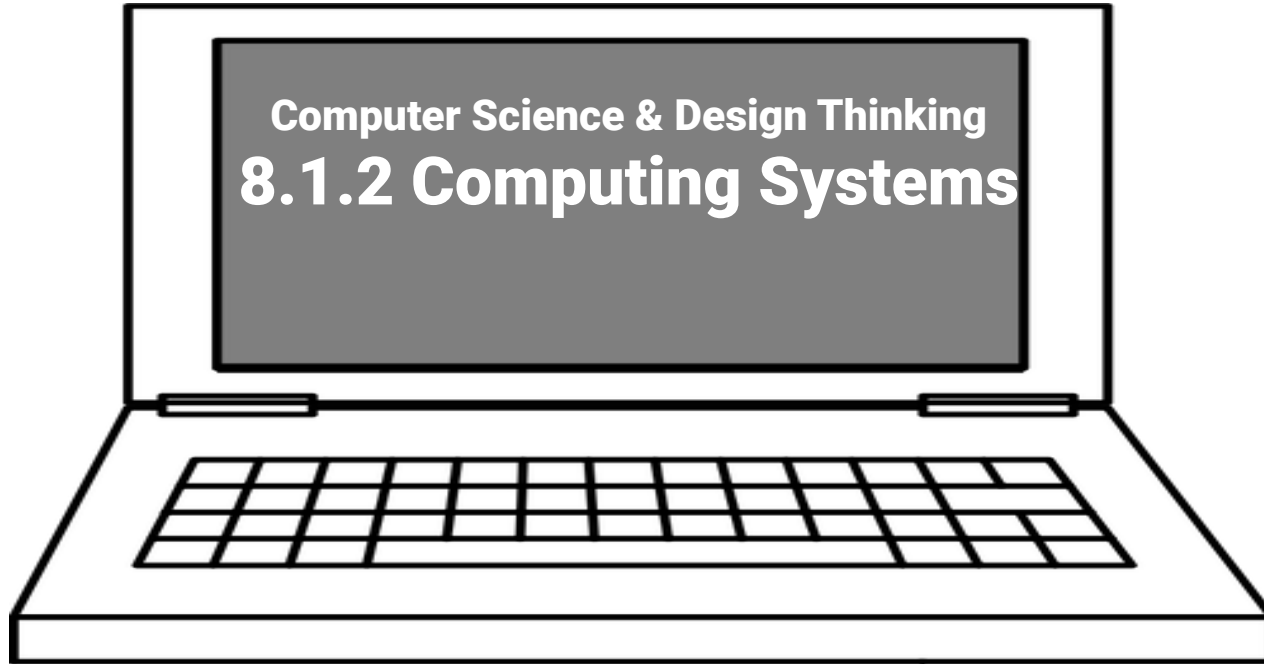


The New Jersey Student Learning Standards



C

S

8.1.2





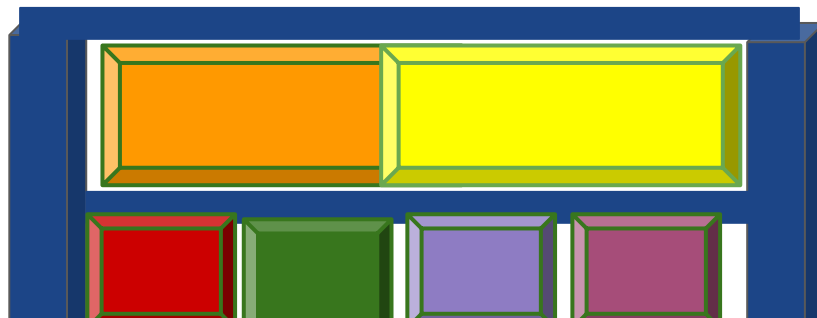
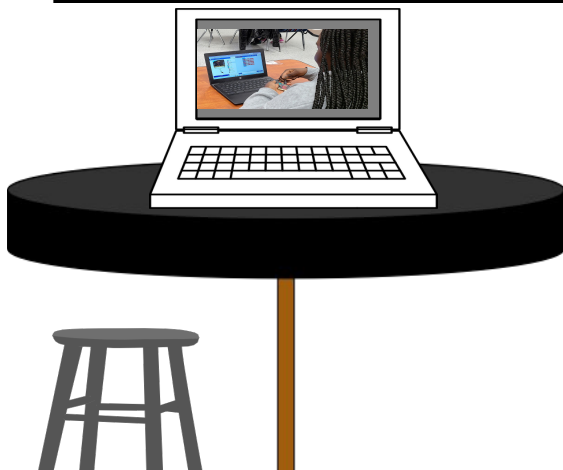
New Jersey Student Learning Standards

Technology

8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

8.1.2.CS.2: Explain the functions of common software and hardware components of computing systems.

