Unit 2-G

EXPLORING CAREER CLUSTERS:

Information Technology

UNIT 2-G:
EXPLORING CAREER CLUSTERS:
Information Technology
Suggestions for the Instructor

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Pg. 2G-12 - 13 -- What Do You Already Know? Job Titles in Health Science

In small groups, discuss each of the job titles in the **Information Technology** career cluster. What do you think these workers do? What kind of environment do they work in? What tools and equipment do they use? What kind of skills do they need to have?

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Pg. 2G-14 – 17 -- Information Technology JOB TITLES: Research

In small groups, look up the job titles below on **MyCareerShines** (www.mycareershines.kuder.com) and write the definition on the lines on the handout. (Other websites or a dictionary may be used if this is not accessible.) ask students to discuss how their research compares with their prior knowledge.

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Pg. 2G-18 -- Information Technology Job Description Match-up

On this handout, have students match the letter of the job from this career cluster with the description of the job duties.

ANSWERS:

	Information Technology Career Cluster		**Description of Job Duties**
A	Application Software Developer	**C**	Develop an equipment plan, including computer network hardware and software to meet user needs.
B	Information Security Analyst	**D**	Design and maintain a secure, organized database for storing information and trains others how to use it.
C	Computer Network Architect	**I**	Identify and solve problem with use of web sites, keeping records of changes to sites and pages, as well as site usage.
D	Database Administrator	**J**	Develop plans to improve computer system functions, improve information sharing within an organization and save money.
E	Computer User Support Specialist	**A**	Design and create application software using computer languages to meet user needs.

F	Systems Software Developer	**G**	Use computer languages to write computer programs from detailed designs, usually as part of a team.
G	Computer Programmer	**H**	Design, edit, and maintain web pages and websites.
H	Web Developer	**L**	Design and implement database systems to meet the data storage needs of a business or organization.
I	Web Administrator	**N**	Teach computer science concepts to students in a K-12 or post-secondary setting.
J	Computer Systems Analyst	**B**	Develop, maintain and monitor security systems for electronic information including encryption and virus protection.
K	Computer Numerically Controlled (CNC) Machine Programmer	**E**	Guide users through setup of new computer equipment, and discusses problems with users in order to identify solutions.
L	Data Warehousing Specialist	**F**	Design systems that allows computer hardware and software to communicate with each other.
M	Computer and Information Research Scientist	**O**	Develop layouts and design schemes for magazines, websites, logos, and marketing materials using computer programs or by hand.
N	Computer Science Teacher	**M**	Apply computer science concepts to identify new uses for computer technology.
O	Graphic Designer	**K**	Program automated machines to develop products by following blueprints or drawings to meet user needs.

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Pg. 2G-19 -- Alphabetical Order

A**NSWERS:**

1. Application Software Developer
2. Computer and Information Research Scientist
3. Computer Network Architect
4. Computer Programmer
5. Computer Science Teacher
6. Computer Systems Analyst
7. Computer User Support Specialist
8. CNC Machine Programmer
9. Database Administrator
10. Data Warehousing Specialist
11. Graphic Designer
12. Information Security Analyst
13. Systems Software Developer
14. Web Administrator
15. Web Developer

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Pg. 2G-20 - 21 -- STRETCH Your VOCABULARY

Have students make new words from the **Information Technology Job Cluster** vocabulary. They may work in small groups to use their own knowledge and a dictionary to see how many forms of the words they can find. (They will not be able to fill in all the categories for some terms.) The first four are done for them.

Have them write a story about a day in the life of a person who works in the **Information Technology** career cluster. Have them use at least ten of the words (in addition to the job titles!)

ANSWERS:

JOB TITLE	RELATED NOUN	Present- tense VERB	ADJECTIVE	ADVERB
Application Software Developer	Application Developer	Apply Develop	Applied Developed	
Information Security Analyst	Security Analysis	Secure Analyze	Secure	Securely
Computer Network Architect	Network Architecture	Network	Networked Architectural	
Database Administrator	Administration	Administer	Administrative	Administratively
Computer User Support Specialist	Support	Support	Supportive	Supportively
Software Systems Developer	System Developer Development	Systematize Develop	Systemic Developed	Systemically
Computer Programmer	Program	Program	Programmatic	Programmatically
Web Developer	Developer	Develop	Developed	
Web Administrator	Administration	Administer	Administrative	Administratively
Computer Systems Analyst	System	Systematize	Systematic	Systematically
Computer Numerically Controlled (CNC) Machine Programmer	Computer Control Machine Program	Computerize Control Program	Computerized Controlled Controlling Programmed	Controllingly
Data Warehousing Specialist	Date Warehouse Specialty	Warehouse Specialize	Warehoused Specialized	
Computer and Information Research Scientist	Information Research Scientist	Computerize Inform Research	Computerized Informative Informed Researchable Researched	

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Pg. 2G-22 -- Information Technology Job Cluster Crossword Puzzle

ANSWERS:

Across

1. An individual with top-level control of a computer program or network. A**dministrator**
3. Computer programs that allow users to perform tasks. **Software**
8. Someone who uses computer languages to write computer software. **Programmer**
9. A system of connections that allows computers to communicate with one another. **Network**

