

Activities/ Resources for Outcomes

Software

Subject classification: this is an information technology resource.



Educational level: this is a secondary education resource.



Type classification: this is a lesson resource.



This is a lesson in the course Introduction to Computers, which is a part of The School of Computer Science.

What is software?

Software enables computer hardware to perform specific tasks. Software, commonly known as programs or applications, consists of all the electronic instructions that tell the hardware how to perform a task. The program you're using right now to view Wikiversity is a type of program called a browser. A browser contains all the instructions that tell your computer how to display a web site. Software is capable of performing many different specific tasks, as opposed to hardware which only perform mechanical tasks that they are designed for. There are three major types of software that most computer users are aware of:

Operating System software:

Helps run computer hardware and computer system. Computer software includes the operating system, device drivers, diagnostic tools and more; the stuff that makes your computer useable by most people. The most commonly used operating systems software are:

Windows

Mac OS X

GNU/Linux

Application software:

Allows users to accomplish one or more tasks; browsing the internet or writing a text document, for example:

Word processor

Graphics software

Programming software tools:

Software that assists a programmer in writing more computer software. Computer programs are often large and complex which makes them hard to design, create and maintain. In addition, computer hardware can only execute computer instructions encoded as 1's and 0's (binary). Programming software tools makes it easier to create programs and maintain them. One of the most important tools is a compiler that takes a computer program written in a high level language, such as C, Java or Haskell, and translates to binary instructions for the computer hardware.

Other Types of Software

Embedded Software

Software that runs on small computers inside other machines, for instance washing machines, cars or medical equipment. These type of programs usually have access to fewer resources (memory, networking, processor power, disk

storage etc.) and do not have a user interface. However, as computer hardware and networking technology becomes cheaper and smaller, embedded computers are becoming more and more connected. This is popularly referred to as the "Internet of Things."

Server Software:

Server programs run on larger centrally located machines. For instance, a bank might have millions of customer records stored in a server database. A client machine (for instance, a program running on a desktop computer) might send a search request for a specific customer account. The server will perform the search and return any data found. Server programs can be created to perform a variety of functions that require the processing of large amounts of information or performing a large number of computational processes.

Software for Wikiversity participants

There are several types of software that you can use to make the most of your participation at Wikiversity.

Operating systems

The most commonly used operating systems are:

Windows

Mac OS X

Linux

Internet browsers

Three of the most used internet browsers are:

Internet Explorer

Firefox

Google Chrome

Other popular ones include Opera and Safari. For a more expansive list, see List of web browsers on Wikipedia.

Email clients

Popular email clients include:

Outlook Express / Windows Mail / Windows Live Mail

Mozilla Thunderbird

See Comparison of e-mail clients for other popular ones. Also, Webmail is a very popular way to send and receive emails.

Webfeed aggregators

Multimedia players

VLC

Window Media Player

Multimedia recorders

VLC

Image editors

GIMP

Inkscape

Photoshop

Internet Relay Chat

Popular IRC clients include:

ChatZilla

mIRC

XChat

For a more comprehensive list see Comparison of Internet Relay Chat clients on Wikipedia.

Voice chat

Skype is a popular Voice over Internet Protocol application.

Software Licenses

A software license is a legal instrument (usually by way of contract law) governing the usage and/or redistribution of software. All software is copyright protected, except material in the public domain. Contractual confidentiality is another way of protecting software. A typical software license grants an end-user permission to use one or more copies of software in ways where such a use would otherwise potentially constitute copyright infringement of the software owner's exclusive rights under copyright law.

Some software comes with the license when purchased off the shelf or an OEM license when bundled with hardware. Software can also be in the form of freeware or shareware. Software licenses can generally be fit into the following categories: proprietary licenses and free and open source licenses, which include free software licenses and other open source licenses. The features that distinguishes them are significant in terms of the effect they have on the end-user's rights.

A free open source license makes software free for inspection of its code, modification, and distribution. Some free licenses, such as the GNU General Public License (GPL), allow the product and/or derivative to be commercially sold.