8.1.2.CS.3: Describe basic hardware and software problems using accurate terminology.



C

S

8.1.2

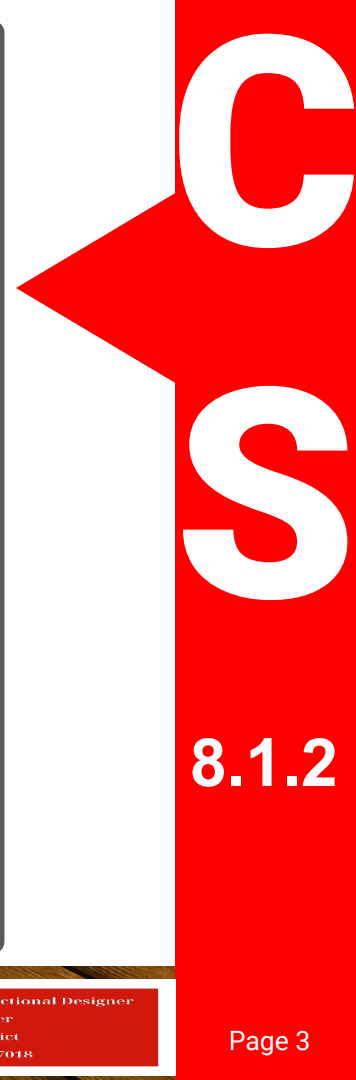




Core Concept 8.1.2 Computing Devices

Computing devices have physical components (**hardware**) and instructions (**software**) that allow them to communicate and process information in digital form.

People interact with a wide variety of computing devices. Some interaction are good and some are not so good.



8.1.2





Topics Covered

- [What is a Computer](#)
- [What is Computer Science](#)
- [What is a Computing System](#)
- [Computer Hardware](#)
 - Internal Hardware
 - External Hardware - I/O Devices
- [Computer Software](#)
 - System Software
 - Operating Software
 - Applications Software Programs
- [Troubleshooting](#)
 - Basic Problems

C

S

8.1.2

What is a Computer?

C

S

8.1.2



What is a Computer?

A computer is an electronic device that

**collects,
analyzes (or *study*),
acts upon
information we give it.**



C

S

8.1.2

What is Computer Science?

C
S

8.1.2



COMPUTER SCIENCE

Computer science is the study of the creation, storage, transportation, and analysis of data.



By: Dr. Katherine Herbert, Professor,
School of Computing, Montclair Computer Science Education Programs



**MONTCLAIR
STATE UNIVERSITY**
© 22 Computer Science Education Programs



**Computer Science for
Everyone, Everywhere**

Supports 6 Montclair State University's Diversity, Equity, and Inclusion
Initiative. For more information, visit <https://www.montclair.edu/diversity-equity-inclusion/>
or contact the Office of Diversity, Equity, and Inclusion at dei@montclair.edu

C S

8.1.2

What is a Computing System?

C

S

8.1.2



What is a Computing System?

A computing system is an ***arrangement*** (or *layout*) of ***hardware and software*** to perform a computing task.



C

S

8.1.2



Question:

**Can you name
a computing
device that use in
school or at home
everyday?**



C

S

8.1.2

Answer: Below is a list of some computing devices that you use at school and home.