Down

2. Looking through a program, design, or set of directions for errors. **Troubleshoot**
4. When tasks are performed by a machine controlled by a computer. **Automated**
5. Making sure that information on a computer network is secure. **Security**
6. The physical components of a computer. **Hardware**
7. A system for storing or "warehousing" information. **Database**

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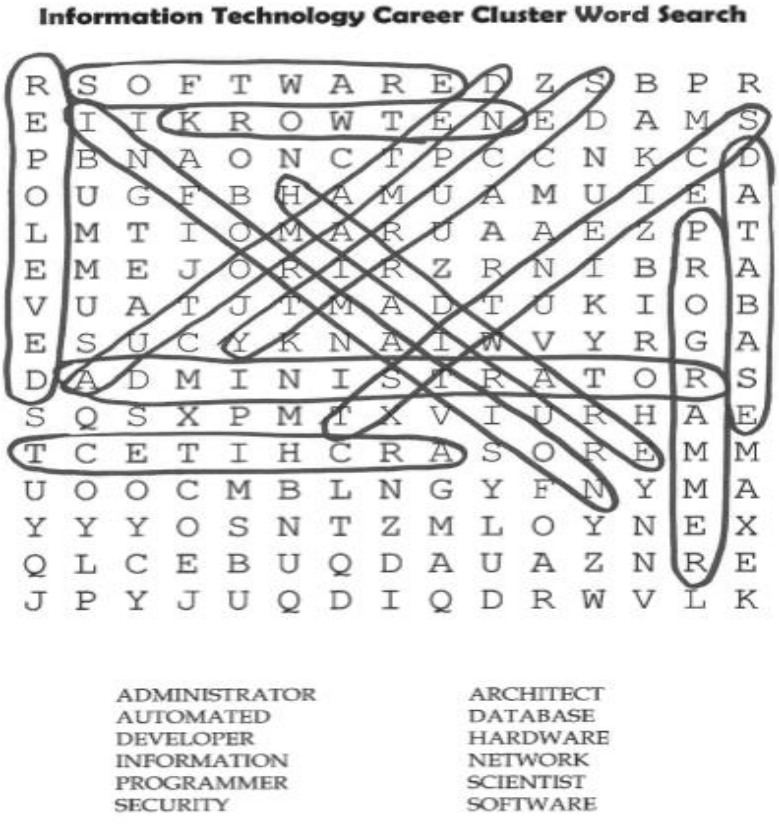
Pg. 2G-23 -- Information Technology Job Cluster Word Search

ANSWERS:



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Pg. 2G-24 – 32 -- SCIENCE in the Information Technology Career Cluster: What is a Computer?

Distribute the handout and ask students to look at the pictures on the chart. Tell them to check off those which they think fit the definition of computer. Then, in small groups, ask them to discuss which pictures they checked and why. Have them discuss:

1. What rules or definitions did you use to categorize these objects?
2. Which items were difficult to categorize as computers? How did you decide if they were computers or not?
3. Did other people in your small group agree or disagree with your decision about how to categorize these items? Did anyone offer an argument that convinced you to change your mind?

Computer Science Vocabulary

Have students define the following computer science-related terms. They should use a dictionary to help them if necessary.

components	input	output	processor
insulator	conductor	data	

If you have access to the internet, share the following you tube video with the class:
How Computers Work: What Makes a Computer, a Computer?
https://www.youtube.com/watch?v=mCq8-xTH7jA&feature=youtu.be

Computer Components

Have students read the information about the key components of a computer, then answer the Comprehension Questions.

ANSWERS:

1. What are the three physical components of a computer? **Central Processing Unit (CPU,) Motherboard, hard drive**

2. What must computers do in order to process information? **In order to process information, a computer must store it.**

3. What is data? **Data is information stored by a computer. Data may be text documents, images, photos, audio clips, videos, or software programs.**

4. What does software do? **Software tells the computer how to work.**

5. What is the difference between input and output? **Input is the information and tasks that the computer programmer or user puts into the computer. Output is information that has been processed by and sent out from a computer.**

6. What are three examples of output? **Text, photos, games, virtual reality, or robotics are all examples of output.**

(continued)

Build a Mobile App

Tell students that a mobile app (short for "software application") is a computer program designed to run on a smart phone (iphone), tablet, or other mobile computing device. In small groups, have students work together to develop an app idea that fits into one of the following three categories that a computer could help solve. :

- **Job / Housing Search**
- **Education**
- **Health**

Have students work in small groups to brainstorm how this problem could be addressed by designing a mobile app. When the groups have finished, have them share their designs for the mobile apps with the class.

Step 1: Brainstorm Problems -- With a partner or in a small group, brainstorm a list of problems that a computer could help solve:

Step 2: Choose a Problem – Discuss which problem from the brainstormed list the group would like to work on. Make sure the problem is interesting to everyone in the group, important to a number of people, and able to be addressed through computer science.

a) Be specific. What needs to change or improve? Why does the problem exist?
b) Who does the problem affect? What is the age, life situation, interests, and background of the people who could use the app?