See also

Computer Skills

Internet Fundamentals

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Introduction to Databases Vocabulary

Data - *Bits or pieces of information.*

Database – *A collection of related data files organized and cross-referenced for quick retrieval.*

Template – *A pre-built database table formatted with categories such as those for business, education, and personal use, including those for events, assets, inventory, and contacts.*

Table – *The main function of a table in a database is to organize and store data. Tables are arranged in rows and columns, making it easy to search, extract, and reference information.*

Related Table – *A table that links or references information from another table, eliminating the need to duplicate data entry.*

Record – *A group or set of related data.*

Field – *The location for a piece of data or information.*

Form – *Shows data for entry or review and is selected from one or more tables or queries.*

Query – *A process for pulling data from tables for informational or reporting purposes.*

Report – *Shows data for printing, display, or interaction and is selected from one or more tables.*

Introduction to Databases Vocabulary Review

<u>Data</u>	<i>Bits or _____ of _____.</i>
<u>Database</u>	<i>A collection of _____ data files _____ and for quick retrieval.</i>
<u>Template</u>	<i>A _____ database _____ formatted with categories such as those for _____, _____, and _____, including those for _____, _____, _____, and _____.</i>
<u>Table</u>	<i>The main function of a table in a database is to _____ and data. Tables are arranged in _____ and _____, making it easy to _____, _____, and _____ information.</i>
<u>Related Table</u>	<i>A table that _____ or _____ information from another, eliminating the need to _____ data entry.</i>
<u>Record</u>	<i>A _____ or set of _____ data.</i>
<u>Field</u>	<i>The _____ for a piece of data or information.</i>
<u>Form</u>	<i>Shows data for _____ or _____ and is selected from one or more tables or queries.</i>
<u>Query</u>	<i>A process for _____ data from tables for or _____ purposes.</i>
<u>Report</u>	<i>Shows data for _____, _____ or _____ and is selected from one or more tables.</i>

Introduction to Databases Vocabulary Review (Key)

<u>Data</u>	<i>Bits or <u>pieces</u> of <u>information</u>.</i>
<u>Database</u>	<i>A collection of <u>related</u> data files <u>organized</u> and <u>cross-referenced</u> for quick retrieval.</i>
<u>Template</u>	<i>A <u>pre-built</u> database <u>table</u> formatted with categories such as those for <u>business</u>, <u>education</u>, and <u>personal use</u>, including those for <u>events</u>, <u>assets</u>, <u>inventory</u>, and <u>contacts</u>.</i>
<u>Table</u>	<i>The main function of a table in a database is to <u>organize</u> and <u>store</u> data. Tables are arranged in <u>rows</u> and <u>columns</u>, making it easy to search, extract, and reference information.</i>
<u>Related Table</u>	<i>A table that <u>links</u> or <u>references</u> information from another <u>table</u>, eliminating the need to <u>duplicate</u> data entry.</i>
<u>Record</u>	<i>A <u>group</u> or set of <u>related</u> data.</i>
<u>Field</u>	<i>The <u>location</u> for a piece of data or information.</i>
<u>Form</u>	<i>Shows data for <u>entry</u> or <u>review</u> and is selected from one or more tables or queries.</i>
<u>Query</u>	<i>A process for <u>pulling</u> data from tables for <u>informational</u> or <u>reporting</u> purposes.</i>
<u>Report</u>	<i>Shows data for <u>printing</u>, <u>display</u>, or <u>interaction</u> and is selected from one or more tables.</i>

Intro to Databases Worksheet

I. Terms/concepts associated with the lesson:

- a. Data –
- b. Database –
- c. Template –
- d. Table –
- e. Related Table –
- f. Record –
- g. Field –
- h. Form –
- i. Query –
- j. Report –

II. Relevance of using databases

- a. Organization of _____ amounts of _____
 - i. How overwhelming would it be to organize and keep track of employee information for a large retail corporation with 1.5 million employees?

III. Benefits of using a database instead of a spreadsheet

- a. On the surface, both types of software seem similar. After all, they store data, and you can enter data in a grid of cells.
- b. The question is, “_____”?
- c. Database software has a _____ structure that helps keep large amounts of information accurate and provides you with customized manageable tables.
- d. Spreadsheet software is used for _____ using _____, while Database software is used for storage of large amounts of data that can be accessed easily and quickly.

IV. Demonstrate selecting a template and entering data into a database.

- a. Tools/Features
 - i. Open the database program
 - ii. Locate and download one of the pre-built templates, also called Assets.
 - iii. Pick an item in the classroom to enter into the template as your first asset.
 - iv. Save the new asset

V. Independent Practice Activity

- a. Brainstorm the fields needed to enter home inventory information for insurance purposes.
- b. You will be responsible for “inventorying” at least 25 items from your own home.
- c. You will create your own access database using the skills taught in this lesson to create a home inventory database.