C

S

8.1.2

- ❖ Smart TVs
- ❖ Smartwatch
- ❖ Fitness Trackers
- ❖ E-readers

- ❖ Desktop
- ❖ Laptop
- ❖ Tablet
- ❖ Smart phone

Types of Computing Devices

We use three different types of computing systems or devices:

- 1. stationary devices**
- 2. mobile devices**
- 3. wearable devices**



C

S

8.1.2

Types of Computing Devices

1. ***Stationary devices*** stay in one place, like a desktop computer. ***You go to the device when you need to use it.***



publicdomainvectors.org

C

S

8.1.2



Learn More

Types of Computing Devices

2. Mobile devices go *with you from place to place* like a laptop, tablet and smartphone in your bookbag.



C

S

8.1.2

Types of Computing Devices

3. **Wearable devices** are *worn on the human body*, like a watch connected to a smartphone or fitness tracker.



Made by FREE-VECTORS.NET

C

S

8.1.2

Computing Devices

Some of the information we give or get from computing devices is good and helpful. Some information is not good and is not helpful.

C
S

8.1.2



Computer Hardware

C

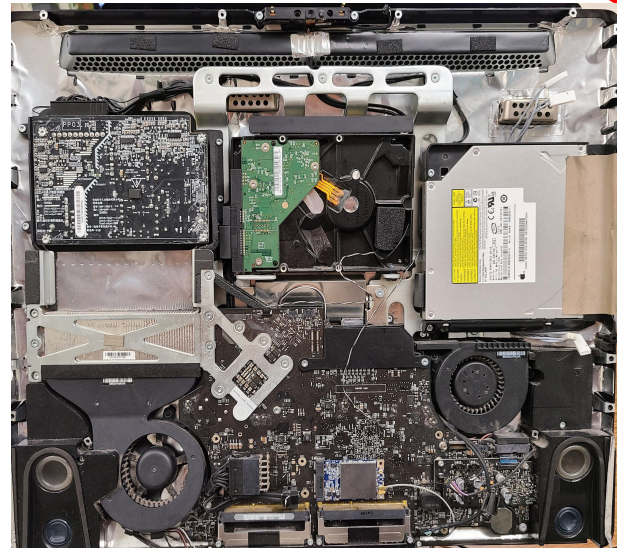
S

8.1.2



Computer Hardware

Computer hardware refers to the *physical (touchable) parts* and related *devices* that make up a computer systems.



C

S

8.1.2

Computer Hardware

Computers have

Internal (inside) **and external**
(outside) **components** (parts).

C
S

8.1.2



Computer Hardware

The *internal hardware* parts of a computer are often referred to as *components*, while external hardware devices are usually called *peripherals*.

8.1.2

Internal Computer Hardware

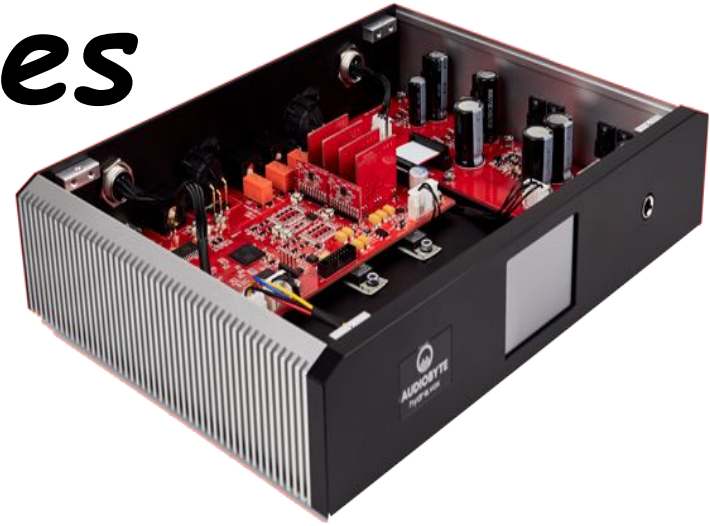
C

S

8.1.2

Internal Computer Hardware

Internal hardware refers to devices that are *inside* the computer.



C

S

8.1.2



Learn More

Internal Computer Hardware

The *motherboard*
is a computer's
brain.