Step 3: Design a Solution – Decide what their app will do to address the problem, and what users will be able to do as a result.

a) What is the solution? What will the app do to help solve the problem for the user?
b) Design the steps of the solution: Input, Output, Store, Process. Have them study the example, then complete the table that follows with information about their own app. The table should answer these questions:

Inputs: What kind of information does the user need to supply? What information does the app need in order to offer a solution?
Process: How would you need to process the information obtained from the input in order to create an output?
Store: What information will your app store permanently? What information would not change, even if there are multiple users? What information would be useful to have stored so it can be used over and over again?
Output: What new information will be available to the users after they have inputted their information?

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Pg. 2G-33 -- What does a Software Developer Do?
EDITING PRACTICE

Have students rewrite the paragraph on the handout. They will edit for complete sentences, correct subject / verb agreement, punctuation, and capitalization.

ANSWERS:

Software developers are responsible for a variety of tasks that make computers useful tools for businesses and organizations. They are involved at nearly every stage of a computer program's life. While they sometimes tackle these important tasks individually, software developers often work as part of a team, collaborating with others to find solutions to problems.

A software developer's job begins with a client – a person or group that has a need for a special type of computer program. After identifying a client's needs, a software developer must design a program to meet those needs, then use computer languages to write the program, or make modifications to an existing program. But the work is not done there! Software developers are also responsible for designing tests to make sure the program is working properly, then troubleshoot or "debug" the program to fix any errors.

The programs that a software developer creates can be used in many different applications. Sometimes, they make tedious tasks (like adding numbers in a spreadsheet) easier or less time consuming to complete by automating them. Other times, they might help a company reach a broader audience by developing mobile apps. The robots seen in many modern factories are even run using software that had to be written by developers!

Although software development is not physically demanding work, software developers face their own challenges. Sitting in one place with your eyes on a computer screen can be stressful on the body. It's important that software developers take time to move around and stay healthy!

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Pg. 2G-34 -- Talk About Jobs! Small Group Dialogue

Have students pick one of the jobs in the Information Technology Career Cluster. In small groups, complete the dialogue on the handout, using at least ten of the words from the previous lessons. Have him write in such a way that the audience learns about the job duties, the work environment, and the qualities a person should possess who holds one of these jobs. Then they can perform the dialogue for the class.

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Pg. 2G-35 – 36 -- A Day in the Life: Tamara Laush, Computer Programmer

Have students read about A Day in the Life of Tamara Laush, Computer Programmer, then answer the comprehension questions individually, as a class or in small groups.

ANSWER KEY

1. What did Tamara do to prepare for his/ her job as a computer programmer?

   She started by tinkering with her Dad's computer and teaching herself, then furthered her skills in college.

2. Why do you think learning new skills is an important part of a programmer's job?

   There are always new technologies to work with, and a new problem might require an unfamiliar technology or computer language.

3. What other workers in the Information Technology Career Cluster does Tamara work with as part of her job?

   Network Architects, Systems Software Developers, Database Managers

4. What are some of the things that Tamara likes most about her job?

   Being able to solve problems; seeing people use the things she builds.

5. What parts of Tamara's job as a computer programmer do you think you would enjoy? Which would you find challenging?

   Answers will vary. Encourage students to use specific examples from the reading.

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Pg. 2G-37 -- Career Cluster Research

Ask students to use three resources to research and complete the information pertaining to job titles in the career cluster they have chosen to explore. (For example: MyCareer Shines: https://mycareershines.kuder.com, another on-line resource, an interview with a career counselor.)

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Pg. 2G-38 - 39 -- Post-Secondary Catalogue Exploration & Presentation

For this activity, students will choose a program at one of the local educational or vocational institutions that interests them, based on what they have learned about their interests, skills and talents as well as what they now know about post-secondary options. (For example: they might select a certificate program from the local technical center, an Associate of Arts degree program, a community college certificate program or Associate of Science degree, or a four–year college degree.) They will go to the website of the institution which offers a program that interests them to answer the following questions. If they do not have internet access, if possible bring in print catalogues from the local college and vocational / technical center. Have students then prepare to present their information to the class.

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Pg. 2G-40 - 42 -- Information Technology Occupation Presentation

Have students study the occupational vocabulary on the handout. Then they can use **MyCareer Shines** (https://mycareershines.kuder.com) and the **Occupational Outlook Handbook** (http://o*netonline.com) to explore in greater depth one of the jobs in the Information Technology Career Cluster and prepare to present the information to the class.

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Image from Creative Commons www.pixabay.com/en/webdesign-design-web-website-3411373/

EXPLORING CAREER CLUSTERS:

INFORMATION TECHNOLOGY

Student Activities

What Do You Know?

Job Titles in information technology

In small groups, discuss each of the job titles in the Information Technology career cluster. What do you think these workers do? What kind of environment do they work in? What tools and equipment do they use? What kind of skills do they need to have?

