KASNEB

DICT

Principles of Web Development

LEVEL 3

PAPER NO.9

Contents

TOPIC 1:

INTRODUCTION TO WEB DEVELOPMENT

Web app development concepts

Web app development is the creation of **application programs** that reside on remote servers and are delivered to the user's device over the Internet.

Web programming refers to the writing, markup and coding involved in Web development, which includes Web content, Web client and server scripting and network security. The most common languages used for Web programming are XML, HTML, JavaScript, Perl 5 and PHP.

Web - Basic Concepts

What is Internet?

The Internet is essentially a global network of computing resources. You can think of the Internet as a physical collection of routers and circuits as a set of shared resources.

Some common definitions given in the past include −

- A network of networks based on the TCP/IP communications protocol.
- A community of people who use and develop those networks.
- A community of people who use and develop those networks.

Internet-Based Services

Some of the basic services available to Internet users are −

- **Email** − A fast, easy, and inexpensive way to communicate with other Internet users around the world.
- **Telnet** − Allows a user to log into a remote computer as though it were a local system.
- **FTP** − Allows a user to transfer virtually every kind of file that can be stored on a computer from one Internet-connected computer to another.
- **UseNet news** − A distributed bulletin board that offers a combination news and discussion service on thousands of topics.
- **World Wide Web (WWW)** − A hypertext interface to Internet information resources.

What is WWW?

WWW stands for **W**orld **W**ide **W**eb. A technical definition of the World Wide Web is − All the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).

A broader definition comes from the organization that Web inventor Tim Berners-Lee helped found, the World Wide Web Consortium (W3C): The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge.

In simple terms, The World Wide Web is a way of exchanging information between computers on the Internet, tying them together into a vast collection of interactive multimedia resources.

What is HTTP?

HTTP stands for **H**ypertext **T**ransfer **P**rotocol. This is the protocol being used to transfer hypertext documents that makes the World Wide Web possible.

A standard web address such as Yahoo.com is called a URL and here the prefix **http** indicates its protocol

What is URL?

URL stands for **U**niform **R**esource **L**ocator, and is used to specify addresses on the World Wide Web. A URL is the fundamental network identification for any resource connected to the web (e.g., hypertext pages, images, and sound files).

A URL will have the following format −

```
protocol://hostname/other_information
```

The protocol specifies how information is transferred from a link. The protocol used for web resources is HyperText Transfer Protocol (HTTP). Other protocols compatible with most web browsers include FTP, telnet, newsgroups, and Gopher.

The protocol is followed by a colon, two slashes, and then the domain name. The domain name is the computer on which the resource is located.

Links to particular files or subdirectories may be further specified after the domain name. The directory names are separated by single forward slashes.

What is Website?

You may be in a specific website as Tutorialspoint.com which is a collection of various pages written in HTML markup language. This is a location on the web where people can find tutorials on latest technologies. Similarly, there are millions of websites available on the web.

Each page available on the website is called a *web page* and first page of any website is called *home page* for that site.

What is Web Server?

TOPIC 3

PICTURES, EFFECT, IMAGES AND COLOURING

Pictures and image working are best handle by design programs and fireworks to be specific is the popular for web images