Intro to Databases Worksheet (Key)

- I. Terms/concepts associated with the lesson:
 - a. Data – Bits of information
 - b. Database – A collection of related data files organized and cross referenced for quick retrieval.
 - c. Template – A pre-built database table formatted with categories such as those for business, education and personal use, including those for events, assets, inventory, and contracts.
 - d. Table – The main function of a table in a database is to organize and store data. Tables are arranged in rows and columns, making them easy to search, extract, and reference information from another table.
 - e. Related Table – A table that links or references information from another table eliminating the need to duplicate data entry.
 - f. Record – A group or set of related data.
 - g. Field – The location for a piece of data or information.
 - h. Form – Shows data for entry or review and is selected from one or more tables or queries.
 - i. Query – A process for pulling data from tables for informational or reporting purposes.
 - j. Report – Shows data for printing, display, or interaction and is selected from one or more tables.
- II. Relevance of using databases
 - a. Organization of vast amounts of data (How overwhelming would it be to organize and keep track of employee information for a large retail corporation with 1.5 million employees?)
- III. Benefits of using a database instead of a spreadsheet
 - a. On the surface, both types of software seem similar. After all, they store data, and you can enter data in a grid of cells.
 - b. The question is, “How do you want to organize your data”?
 - c. Database software has a relational structure that helps keep large amounts of information accurate and provides you with customized manageable tables.
 - d. Spreadsheet software is used for analyzing numbers using formulas, while database software is used for storage of large amounts of data that can be accessed easily and quickly.
- IV. Demonstrate selecting a template and entering data into a database.
 - a. Tools/Features
 - i. Open the database program
 - ii. Locate and download a pre-built template, also called assets.
 - iii. Pick 1 item in classroom to enter in the template as your first asset.
 - iv. Save the new asset
- V. Independent Practice Activity
 - a. Brainstorm the fields needed to enter home inventory information for insurance purposes
 - b. You will be responsible for “inventorying” at least 25 items from your home.
 - c. You will create your own access database using the skills taught in this lesson to create a home inventory database.

Introduction to Databases Activities

Class Brainstorm/Discussion:

Instructions for Teacher:

During the lesson, involve the entire class in discussions/brainstorms about the relevance of using databases, specifically large companies with vast amounts of data. During the explanation of the Independent Practice, have students first brainstorm fields for the home inventory project. This will help re-enforce the concepts of records and fields.

Class Participation in Teacher Demonstration:

Instructions for Teacher:

As you demonstrate selecting and downloading a pre-built template, get student buy-in by involving them in the process. Students will observe, but then ask for one or two volunteers to demonstrate in front of peers. Encourage students watching to peer coach and evaluate the student demonstrator on his or her techniques.

Independent Database Creation:

Instructions for Teacher:

Students will independently inventory 25 home items and enter the data into their database.

Instructions for Student:

Now that you've seen me demonstrate some of the tools/features available in the database software, you're going to create your own personalized home inventory database and apply the skills we've learned today. You will need to first inventory at least 25 items of value from your own home. You will enter the data into the database program using a prebuilt template with the fields we came up with today.

Home Inventory Database Evaluation Rubric

CRITERIA	YES 1 – 25 Points	NO 0 Points	POINTS
Used the pre-built template	The student correctly selected and downloaded the pre-built template.	The student did not correctly select and download the pre-built template.	
Student brought inventory of 25 items from his/her home	The student used the fields to specified fields to inventory at least 25 items from his/her home.	The student did not use the fields to specified fields to inventory at least 25 items from his/her home.	
Used the 'forms' part of the database software to enter the data for the 25 items	The student used the 'forms' part of the database software instead of table view to enter data for the 25 items.	The student did not use the 'forms' part of the database software instead of table view to enter data for the 25 items.	
Saved the database using lastname_firstname_home inventory in the file name	The student correctly saved the database with the specified filename format.	The student did not correctly save the database with the specified filename format.	

Computer Network Fundamentals - Teacher Pack

(For use in the final outcome of the Science module, “Discover basics of computer networking.”)

To download a PDF of this pack, click this link: <https://docplayer.net/58712680-Computer-network-fundamentals-teacher-pack.html>