Application Software Developer _____

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Information Security Analyst _____

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Computer Network Architect _____

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Database Administrator _____

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Computer User Support Specialist _____

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Systems Software Developer _____

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Computer Programmer _____

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Web Developer _____

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Web Administrator _____

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Computer Systems Analyst _____

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Computer Numerically Controlled (CNC) Machine Programmer _____

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Data Warehousing Specialist _____

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Computer and Information Research Scientist _____

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Computer Science Teacher _____

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Graphic Designer _____

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Information Technology

JOB TITLES: Research

*In small groups, look up the job titles below on **MyCareerShines** (www.mycareershines.kuder.com) and write the definition on the lines below. (Other websites or a dictionary may be used if this is not accessible.) How does your research compare with your prior knowledge?*

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Application Software Developer

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Information Security Analyst

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Computer Network Architect

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Database Administrator

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Computer User Support Specialist

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Systems Software Developer

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Computer Programmer

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Web Developer

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Web Administrator

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Computer Systems Analyst

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CNC Machine Programmer

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Data Warehousing Specialist

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Computer and Information Research Scientist

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Computer Science Teacher

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Graphic Designer

****

INFORMATION TECHNOLOGY

Job Description Match-up

Match the letter of the job from this career cluster with the description of the job duties.

	Information Technology Career Cluster		**Description of Job Duties**
A	Application Software Developer		Develop an equipment plan, including computer network hardware and software to meet user needs.
B	Information Security Analyst		Design and maintain a secure, organized database for storing information and trains others how to use it.
C	Computer Network Architect		Identify and solve problem with use of web sites, keeping records of changes to sites and pages, as well as site usage.
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G	Computer Programmer		Design, edit, and maintain web pages and websites.
H	Web Developer		Design and implement database systems to meet the data storage needs of a business or organization.
I	Web Administrator		Teach computer science concepts to students in a K-12 or post-secondary setting.
J	Computer Systems Analyst		Develop, maintain and monitor security systems for electronic information including encryption and virus protection.
K	Computer Numerically Controlled (CNC) Machine Programmer		Guide users through setup of new computer equipment, and discusses problems with users in order to identify solutions.
L	Data Warehousing Specialist		Design systems that allows computer hardware and software to communicate with each other.
M	Computer and Information Research Scientist		Develop layouts and design schemes for magazines, websites, logos, and marketing materials using computer programs or by hand.
N	Computer Science Teacher		Apply computer science concepts to identify new uses for computer technology.
O	Graphic Designer		Program automated machines to develop products by following blueprints or drawings to meet user needs.

Alphabetical Order

*Put the following **Information Technology** job titles in alphabetical order.*

Application Software Developer
Computer Network Architect
Computer User Support Specialist
Computer Programmer
Web Administrator
Computer and Information Research Scientist
Computer Science Teacher
CNC Machine Programmer
Information Security Analyst
Database Administrator
Systems Software Developer
Web Developer
Computer Systems Analyst
Data Warehousing Specialist
Graphic Designer

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

STRETCH YOUR VOCABULARY

*Make new words from the **Information Technology** Career Cluster vocabulary. Work in small groups to use your own knowledge and a dictionary to see how many forms of the words below you can find. (You will not be able to fill in all the categories for some terms.) The first four are done for you.*

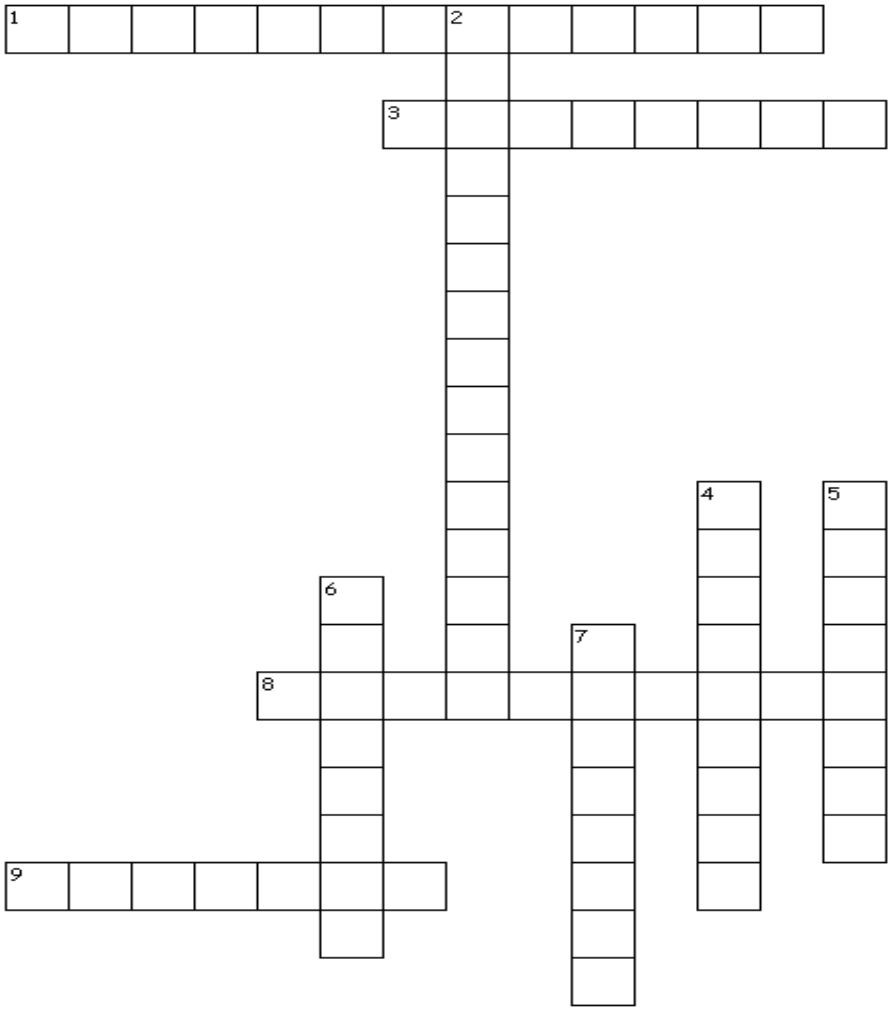
JOB TITLE	RELATED NOUN	Present- tense VERB	ADJECTIVE	ADVERB
Application Software Developer	*Application* *Developer*	*Apply* *Develop*	*Applied* *Applicable* *Developed*	
Information Security Analyst	*Security* *Analysis*	*Secure* *Analyze*	*Secure*	*Securely*
Computer Network Architect	*Network* *Architecture*	*Network*	*Networked* *Architectural*	*Architecturally*
Database Administrator	*Administration*	*Administer*	*Administrative*	*Administratively*
Computer User Support Specialist				
Systems Software Developer				
Computer Programmer				
Web Developer				
Web Administrator				
Computer Systems Analyst				
Computer Numerically Controlled (CNC) Machine Programmer				