C

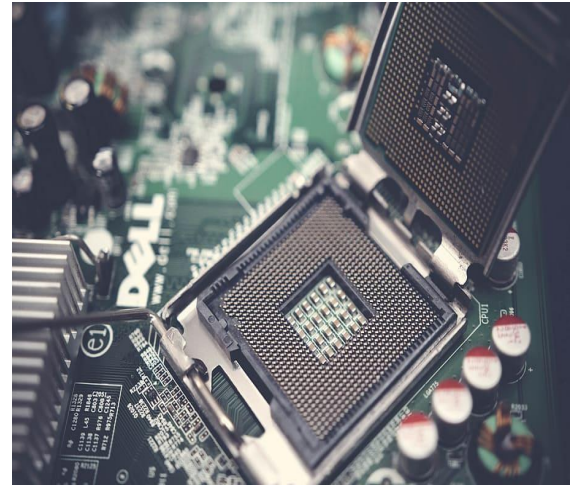
S

8.1.2



Internal Computer Hardware

The **Central Processing Unit (CPU)** acts like “control center”, it runs the machine's operating system and apps.



C

S

8.1.2



Internal Computer Hardware

A *hard drive* or hard disk drive (HDD) is a ***type of data storage device*** that stores data even when your device is off.



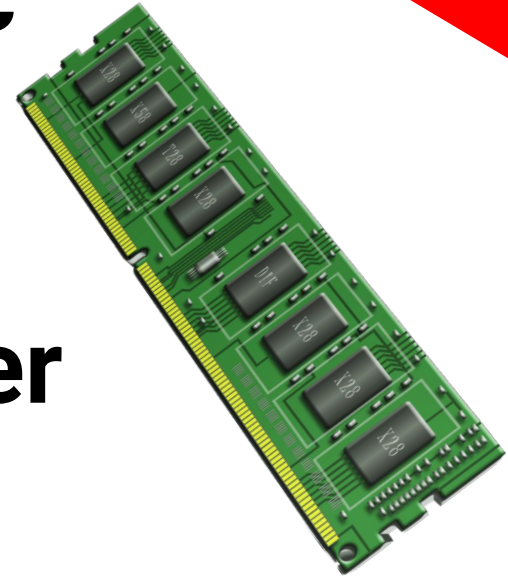
C

S

8.1.2

Internal Computer Hardware

Memory is the electronic holding place for the instructions and data or information the computer needs to reach quickly.



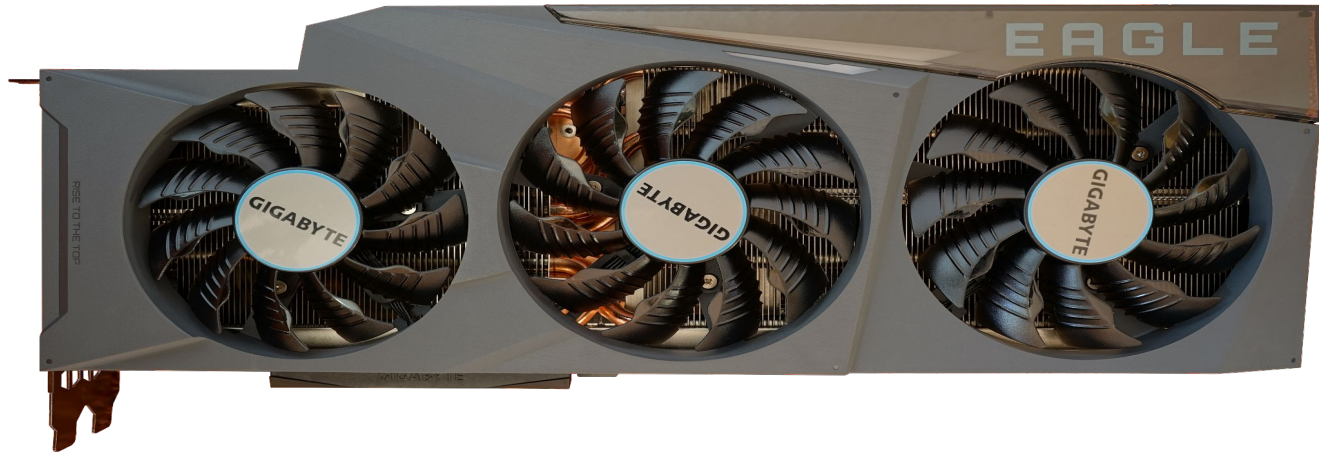
C

S

8.1.2

Internal Computer Hardware

A **computer fan** is used to cool the insides down.



