

PROJECT IDEA STARTER

Computers

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A computer is a highly sophisticated device that performs tasks. Computers are an important part of our lives, allowing many complicated tasks to be done very quickly. From just a few

instructions, computers are able to carry out a whole range of tasks, from sending out a letter to flying an aircraft.



Computers are made of many parts, called components, that when fitted together provide the power to work quickly and reliably. The machine itself, called hardware, cannot operate without instructions, called software. So, while computer makers have been busy developing faster and faster parts, computer programmers have been equally busy using the latest techniques for finding shortcuts to make the machines perform ever more complex tasks.

Computers cannot follow instructions without a programming language. Because there are several different programming languages, programmers choose the one that best meets their needs. Computer users rarely program their own computers. Most people purchase a programming language software package.

Today's computers come in many sizes, ranging from the tiny embedded microprocessors of a digital watch to the huge mainframes used by engineers. One thing all computers have in common is the way they work. Their operation can be divided into three steps: entering data, processing data and producing output.

Once a user puts information into a computer, the information goes to a Central Processing Unit (CPU) where it is translated into binary code.

Much of the information fed into a computer is stored in its memory. There are two basic types of memory: ROM and RAM. Read Only Memory (ROM) can only be played back but not changed. Random Access Memory (RAM) is the space where games, word processing and graphic-type programs operate. When the computer is turned off, anything that is not saved while working in this space disappears. Typically, operating programs and saved data are stored on the computer's memory disk, or hard drive.

Many people work with personal computers, or PCs, at home, at school or in offices. These computers are used to create letters, send e-mail, view websites, chat with friends, manage data, produce graphics, and edit music and video files.

During the early stages of computer development, scientists recognized the importance of computers being able to communicate with each other. The creation of communication protocols, or sets of rules,

PLAN YOUR PROJECT

Use this idea starter AND publication 4-H 365 *Self-Determined Project Guide* as the starting place for your 4-H self-determined project. The *Self-Determined Project Guide* is available from your county OSU Extension office or on the Web at ohio4h.org/selfdetermined. You may choose to do a little or a lot depending on your level of interest. Be sure to register your project with your county OSU Extension office.

was an important precursor to the development of the Internet and eventually the World Wide Web. Because the Internet allows us to link computer-to-computer worldwide, one can quickly see why it has become the fastest and easiest way to access and share information.

While it is impossible to predict exactly what computers of the future will be able to do, we do know that they will be smaller, faster and more powerful.

AREAS OF INTEREST AND THINGS TO DO

Every self-determined 4-H project can be broken down into areas of interest. These are the specific things members want to address during their project adventures. Using *4-H 365 Self-Determined Project Guide*, identify at least three areas of interest with at least three activities per area to explore. Take your ideas from the list below or make up your own.

Computers in Our Lives and Communities

- ☐ Make a list of how computers are used in the home, at school or in your community.
- ☐ Describe how your parents use computers on the job.
- ☐ Identify how microprocessors are a part of your everyday life.
- ☐ Use your computer to arrange historical events on a timeline.
- ☐ Investigate the future uses of computer technology in the home.



Computer Hardware

- ☐ Clean your computer's hard drive.
- ☐ Take apart an old computer to understand how it works.
- ☐ Identify the parts inside a computer.
- ☐ Explain the difference between RAM and ROM.
- ☐ Build your own computer system.
- ☐ Detect a computer problem and solve it.
- ☐ Explain how a computer works.
- ☐ Explain screen resolution and how it compares to TV sets and HDTV.
- ☐ Experience plugging different peripherals into your computer.

Computer Software

- ☐ Evaluate a piece of software based on usability and price.
- ☐ Use word-processing software to produce a letter.
- ☐ Use a database like Excel to organize and process information.
- ☐ Explore file structures and practice moving and copying files.
- ☐ Locate and delete duplicate files on your system.
- ☐ Understand file extensions and explain what they mean.
- ☐ Use a graphics program to design images.
- ☐ Use a spreadsheet to make graphs and charts.
- ☐ Design an animated GIF.
- ☐ Create your own computer program.
- ☐ Run a virus check program.

Using the Internet

- ☐ Develop an "online safety guide" with your family.
- ☐ Conduct a search on the Internet.
- ☐ Chat with your friends online.

- ☐ Review Internet safety rules and netiquette.
- ☐ Develop a checklist for evaluating websites on accuracy, currency and objectivity.
- ☐ Design a website using a Web editor or HTML.
- ☐ Identify and correct HTML problems.
- ☐ Identify and correct Web page problems.

Organize, Analyze and Create

- ☐ Create two birthday signs.
- ☐ Use word-processing software to create a story.
- ☐ Use desktop publishing to create and print a newspaper or magazine.

- ☐ Learn the basics of ASCII.
- ☐ Compare features of similar software.
- ☐ Design a multimedia presentation.
- ☐ Use technology skills in community service.
- ☐ Use a digital camera to create a slide show.

RELATED RESOURCES

The Tech Terms Computer Dictionary, techterms.com

Computer History Museum, computerhistory.org

Smithsonian National Museum of American History Computer History Collection, americanhistory.si.edu/comphist