Data Warehousing Specialist				
Computer and Information Research Scientist				

SMALL GROUP STORY

Now write a story about a day in the life of a person who works in the career cluster of Information Technology. Use at least ten of the words above (in addition to the job titles!)

Information Technology Career Cluster Crossword Puzzle



Across

1. An individual with top-level control of a computer program or network.
3. Computer programs that allow users to perform tasks.
8. Someone who uses computer languages to write computer software.
9. A system of connections that allows computers to communicate with one another.

Down

2. Looking through a program, design, or set of directions for errors.
4. When tasks are performed by a machine controlled by a computer.
5. Making sure that information on a computer network is secure.
6. The physical components of a computer.
7. A system for storing or "warehousing" information.

Information Technology Career Cluster Word Search

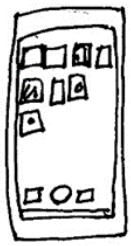
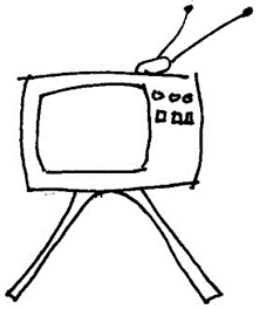
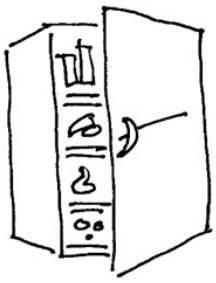
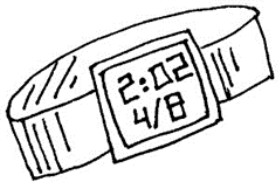
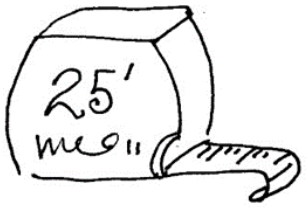
R S O F T W A R E D Z S B P R
E I I K R O W T E N E D A M S
P B N A O N C T P C C N K C D
O U G F B H A M U A M U I E A
L M T I O M A R U A A E Z P T
E M E J O R I R Z R N I B R A
V U A T J T M A D T U K I O B
E S U C Y K N A I W V Y R G A
D A D M I N I S T R A T O R S
S Q S X P M T X V I U R H A E
T C E T I H C R A S O R E M M
U O O C M B L N G Y F N Y M A
Y Y Y O S N T Z M L O Y N E X
Q L C E B U Q D A U A Z N R E
J P Y J U Q D I Q D R W V L K

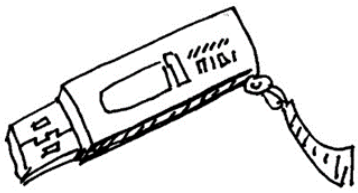
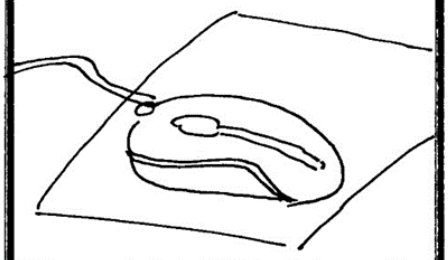
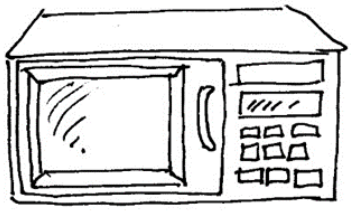
ADMINISTRATOR
ARCHITECT
AUTOMATED
DATABASE
DEVELOPER
HARDWARE
INFORMATION
NETWORK
PROGRAMMER
SCIENTIST
SECURITY
SOFTWARE

SCIENCE in the Information Technology Career Cluster

What is a Computer?

Look at the pictures below. Check off those which you think fit the definition of computer. Then, in small groups, discuss which pictures you have checked and why. What rules or definitions will you use to decide? Did you all agree? What makes something a computer?

