

CHAPTER 1

Introduction and Overview of Operating Systems



Week 1: September 13 – 17, 2021

Objectives:

1. Discuss the importance of Basic User Interface.
2. Value the importance of Basic User Interface.
3. Understand the basic concepts and structures of Basic User Interface.



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Basic User Interface

A User interface (UI) facilitates communication between an application and its user by acting as an intermediary between them. Each application including the operating system is provided with a specific UI for effective communication. The two basic function of a user interface of an application is to take the inputs from the user and to provide the output to the users. However, the types of inputs taken by the UI and the types of output provided by the UI may vary from one application to another.

A user interface of any operating system can be classified into one of the following types:

1. Graphical user interface (GUI)
2. Command line user interface (CLI)

Graphical User interface (GUI)

The graphical user interface is a type of GUI that enables the users to interact with the operating system by means of point-and-click operations. GUI contains several icons representing pictorial representation of the variables such as a file, directory, and device. The graphical icon provided in the UI can be manipulated by the users using a suitable pointing device such as a mouse, trackball, touch screen and light pen. The other input devices like keyboard can also be used to manipulate these graphical icons. GUIs are considered to be very user-friendly interface because each object is represented with a corresponding icon. Unlike the other UIs the users need not provide text command for executing tasks.



Figure 1. GUI vs CLI

Advantages of GUI based operating system

1. The GUI interface is easy to understand and even the new users can operate on them on their own.
2. The GUI interface visually acknowledges and confirms each type of activities performed by the users. For example, when the user deletes a file in the Windows operating system, then the operating system asks for the confirmation before deleting it.
3. The GUI interface enables the users to perform a number of tasks at the same time. These features of the operating system are also known as multitasking.

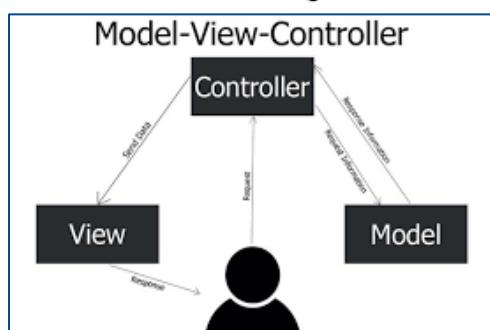


Figure 2. GUI Design Diagram



Figure 3. GUI Testing Pic





ACTIVITY 1

Directions: Refer to Research 101. Write it on any Word Processor and convert it to PDF. Upload your PDF to our Google Classroom by clicking on Activity 1 and follow the steps for uploading or posting. For off-line students, make sure to have your Activity 1 checked by 9am-11am, Friday, September 17, 2021. Same as true with the deadline for on-line students, you can post your Activity 1 on or before the said time and date.

For more inquiries, please e-mail me at iansugatan@iscof.edu.ph, or call me at 09462006763. You can also post a comment at our FB Group, or PM Directly.



RESEARCH 101

1. Research on 3-dimentinal GUI's. What are its applications in software development? Give a detailed example.
2. What are layers of GUI based on a Windows OS? Give detailed example.
3. In your own words, where does GUI fit in an Operating System? What are the challenges in making GUI's? Explain.



Command Line Interface

Figure 4. GUI Graphic 1

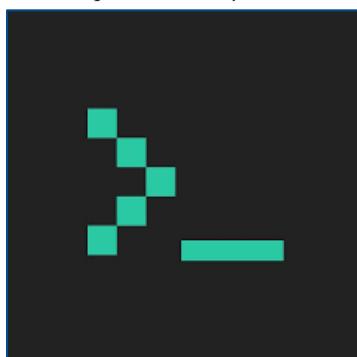


Figure 5. GUI Graphic 2

Command Line Interface (CLI)

Command line interface is a type of UI that enables the users to interact with the operating system by issuing some specific commands. In order to perform a task in this interface, the user needs to type a command at the command line. When the user enters the key, the command line interpreter received a command. The software program that is responsible for receiving and processing the commands issued by the user. After processing the command are called command line interpreter, the command line interpreter displays the command prompt again along with the output of the previous command issued by the user. The disadvantages of the CLI are that the user needs to remember a lot to interact with the operating system. Therefore, these types of interfaces are not considered very friendly from the user's perspective.



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Today, many users rely upon graphical user interfaces and menu-driven interactions. However, some programming and maintenance tasks may not have a graphical user interface and may still use a command line.

Alternatives to the command line interface include text-based user interface menus (for example, IBM AIX SMIT), keyboard shortcuts, and various desktop metaphors centered on the pointer (usually controlled with a mouse). Examples of this include the Microsoft Windows, DOS Shell, and Mouse Systems PowerPanel. Command-line interfaces are often implemented in terminal devices that are also capable of screen-oriented text-based user interfaces that use cursor addressing to place symbols on a display screen.

Programs with command-line interfaces are generally easier to automate via scripting.

Many software systems implement command-line interfaces for control and operation. This includes programming environments and utility programs.

