

RASTER

- **JPEG** (JAY-peg) is a commonly used method of lossy compression for digital images, particularly for those images produced by digital photography.
- **Portable Network Graphics (PNG /'pin)** is a raster graphics file format that supports lossless data compression. PNG was created as an improved, non-patented replacement for Graphics Interchange Format (GIF) and is the most used lossless image compression format on the internet.
- **GIF** a lossless format for image files that supports both animated and static images.
- The **BMP** file format, also know as bitmap image file or device independent bitmap (DIB) file format or simply a bitmap, is a raster graphics image file format used to store bitmap digital images, independently of the display device (such as a graphics adapter), especially on Microsoft Windows and OS/2 operating systems.

VECTOR

- **Encapsulated Postscript Vector graphics (Adobe Illustrator) EPS** is a file extension for a graphics file format used in vector-based images in Adobe Illustrator. EPS stands for Encapsulated Postscript. An EPS file can contain text as well as graphics.
- **Scalable Vector Graphics (SVG)** is an XML-based vector image for two-dimensional graphics with support for interactivity and animation. The SVG specification is an open standard developed by the World Wide Web Consortium (W3C) since 1999. SVG images and their behaviors are defined in XML text files.

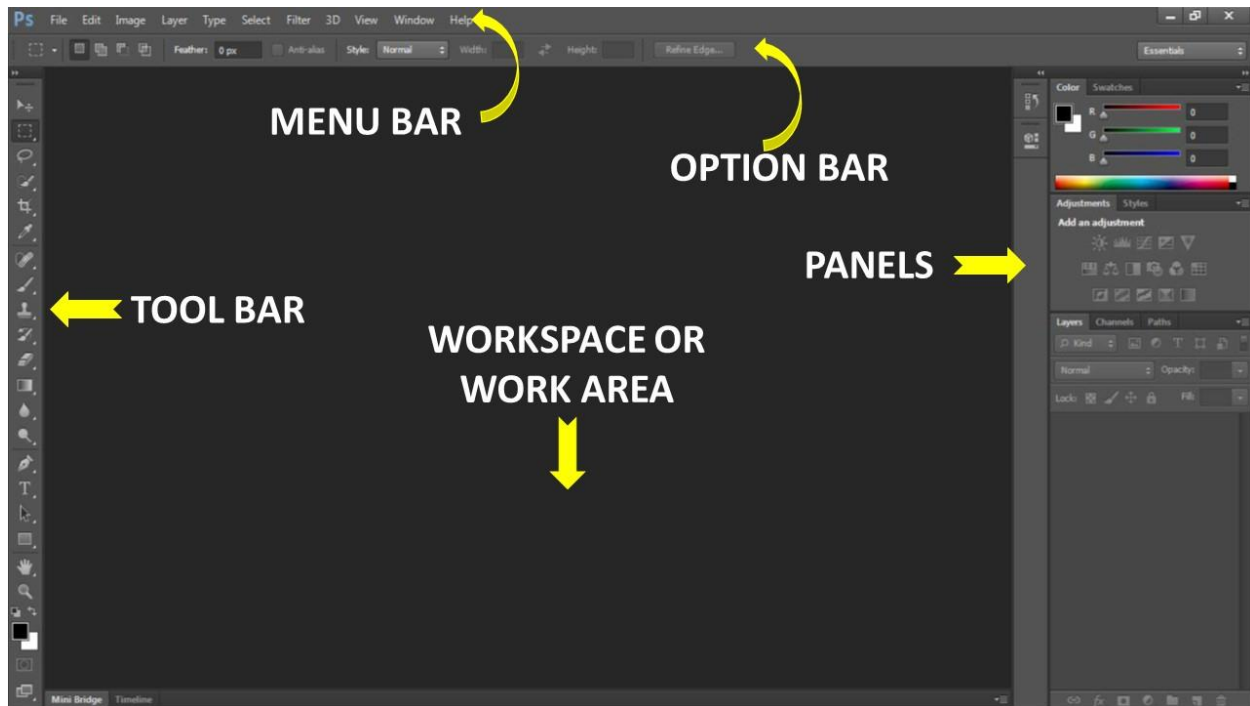
3D

- **.3ds** is one of the file formats used by the Autodesk 3ds Max 3D modeling, animation and rendering software.
- **.fbx** is an exchange format, in particular for interoperability between Autodesk products and other Digital content creation (DCC) software packages.