✓	Is it a computer?	✓	Is it a computer?
			
			
			
			

✓	Is it a computer?	✓	Is it a computer?
			
			
			
			

Discuss:

1. What rules or definitions did you use to categorize these objects?

2. Which items were difficult to categorize as computers? How did you decide if they were computers or not?

3. Did other people in your small group agree or disagree with your decision about how to categorize these items? Did anyone offer an argument that convinced you to change your mind?

Computers Are Everywhere

We are dependent on computers and technology for much of daily life. But most of us – unless we work in the field of information technology – don't know much about what is going on inside of these complex and important machines.

Computer Science Vocabulary

Define the following computer science-related terms. Use a dictionary to help you if necessary.

- **components** _____

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  _____

- **input**_____

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- **output**_____

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- **processor**_____

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- **insulator**_____

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- **conductor**_____

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- **data**_____

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Computer Components

What are the **components** of a computer? And how do they work together to do the amazing things they do?

Central Processing Unit

The main part of a computer is called the **central processing unit**, or CPU. The CPU is the control center of the computer. Information is put into the CPU, and this is called **input**. The CPU uses something called a **processor**. This is a device that helps the computer read the input and determines what it needs to do.

The processor is very small, and sometimes it is referred to as a chip. The chip is powerful, and the processors performs many complicated calculations.

Motherboards

A computer is composed of many different circuits. Inside of each computer is the main circuit board called a **motherboard,** where the important circuits are located. The motherboard helps all parts of a computer work together.

The actual motherboard is made many different materials. The board itself is composed of fiberglass, which is an **insulator.** This helps control the flow of electricity to other parts of the computer. The actual circuits are usually made from copper, which is a **conductor.** This allows the electricity to flow within the motherboard.

Hard Drive

The hard drive is the place where people store a lot of information, or **data**, on their computers. Documents and pictures are examples of data.

Software

Software is the name for computer instructions that tell the computer how to work.
The physical hardware performs the work, but the computer scientists design (program) the software that tells the hardware what to do.

Basic hardware components of a modern personal computer, including a monitor, a motherboard, a CPU, a RAM, two expansion cards, a power supply, an optical disc drive, a hard disk drive, a keyboard and a mouse

Image from https://en.wikipedia.org/wiki/Computer_hardware

How Do Computers Work?

Computers help with thinking work. They are designed to manipulate information.

All computers:

❖ **Take input** – Input is the information and tasks that the computer programmer or user puts into the computer. They give the computer information which is then stored.

❖ **Store information -- I**n order to process information (or data), a computer must store it. This information may be in the form of text documents, images, photos, audio clips, videos, or software programs.

❖ **Process information** – Computers process and store information (data / input,) until it is ready to be output.

❖ **Output the results** – Any information that has been processed by and sent out from a computer is considered **output**. An example of output is anything you view on a computer monitor. Output can be text, photos, games, virtual reality, or robotics.

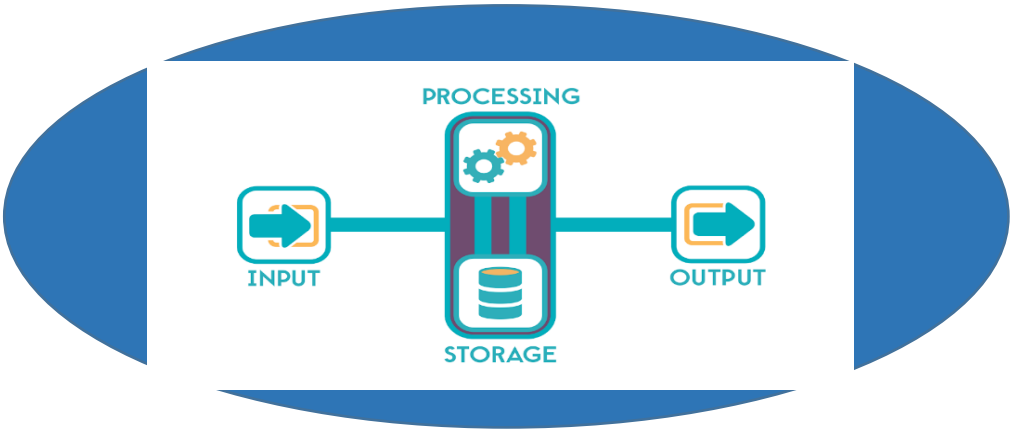

Image from https://curriculum.code.org/csd-1718/unit1/4/

Comprehension Questions

1. What are the three physical components of a computer?
2. What must computers do in order to process information?
3. What is data? .
4. What does software do?
5. What is the difference between input and output?
6. What are three examples of output?

Build a Mobile App

A **mobile app** (short for "software application") is a computer program designed to run on a smart phone (iphone), tablet, or other mobile computing device.

A smart phone is a small, handheld computer that helps with certain kinds of thinking work by processing information. Just like a laptop of desktop computer, it is a machine that inputs, stores, processes, and outputs information.