How to edit images in Macromedia Fireworks

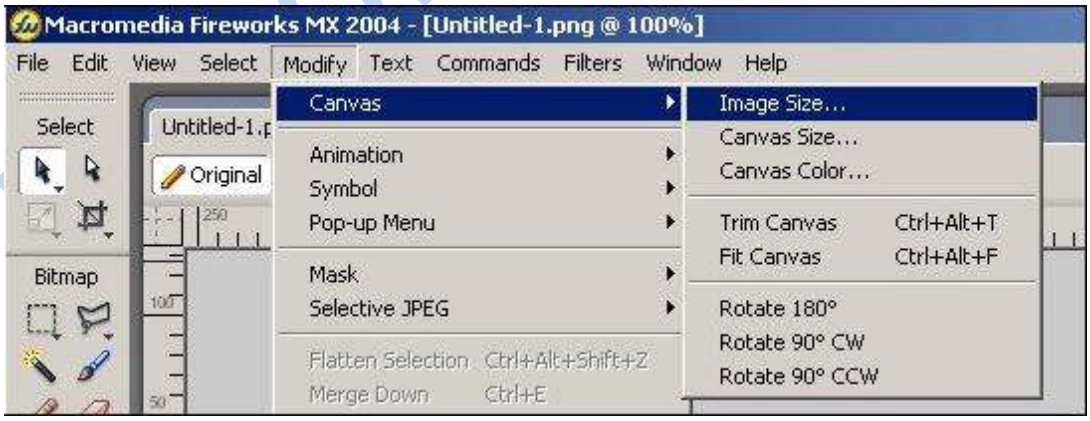
Image

Image Size and Canvas Size

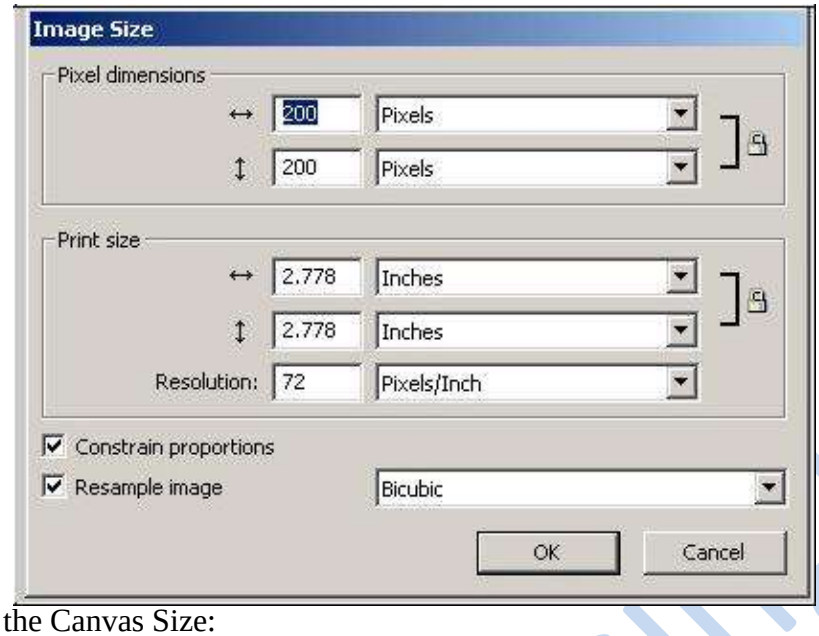
These are two different things. If you adjust the image size it will change the size of your image. If you adjust the Canvas Size it will change the size of the canvas or background that your image is on.

To adjust the image size:

- Go to **Modify – Canvas – Image Size**
- You should see…



- Adjust to the size you want to use the finished image at.



To adjust the Canvas Size:

To adjust the **Canvas Size**, do as above but select **Canvas Size** instead of Image Size.

Cropping

Sometime there is part of an image that you don't want included or perhaps you just want to change the shape of your image.

- Open your image in Macromedia Fireworks
- Select the Crop Tool

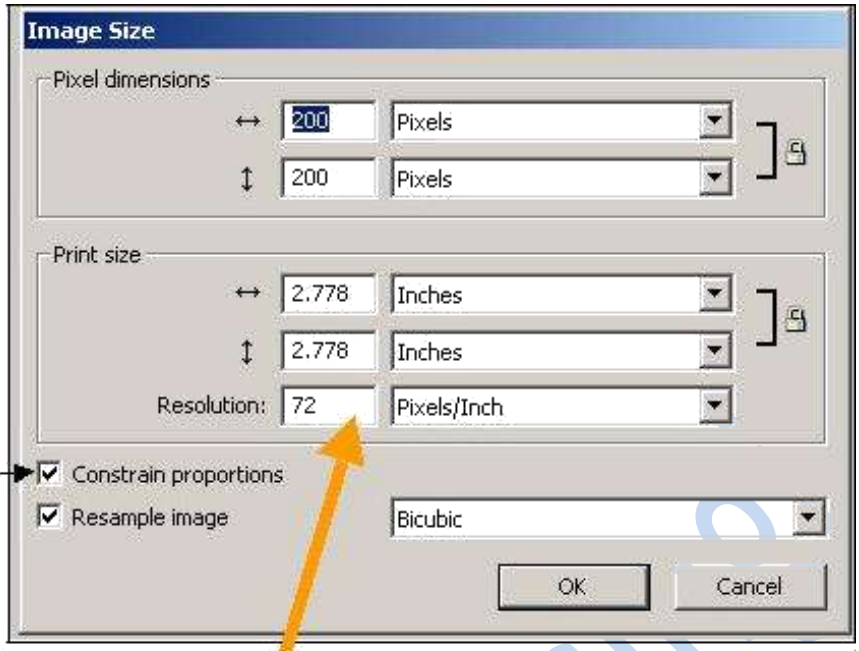
- Click and drag over the area you want. You can adjust this by moving the black square handles that appear (see below).