C

S

8.1.2

Internal Computer Hardware

A power supply unit (PSU) provides electricity.



C

S

8.1.2

External Computer Hardware

C

S

8.1.2



External Computer Hardware

External hardware refers to devices that are attached to a computer.

C

S

8.1.2

External Computer Hardware

Some external devices are also called peripheral or I/O (input/output) devices.

C

S

8.1.2

External Computer Hardware

I/O (Input/Output) *Devices*



Input devices
get data into the
computer.

Output devices
allow you to
retrieve, see or
hear results.

C

S

8.1.2



External Computer Hardware

Input Devices

C S

8.1.2



External Computer Hardware

An *input device* is any device that lets you get data into to a computer.

C

S

8.1.2

External Computer Hardware

Some input devices are wired. They connect to a device with a cord.



Some input devices are wireless. They connect to a device by transmitting a signal.

C

S

8.1.2

External Computer Hardware

A **mouse** is an *input device* that let's navigate (or move) around the screen and provide instructions. Some mouse are connected with a wire to your computer and some are wireless.



Wired mouse



Wireless mouse

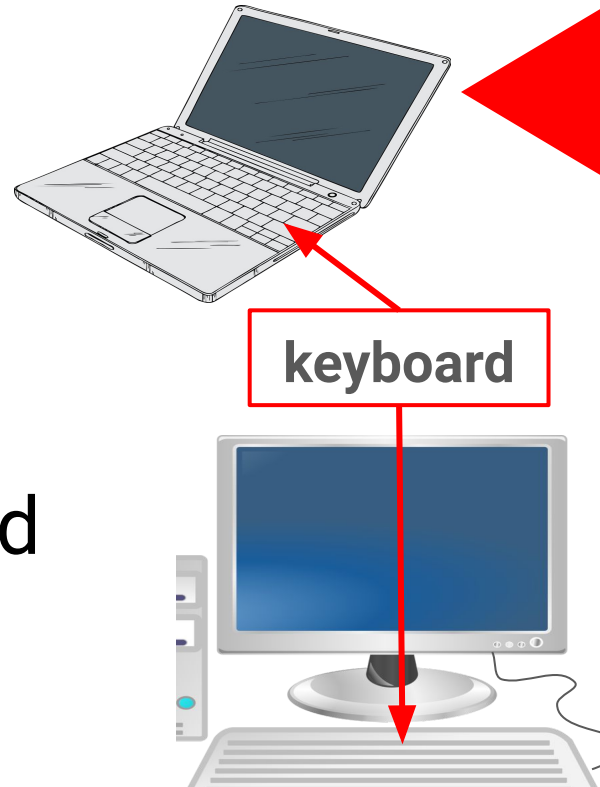
C

S

8.1.2

External Computer Hardware

A **keyboard** is an *input device* that lets you insert text, numbers, symbols, and commands. Some **keyboards** are built into your device and some keyboards are connected with a wire or without a wire, wireless.



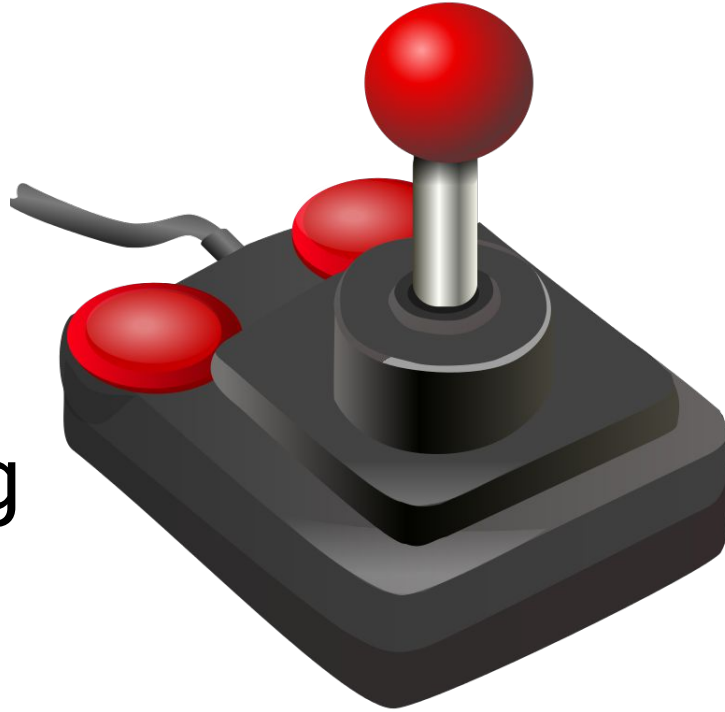
C

S

8.1.2

External Computer Hardware

A **joystick** is an *input device* that lets you navigate (move around) a screen while playing online games.