Apps are designed by computer scientists to make life easier. In small groups, develop an app idea that fits into one of the following three categories:

Job / Housing Search – Apps can help users send emails, search for jobs or apartments, build resumes, practice interview skills, and more. Examples include:

- Indeed Job Search
- Career Source

Education – Apps can help users study for the GED, look for training opportunities, study a foreign language, learn new vocabulary, and more. Examples include:

- Duolingo – Learn Languages for Free
- Quizlet: Flashcard & Language App
- Lumosity – Brain Training

Health – Apps can help users keep track of what they eat, communicate with their doctors, measure biological factors (such as blood pressure, weight, and glucose), track how much they exercise, and more.

Image from Creative Commons
www:pixabay.com/en/iphone-cellphone-smartphone-mobile-37856/

SCIENCE in the Information Technology Career Cluster: What is a Computer?

Computer scientists design apps that solve problems. Think of a problem in one of the three categories above ***(Job / Housing Search, Education, and Health)*** *that a computer could help solve. Work in small groups to brainstorm how this problem could be addressed by designing a mobile app.*

Step 1: Brainstorm Problems -- *With a partner or in a small group, brainstorm a list of problems that a computer could help solve:*

Job / Housing Search	Education	Health

Step 2: Choose a Problem – *Discuss which problem from the brainstormed list above your group would like to work on. Make sure the problem is interesting to everyone in the group, important to a number of people, and able to be addressed through computer science.*

a) Be specific. What needs to change or improve? Why does the problem exist?

_____

_____

_____

b) Who does the problem affect? What is the age, life situation, interests, and background of the people who could use the app?

_____

_____

Step 2: Design a Solution – Decide *what your app will do to address the problem, and what users will be able to do as a result.*

a) What is the solution? What will the app do to help solve the problem for the user?

_____

_____

_____

b) Design the steps of the solution: Input, Output, Store, Process.
Look at the example below, then complete the table that follows with information about your own app. The table should answer these questions:

Inputs: What kind of information does the user need to supply? What information does the app need in order to offer a solution?

Process: How would you need to process the information obtained from the input in order to create an output?

Store: What information will your app store permanently? What information would not change, even if there are multiple users? What information would be useful to have stored so it can be used over and over again?

Output: What new information will be available to the users after they have inputted their information?

EXAMPLE

Problem: *It's hard to find housing that rents to people with felonies.*
Solution: *Users are given a list of managers who rent to people with felonies.*

Input	Process	Store	Output
Renters: ~ Desired location ~ Number of bedrooms ~ Price range **Managers:** ~ Location ~ Bedrooms ~ Price	Match user input with database of affordable housing that rents to people with felonies	Maintain database as more managers input information about housing	List of available apartments, matching renters with managers

Name of App: _____

Problem: *Solution:*			
Input	**Process**	**Store**	**Output**

What Does a Software Developer Do?

EDITING PRACTICE

Adapted from www.sokanu.comRewrite the paragraph below. Edit for spelling, complete sentences, correct subject / verb agreement, punctuation, and capitalization.

software developers are responsible for a variety of task that make computers useful tools for businesses and organizations. They are involved at nearly every stage of a computer program's life While they sometimes tackle these important tasks individually, software developers often work as part of a team, collaborating with others to find solutions to problems.

A software developer's job begins with a client – a person or group that has a need for a speshal type of computer program. after identify a client's needs, a software developer must design a program to meet those needs, then use computer languages to write the program, or make modifications to an existing program. But the work is not done there! Software developers are also responsible for designing tests to make sure the program is working properly, then troubleshoot or "debug" the program to fix any erors.

the programs that a software developer creates can be used in many different applicashuns. sometimes, they make tedious tasks (like adding numbers in a spreadsheet) easier or less time consuming to complete by automating them. Other times they might help a company reach a broader audience by developing mobile apps. The Robots seen in many modern Factories are even run using software that had to be written by developers!

although software development is not physically demanding work, softwar developers face their own challenges. Sit in one place with your eyes on a computer screen can be stressful on the body. Its important that software developers take time to move around and stay healthy!

Image from Creative Commons pixabay.com/en/technology-laptop-computer-792181/

Talk About Jobs!

Small Group Dialogue

*Pick one of the jobs in the **Information Technology Career Cluster**. In small groups, complete the dialogue below, using at least ten of the words from the previous lessons. Write in such a way that the audience learns about the job duties, the work environment, and the qualities a person should possess who holds one of these jobs. Then perform the dialogue for the class.*

Joe: I love being a _____

Sarena: Me, too! My favorite part of this job is _____

_____

Joe: Really? My favorite part is_____

_____

Sarena: I got my training for the job _____

_____

Joe: I got my training_____

_____

Sarena: I love the technology! I love the fact that every day I get to use _____

_____

Joe: And the environment is so _____

_____

Sarena: And you have to be a special sort of person to do this! You have to be_____

_____

Joe: _____

_____

Sarena: _____

_____

A Day in the Life:
Tamara Laush, Computer Programmer

I think I always knew I would be interested in computers, from the first time I got to play on an extra work computer my dad got to take home. When I started learning to code and different programming languages – first on my own, then later in college - I liked how I could build things and see right away the direct effects of what I changed.

Sometimes it's hard to explain to people what I do. "Computer Science" is a really, really, really broad term! Some people dive deep into computer systems, down to how a CPU actually sends commands to the rest of a computer's components. Some are specialists in computer networks, programming the technologies that keep us connected 24/7. Some people walk the line between designers and programmers, doing a bit of both. There is lots of different work to be done!