- When you are happy with your selection, **Double Click inside the area you have selected** to crop it.
- Go to **File – Save As – Call it 'Cropped image of ……..'**
- Using **Save As** means you can keep the original picture as well in case you want to use it again.

Resolution

To change the resolution of an image:

- Got to **Modify – Canvas – Image Size**



- Adjust the resolution here.
- If the Constrain proportions box is checked and you make the resolution smaller, the image dimensions will get smaller as well.

4. Exporting

To export or change the file format:

- Open the image you want to use.
- Got to **File – Export Preview**

TOPIC 4

WEB DEVELOPMENT PLATFORMS

Web development can range from developing the simplest static single page of plain text to the most complex web-based internet applications,

A *platform* is the underlying programming language that the site will utilize. The most popular development platforms are HTML, PHP, .NET, and JSP.

Dream weaver is one of the applications that help manage webpages developed in the above platforms… and so are synonymously regarded as web platforms too though are only web development tools

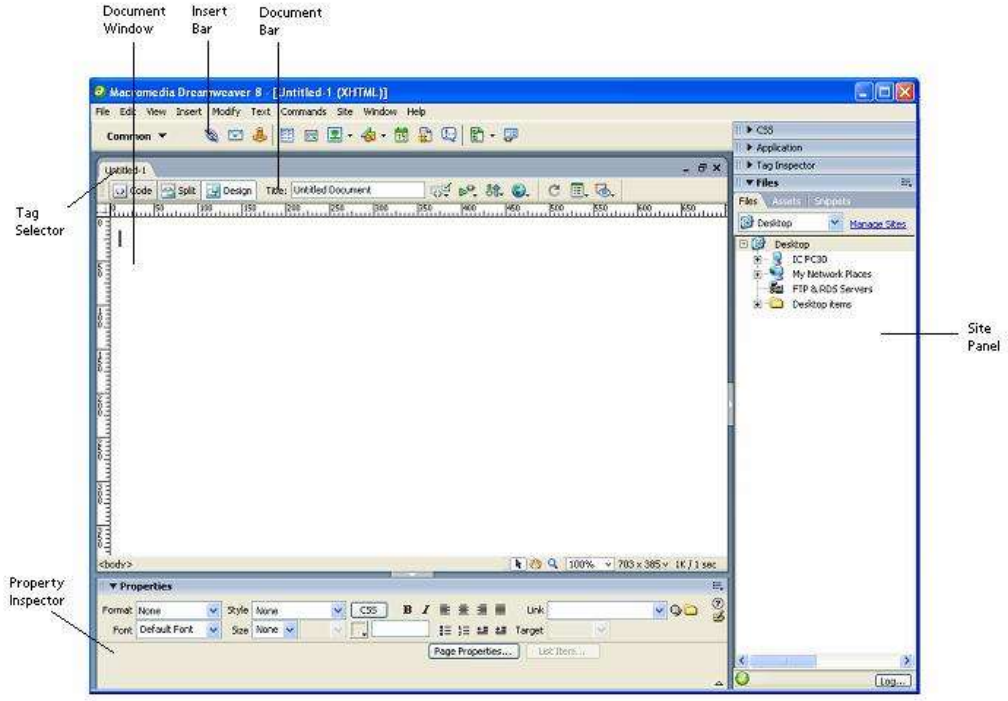
Introduction to Dreamweaver

What is Dreamweaver? Dreamweaver helps you to create web pages while it codes html (and more) for you. It is located on the bottom tray  or in the **start** menu, under **Macromedia**.

Manage a website in Dreamweaver

Before you begin: *Webspace*: your webpage must be on your webspace to be accessible from the internet. store all components of the website in one folder. It is recommended that you create a separate "images" folder within the main one to keep track of your images. The main folder must be on your webspace. *Planning*: it helps if you know how you want your webpage to look *before* using Dreamweaver. Think about colors, uniformity among pages and organization of links and topics.

Creating a new page:
Under "File", select "New". Make sure it is set on "Basic Page" and "HTML".