Overview of Adobe Photoshop

Adobe Photoshop is a seriously powerful photo and image editing application. Let us have a quick look at what Photoshop is, and what it is not. Remember that Photoshop is not a drawing program.

This is a very common source of confusion and frustration. Although it is possible to use Photoshop to design and construct original graphics, you will find that it is difficult and limited. The reason is that Photoshop is not intended to be used for this type of work. Photoshop is an *image editing* tool, not a *design tool*. To create original images, Adobe provides other specialist programs such as Adobe Illustrator and Adobe Image Ready.

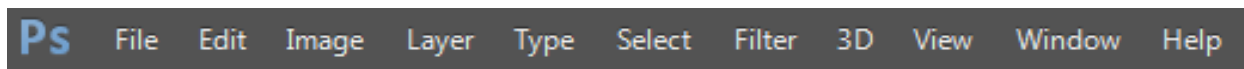


ELEMENTS OF THE INTERFACE

A. MENU BAR

Contains menus for performing common tasks.

- Consists of eleven menu options: File; Edit; Image; Layer; Type; Select; Filter; 3D; View; Window; Help
- Menu items containing an ellipsis (three consecutive dots) indicate that a dialogue box will follow that option.
- Menu items with an arrow indicate a submenu for that particular option.



1. **File** Menu – New (Starting a new file), Open (Opening a previous file), Save (Save file) and Print.
2. **Edit** Menu – Copy, Paste, Cut and Transform.
3. **Image** Menu – Adjustments, Image Size, Canvas Size and Image Rotation.
4. **Layer** Menu – New Layer, Duplicate Layer, Delete, Rename Layer, Merge Down and Group Layers.
5. **Type** Menu – Panels, Type Orientation, Font Preview Size and Language Options.

6. **Select** Menu – All, Reselect, Deselect, Inverse and Color Range.
7. **Filter** Menu – Filter Gallery, Blur, Distort, Noise, Pixelate, and other Filters.
8. **3D** Menu – New 3D Layer from File, New Mesh from Layer and New Title Paint from Layer
9. **View** Menu – Zoom In, Zoom Out, Fit to Screen, Actual Pixels and Print Preview.
10. **Window** Menu – Arrange, Workspace (Palates) and Extensions
11. **Help** Menu – Online Help, Support Center and About Photoshop

B. OPTIONS BAR

Works in coordination with your tool bar to provide additional settings for the tool you're currently using.

- The options bar changes according to whichever tool you are using.



C. TOOLBAR

Perhaps the most important element of the Photoshop interface is the **TOOLBAR**. The tool bar is located by default on the left-hand side of the work area. It contains mouse-based tools that are used for editing and navigation in Photoshop. Most of the tool icons have a small black down-pointing arrowhead in the bottom right-hand corner. This indicates that these are more tools that can be accessed by clicking and holding down the mouse button. Once the extended tools have appeared, you may release the mouse button and the tools will remain.

Listed below are the tools located in the tool bar, an image of the tool, functions of that tools, and a brief description of the tool functions.



Move- Allows the user to move selected elements around the selected layer.



Rectangle Marquee-Allows the user to select rectangular shaped sections area of the layer in the image .



Lasso- allows the user to draw freeform section borders within the image.



Magic Wand – Allows the user to select sections of and image based on color.



Crop- Allows the user to alter an image by excluding desired parts



Eye Dropper- Allows the user to sample or select a specific color within an image.



Spot healing Brush-Allows the user to quickly repair small imperfections in an image.



Brush- Allows the user to paint different kinds of brush strokes of the foreground color.



Clone Stamp-Allows the user to copy portions of the image.



History Brush- Allows the user to draw/paint with sample data from the image.



Eraser- Allows the user to erase desired pixels in an image.