The best part of my work is that every day, I get to solve problems. I help information get from point A to point B. I figure out the *best* way to get something done, then I figure out the *fastest* way to get something done, and then I find a way to make those two work together. There's a lot of coding, but I'm on a team that works together to solve bigger problems than I could by myself.

Computer programming has its challenges, too. In my particular job, sometimes it's making different technologies or programming languages play nice with each other. Other times it's trying to figure out just what needs to be built – when you're trying to solve a problem that's never been solved before, there are countless ways you *could* do it, but what's the *best* way? When I see people use the things I've built, though, the extra effort is worth it.

Image from Creative Commons www://svgsilh.com/image/146329.html

A Day in the Life: Tamara Laush, Computer Programmer

QUESTIONS

1. What did Tamara do to prepare for her job as a computer programmer?

2. Why do you think learning new skills is an important part of a programmer's job?

3. What other workers in the Information Technology Career Cluster does Tamara work with as part of her job?

4. What are some of the things that Tamara likes most about her job?

5. What parts of Tamara's job as a computer programmer do you think you would enjoy? Which would you find challenging?

Career Cluster Research

Use three resources to research and complete the information pertaining to job titles in the career cluster you have chosen to explore. (For example: MyCareer Shines: https://mycareershines.kuder.com, another on-line resource, an interview with a career counselor.)

Name of career cluster:_____

Job Title			
Educational level needed: (On-the-job training, apprenticeship, 2-year technical school or community college, 4-year college/university?)			
Salary/Wages: (Beginning, Median, Experienced?)			
Environment: (Outdoors / indoors, school, office, hospital, business?)			
Qualities needed to be successful in this occupation: (Special skills, personal qualities, etc.)			

Post-Secondary Catalogue Exploration & Presentation

Based on what you have learned about your interests, skills and talents as well as what you now know about post-secondary options, choose a program at one of the local institutions that interests you (for example: you might select a certificate program from Lively Technical Center, a TCC Associate of Arts degree program, TCC certificate program, or a FAMU four–year degree.) Go to the website of the institution which offers a program that interests you to answer the following questions. If you do not have internet access, use the print catalogues from the local college and vocational / technical center. Prepare to present your information to the class.

1. What is the name of the website?_____

2. What is the name of the program of study that interests you?_____

_____

3. How many credit hours or clock hours is the program?_____

4. How long will it take in weeks, months or years to complete the program?_____

_____

5. What does the program cost?_____

6. Does the program accept financial aid?_____

7. What are the entrance requirements of the program? (TABE scores? GED? ACT or SAT? Other tests or requirements?)

_____

_____

8. What are some of the classes you will have to take in this program?

_____ _____

_____ _____

_____ _____

9. What do graduates of this program typically earn?_____

_____

10. What questions would you ask of a student who is currently involved in this program?

11. What questions would you ask of a counselor in student services about this program?

12. If this program is right for you, what do you need to do to prepare for it so that you can be successful? (Be specific: what do you need to accomplish academically, financially and personally before you apply?)

Information Technology
Occupation Presentation

Study the occupational vocabulary below. Then use **MyCareer Shines** (https://mycareershines.kuder.com) and the **Occupational Outlook Handbook** (http://o*netonline.com) to explore in greater depth one of the jobs in the Architecture and Construction Career Cluster. Prepare to present the information to the class.

DEFINITIONS:

- **occupational outlook:** the chance you have of getting a job in a certain field in the current economy. Occupational outlook is related to how many jobs are available in this field and how many workers are needed.
- **occupational hazards:** working conditions that can lead to illness or death. Often, but not always, people in high-risk jobs are paid more than similar but less risky jobs to compensate for the danger involved.
- **certification:** evidence that an individual has acquired the skills and knowledge needed to do a job, given by a school or authority after an evaluation or test
- **mandatory:** required or commanded by authority; obligatory
- **job prospects:** the range of career opportunities available to a person having a particular combination of skills, knowledge, qualifications, etc.
- **median earnings:** the middle salary out of all the people in a group (often used to describe people doing a similar job), half having incomes above the median, half having incomes below the median

****

Occupation _____

1. What are the typical job duties of this occupation?

_____

_____

_____

2. What is the typical environment where this work takes place?

_____

3. What are the typical hours worked by a person doing this job?

_____

_____

4. Are there occupational hazards? What are they?

_____

_____

5. What education and / or training are required to enter this occupation?

_____

_____

6. What licenses or certifications are mandatory for this occupation?

_____

_____

7. What skills should a person in this occupation possess?

_____

_____

_____

8. What is the total number of jobs in this occupation today?

_____

9. What is the projected change in the number of jobs in this occupation?

_____

10. What are the job prospects for this occupation in Florida?

_____

11. What are the median earnings for workers in this field?

_____

12. In your opinion, what are the major advantages of this occupation?

_____

_____

_____

_____

13. In your opinion, what are the major disadvantages of this occupation?

_____

_____

_____

_____

14. Does this job suit you and your talents and interests? How?

_____

_____

_____

_____

15. If you decided to pursue work in this occupation, what steps would you need to take?

_____

_____

_____