C

S

8.1.2

External Computer Hardware

A **microphone** is an *input device* that lets you record sounds like your voice. Some microphones are **built into** the device, some are **wired** and some are **wireless**.



C

S

8.1.2



External Computer Hardware

A **camera** is an *input device* that lets you take pictures that can be stored on your computer.



Some **cameras** are **built into** the computing device and some are **attached** to it.



C

S

8.1.2

External Computer Hardware

Output Devices

C S

8.1.2



External Computer Hardware

An outputs device allows you to retrieve (or get) information from the computer. Some output devices are wired and some are wireless (without wires).

C

S

8.1.2

External Computer Hardware C

An **output** device like a **monitor** allows you to see information on a monitor or screen.



screen or monitor

S

8.1.2

External Computer Hardware

An **output** device like **speakers** allows you to hear sound. Some speakers are built into the device and some are attached.



C

S

8.1.2

External Computer Hardware

An output device like headphones also allow you to hear sound. This device is placed over your ears. Some headphones are wired and some are wireless.



C

S

8.1.2

External Computer Hardware

An **output** device like a **printer** allows you to get a **hardcopy** or **printout** of your information. Some printers are wired to the computer and some are wireless.



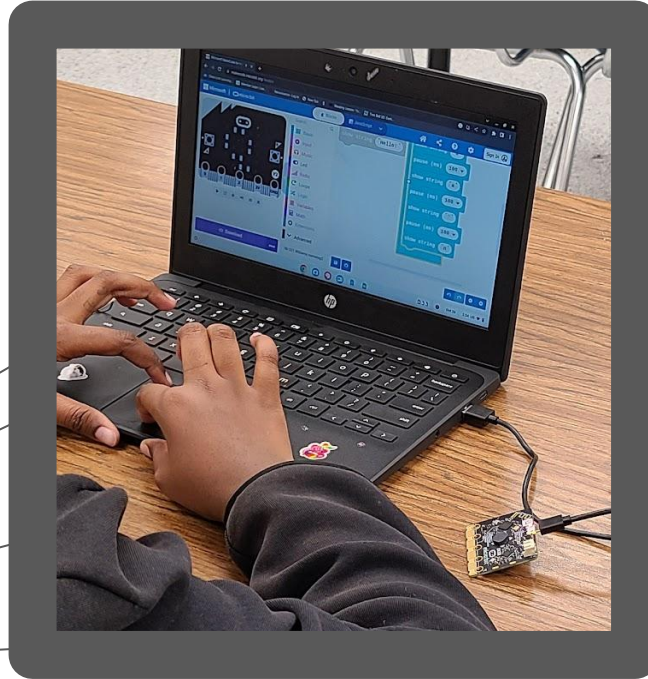
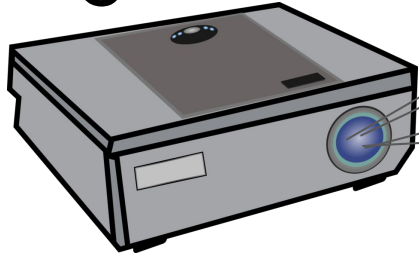
C

S

8.1.2

External Computer Hardware

An **output** device like a **projector** allows you to display images or video to a much larger screen.



C

S

8.1.2

Computer Software

C

S

8.1.2



Computer Software Programs

What are software programs?

- software programs;
- software;
- software application; or
- apps

8.1.2



Computer Software Programs

Software program or app, is a ***set of instructions*** that allow the computer to **perform an operation or task**.

C
S

8.1.2



Computer Software Programs

Software program are categorized or grouped according to the tasks they perform. The three main ones we use are:

1. **System software**
2. **Operating Software**
3. **Applications Software**

C
S

8.1.2

System Software

Control and coordinate the procedures and functions of computer hardware.