Gradient- Allows the user to fill a desired space with the gradient of the color or pattern of choice.



Blur- Allows the user to blur or soften desired sections of the image.



Dodge- Allows the user to lighten desired parts of the image.



Pen- Allows the user to create complex shapes and create paths.



Horizontal Text-Allows the user to horizontally type on the layer or image.



Path Selection- Allows the user to select a path to use other tools.



Rectangle- allows the user to create rectangles of different sizes.



Hand- allows to user to drag/ move images in the window.



Zoom-Allows the user to increase or decrease the size of the view of the file.



Set Foreground Color/Set Background Color- allows the user to select or change the colors for the foreground and background

D. Panels

Helps you monitor and modify your work

- Provides groups of functionalities specific to certain tools or tasks.
- You can create a custom workspace by moving and manipulating panels.

OPTIMIZE PHOTOSHOP PERFORMANCE

Tweak your operating system, hardware, and application settings to help your computer run Photoshop stably at the optimum speed. If Photoshop is running slower than expected on your computer, or if you're experiencing system freezes, lags, or delays while using Photoshop, try the tips and techniques outlined in this document.

Tweak – improve a mechanism or system by making fine adjustments to it.

There are four primary ways to affect performance in Photoshop:

1. Fine-tune Photoshop features

Disable Rulers and Overlays

Having rulers and overlays (such as Grids, Slices and Smart Guides) visible can slow some operations, such as painting, transform, and dragging layers on the canvas.

- To disable rulers, in the **View** menu, deselect **Rulers**.
- To disable overlays, go to the **View > Show** menu, select **None** or disable the individual items.

Minimize or turn off panel preview thumbnails

Each time you change a document, Photoshop updates all the thumbnails visible in the Layers and Channels panels. This update can affect responsiveness when you're rapidly painting, moving, or nudging layers. The more thumbnails visible, the greater this effect.

To minimize or disable these thumbnail previews, click the Panel menu and choose **Panel Options**. Select a smaller thumbnail size or select **None**, and then click **OK**.

If you want Photoshop to always use less memory, choose **Edit > Preferences > Performance** (Windows) or **Photoshop > Preferences > Performance** (macOS) and move the **Memory Usage** slider to the left.

2. Optimize your hardware setup

Use a fast processor

The speed of the computer's central processing unit, or CPU, limits the processing speed of Photoshop.

Photoshop generally runs faster with more processor cores, although some features take greater advantage of the additional cores than others. However, you'll get diminishing returns with multiple processor cores: The more cores you use, the less you get from each additional core. Therefore, Photoshop doesn't run four times as fast on a computer with 16 processor cores as on a computer with four cores. For most users, the increase in performance that more than six cores provide doesn't justify the increased cost.

3. Optimize your operating system for Photoshop

Use the following information to set up and use your operating system efficiently with Photoshop.

- Close unnecessary applications and startup items
Other open applications and startup items decrease the amount of memory available to Photoshop. To free up additional memory, quit unnecessary applications, startup items, and extensions
- Run Disk Cleanup (Windows)
From time to time, run Disk Cleanup to remove temporary files and any other files that are not being used.
- Defragment the hard disk (Windows)
Photoshop takes longer to read or write a fragmented file than one saved to a contiguous location.
- Turn on automatic OS updates
Updates to the Windows or macOS improve performance and compatibility with applications

4. Set power options

Ensure that Photoshop is using the High-Performance graphics card rather than lower powered Integrated graphics card for computers that have two graphics cards.