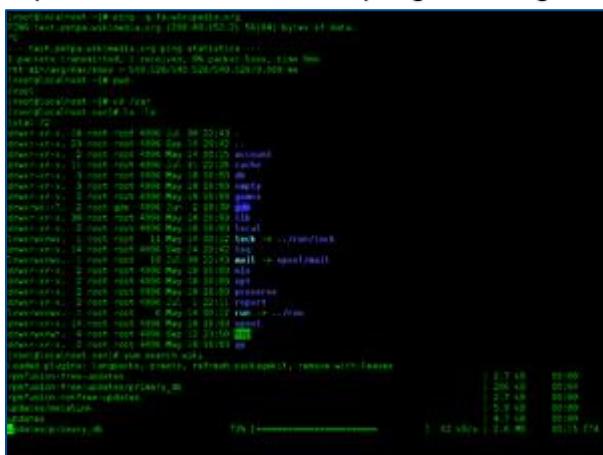


Figure 6. Bash session in GNOME Terminal 3, Fedora 15

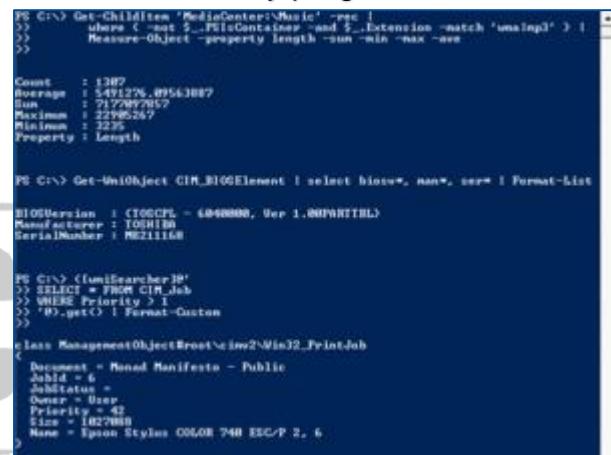


Figure 7. Windows PowerShell 1.0 on Windows Vista

Compared with a graphical user interface, a command-line interface requires fewer system resources to implement. Since options to commands are given in a few characters in each command line, an experienced user may often find the options easier to access. Automation of repetitive tasks is simplified by line editing and history mechanisms for storing frequently used sequences; this may extend to a scripting language that can take parameters and variable options. A command-line history can be kept, allowing review or repetition of commands.

A command-line system may require paper or online manuals for the user's reference, although often a "help" option provides a concise review of the options of a command. The command-line environment may not provide graphical enhancements such as different fonts or extended edit windows found in a GUI. It may be difficult for a new user to become familiar with all the commands and options available, compared with the icons and drop-down menus of a graphical user interface, without repeated reference to manuals.

Command-line interpreters allow users to issue various commands in a very efficient (and often terse) way. This requires the user to know the names of the commands and their parameters, and the syntax of the language that is interpreted.





ACTIVITY 2

Directions: Refer to Pic Collage 102. Copy+paste it on any Word Processor, convert it to PDF and send it to our Google Classroom by clicking on Activity 2 and follow the steps for uploading or posting. For off-line students, make sure to have your Activity 2 checked by 9am-11am, Friday, September 17, 2021. Same as true with the deadline for on-line students, you can post your Activity 2 on or before the said time and date.

For more inquiries, please e-mail me at iansugatan@iscof.edu.ph, or call me at 09462006763. You can also post a comment at our FB Group, or PM Directly.



Pic Collage 102

Refer to Command Line Interface (CLI). Make a picture collage of these applications and label them according to its use or function. You may use any online and offline software, provided it will be copy+pasted to any Word Processor. Convert it to PDF and save it as Activity 2. Provide at least 5 pics with caption. These pictures should not have any copyright implications and can be downloaded from the web for free. You can also screenshot your own CLI and post it on our collage, provided, it is related to our Activity.



The graphical user interface (GUI) is a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation. GUIs were introduced in reaction to the perceived steep learning curve of command-line interfaces (CLIs), which require commands to be typed on a computer keyboard.

A command-line interface (CLI) processes commands to a computer program in the form of lines of text. The program which handles the interface is called a command-line interpreter or command-line processor.

Operating system (OS) command-line interfaces are usually distinct programs supplied with the operating system.



HYPERLINKS

<https://blogs.helsinki.fi/students-digital-skills/1-introduction-to-the-use-of-computers/1-1-computer-functionality/operating-system-and-user-interface/>

<https://www.includehelp.com/operating-systems/types-functions-of-user-interfaces-of-operating-systems.aspx>

https://en.wikipedia.org/wiki/Graphical_user_interface

https://en.wikipedia.org/wiki/Command-line_interface

VIDEO LINK

For tutorials on C# basics, pls visit this links:

<https://www.youtube.com/watch?v=XIGSJshYb90>

<https://www.youtube.com/watch?v=mUXVBMhr7Xg>



FOR FURTHER STUDY

Wells, John (2009). *Longman Pronunciation Dictionary* (3rd ed.). Pearson Longman. ISBN 978-1-4058-8118-0.

Friedman, Ted (2005). "Chapter 5: 1984". *Electric Dreams: Computers in American Culture*. New York University Press. ISBN 978-0-8147-2740-9. Retrieved October 6, 2011.

Grote, Patrick (October 29, 2006). "Review of *Pirates of Silicon Valley Movie*". DotJournal.com. Archived from the original on November 7, 2006. Retrieved January 24, 2014.

Metz, Cade (2013-01-03). "Say Bonjour to the Internet's Long-Lost French Uncle". Wired. Retrieved 2017-07-31.

Mazières, David (Fall 2004). "MULTICS - The First Seven Years". Advanced Operating Systems. Stanford Computer Science Department. Retrieved 2017-08-01.