C

S

8.1.2

Operating Software

Converts user instructions into code that the computer can understand and vice versa.

C

S

8.1.2

Applications Software

Programs created to
complete specific tasks.

C

S

8.1.2

Computer Software Applications Software Programs

C
S

8.1.2



Applications Software Programs

There are many categories of applications programs. The four main types of programs you use in school are:

- 1. Web Browser**
- 2. Document Production**
- 3. Presentation**
- 4. Educational**

C
S

8.1.2



Applications Software often used in school.



Chrome

Web browsers

Apps that facilitate easy surfing of the internet.



Safari



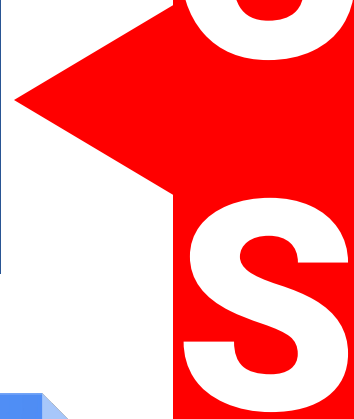
Internet Explorer

C
S

8.1.2

Applications Software often used in school.

Document Production



8.1.2

Apps like **MS Word** and **Google Docs** that enable document production like book reports and essays.

Applications Software often used in school.



Presentation



Apps like MS Powerpoint and Google Slides allow the **visual presentation of information** in the form of slides that can contain text, charts, tables, audio, video, and animation.

C S

8.1.2

Applications Software often used in school.

Education Software

Educational software apps are designed for learning and practice!

flocabulary.com

ixl.com

typing.com

C

S

8.1.2

Applications Software often used in school.

Web browsers

Apps that facilitate easy surfing of the internet like Internet Explorer and Chrome.

Document Production

Apps like MS Word and Google Docs that enable document production like letters, essays, book reports, and research papers.

Presentation

Apps Like MS Powerpoint and Google Slides that allow visual presentations of information in the form of slides that incorporate text, charts, tables, audio, video, and animation.

Education software

Apps like Typing.com and Flocabulary that are designed for learning and tutorials.

Troubleshooting

C
S

8.1.2

Sometimes things go wrong with a computing device. The key is not to worry! Find a trusted adult to help you! Here are some things you and a trusted adult can do.

Troubleshooting

C

S

8.1.2



Troubleshooting Strategy For Grades K to 2



Step 1. Don't Panic! Sometimes things happen and we need help figuring things out.

C

S

8.1.2

Troubleshooting Strategy For Grades K to 2



Step 2. Find a trusted adult tell them what you were doing when the problem started and any other details you remember.

C

S

8.1.2

Troubleshooting Strategy For Grades K to 2



Step 3. Ask the adult to **check all of the wires.** Maybe something fall off or is out of place?

C

S

8.1.2



Troubleshooting Strategy For Grades K to 2



Step 4. Have the adult **check the internet connection.**

C

S

8.1.2

Troubleshooting Strategy For Grades K to 2



Step 5. Close all the apps and turn the **computer off for about 30 seconds**, and then turn it back on.

C

S

8.1.2



Troubleshooting Strategy For Grades K to 2



Step 6. If the computer is still not working the adult must **get technical support.**

C
S
8.1.2

Troubleshooting Strategy For Grades K to 2



Step 1. Don't Panic! Sometimes things happen and we need help figuring things out.

Step 2. Find a trusted adult tell them what you were doing when the problem started and any other details you remember.

Step 3. Ask the adult to check all of the wires. Maybe something fall off or is out of place?

Step 4. Have the adult check the internet connection.

Step 5. Close all the apps and turn the **computer off for about 30 seconds**, and then turn it back on.

Step 6. If the computer is still not working the adult must get technical support.



C

S

8.1.2

Resources

1. [Computer Hardware](#)
2. [Types of Software Programs](#)
3. [Different *Types of Applications Software*](#)
4. [I/O Devices](#)
5. OpenAI. (2023-2024). ChatGPT (3.5) Retrieved from <https://www.openai.com/>
6. [TechTerms.com](#)

C
S

8.1.2