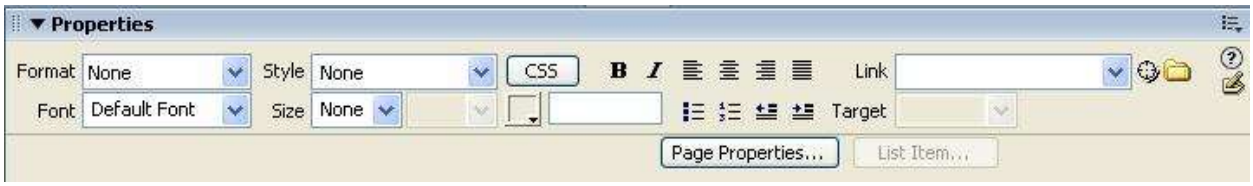
The Dreamweaver Windows

The **Document window** displays the current, editable page.
The **Site Panel** allows you to easily access, view and manage the files and folders that make up your site. This is **optional**, but useful.

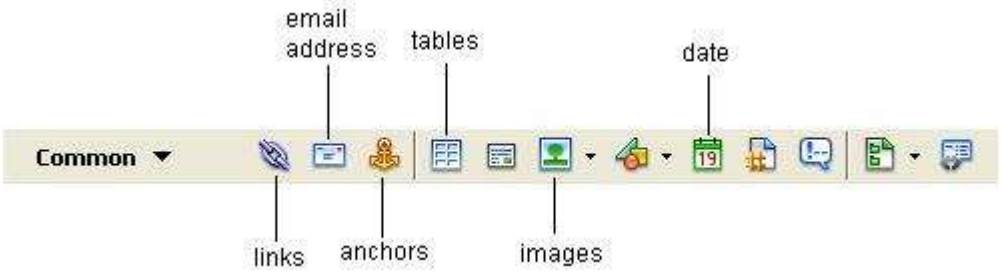
From the top menu, select **Site**➪**New Site**➪click the "**Advanced**" tab. Fill in the **Site Name** ("bob's site"), the **Local Root Folder** (the folder where all pages of your website are contained), and the **http address** (the exact online location of your site—http://www.mtholyoke.edu/~bob/main_folder_name).

The two commonly used tool bars are the **Insert bar** and the **Properties inspector**. If they are not visible on your screen, pull down these options under **Windows (Insert** and **Properties)** at the top, or press **F4** on your keyboard.

The Property Inspector allows you to view and change properties of selected objects or texts.

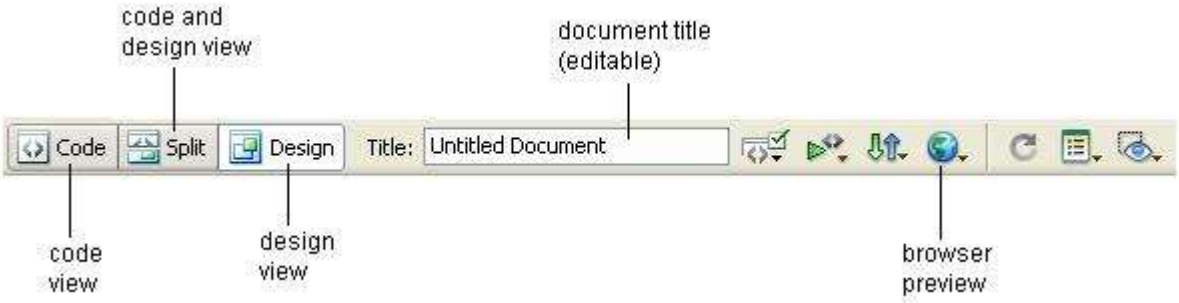


The **Insert bar** contains buttons for inserting various types of objects, e.g. images, tables and text into your page.



The **Document toolbar** contains buttons and pop -up menus that provide different views of the Document window (e.g. Design view, Code view) and gives you access to references and a preview of your page in the browser of your choice. If the document toolbar is not already visible, go to **View➪ Toolbars➪ Document** in the top menu.

To preview your page in a browser click on the Browser Preview on the Document toolbar or choose **File ➪ Preview in Browser**. You must save the page first to see changes.