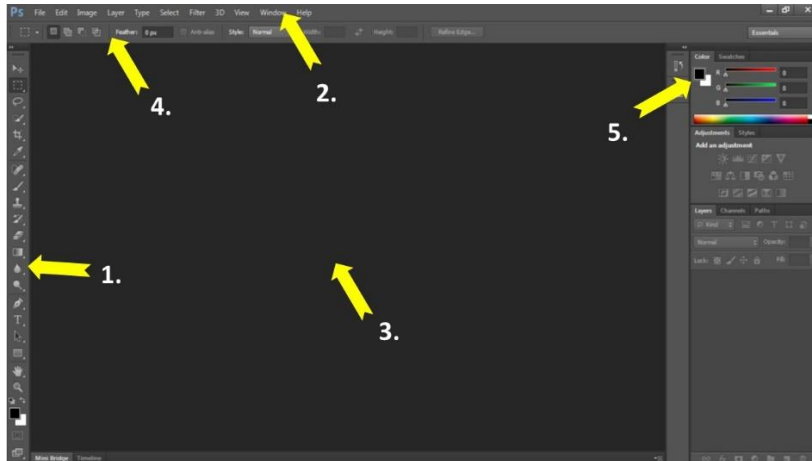
Windows Update won't always give you the latest and greatest drivers. *You must go directly to your card manufacturer's website to check for driver updates:*

- ✓ NVIDIA drivers
<https://www.nvidia.com/download/index.aspx?lang=en-us>
- ✓ AMD drivers
<https://www.amd.com/en/support>
- ✓ Intel drivers
<https://downloadcenter.intel.com/>



What I Have Learned

Directions: Inspect the Photoshop Window Interface and determine what is the basic parts where the arrow is pointing. Write your answer in a separate sheet of paper



What I Can Do

Directions: Match the photoshop tools in Column B to their uses in Column A. Write your answer in a separate sheet of paper.

Column A

1. It allows the user to alter an image by excluding desired parts.
2. This is used to lighten desired parts of the image.
3. This tool is used to move selected elements around the selected layer.
4. It allows the user to horizontally type on the layer or image.
5. This tool is used to quickly repair small imperfections in an image.
6. It allows the user to copy portions of the image.
7. This tool is used to select sample or select a specific color within an image.
8. It allows the user to create complex shapes and create paths.
9. This tool allows the user to draw/paint with sample data from the image.
10. It allows the user to select or change the colors for the foreground and background.

Column B

- A. History Brush
- B. Spot Healing Brush
- C. Clone
- D. Zoom
- E. Set Foreground Color/Set Background Color
- F. Crop
- G. Brush
- H. Horizontal Text
- I. Dodge
- J. Pen
- K. Move
- L. Eye Dropper



Assessment

- A. Directions:** Identify what is being described in the following sentences and write your answer on a separate sheet of paper.
1. It encompasses the processing of altering images, whether they are digital photography, traditional photochemical photographs or illustration.
 2. It is a seriously powerful photo and image editing application.
 3. It indicates that a dialog box will follow menu if you see these three consecutive dots in any of the menu bar tab.
 4. This bar consists of 11 menus for performing common tasks.
 5. This bar works in coordination with your tool bar to provide additional settings for the tool you are currently using.
 6. This image uses many colored pixels or individual building blocks to form a complete image.
 7. It is the process of developing a mathematical representation of any three-dimensional surface of an object via specialized software.
 8. This image format is the commonly used method of lossy compression for digital images particularly for those images produced by digital photography.
 9. The most important element of Photoshop interface and is located by default on the left-hand side of the work area.
 10. This means improving a mechanism or system by making fine adjustments to it.
- B. DIRECTIONS:** Enumerate the four (4) primary ways to affect performance in Photoshop. write your answer on a separate sheet of paper.
1. _____
 2. _____
 3. _____
 4. _____



Answer Key



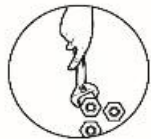
1. Tool bar
2. Menu bar
3. Panels
4. Option bar
5. Workspace or Work Area

What I Have Learned



- A.
1. PHOTO EDITING
 2. PHOTOSHOP
 3. ELLIPSIS
 4. MENU BAR
 5. OPTIONS BAR
 6. RASTER
 7. 3D MODELING
 8. JPEG
 9. TOOLBAR
 10. TWEAKING
- B.
1. FINE-TUNE PHOTOSHOP FEATURES
 2. OPTIMIZE YOUR HARDWARE
 3. OPTIMIZE YOUR OPERATING SYSTEM FOR PHOTOSHOP
 4. SET POWER OPTIONS

Assessment



What I Can Do

1. F
2. I
3. K
4. H
5. B
6. C
7. L
8. J
9. A
10. E

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