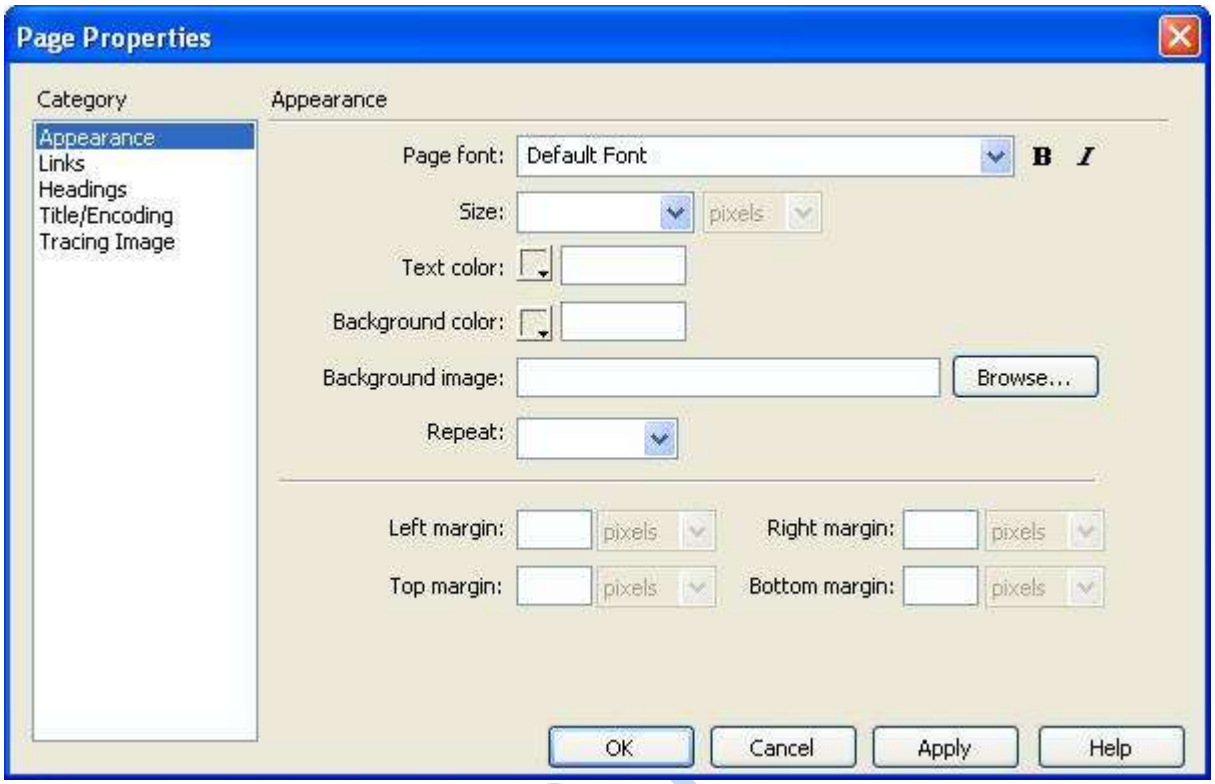


Page Title and Page Properties

Page Title: It is important to title new web pages. A good habit to adopt is to title your page before you do anything else. The page title appears in the top title bar of the browser window and if bookmarked, the title of the bookmark. Without a title, "Untitled document" will appear. You can ypype in the page title in the Title box located in the **Document toolbar**.

Page Properties

The default appearance of text, background color, page margins, color of links, and other properties can be changed in the **Page Properties** window. Go to **Modify ➪ Page Properties** or press Control + J on your keyboard to open the Page Properties dialog box. It is important to establish defaults on text as different browsers may have different defaults.



TOPIC 5

WEB SCRIPTING

In computer programming, a script is a program or sequence of instructions that is interpreted or carried out by another program rather than by the computer processor (as a compiled program is).

Scripting language

A high-level programming language that is interpreted by another program at runtime rather than compiled by the computer's processor as other programming languages (such as C and C++) are. Scripting languages, which can be embedded within HTML, commonly are used to add functionality to a Web page, such as different menu styles or graphic displays or to serve dynamic advertisements. These types of languages are client-side scripting languages, affecting the data that the end user sees in a browser window. Other scripting languages are server-side scripting languages that manipulate the data, usually in a database, on the server.

Scripting languages came about largely because of the development of the Internet as a communications tool. JavaScript, ASP, JSP, PHP, Perl, Tcl and Python are examples of scripting languages.

Server-side vs Client-side Programming

Server-side Programming

Server-side programming, is the general name for the kinds of programs which are run on the **Server**.

Uses

- Process user input.
- Display pages.
- Structure web applications.
- Interact with permanent storage (SQL, files).

Example Languages

- PHP
- ASP.Net in C#, C++, or Visual Basic.
- Nearly any language (C++, C#, Java). These were not designed specifically for the task, but are now often used for application-level web services.

Client-side programming

Much like the server-side, Client-side programming is the name for all of the programs which are run on the **Client**.

Uses

- Make interactive webpages.
- Make stuff happen dynamically on the web page.
- Interact with temporary storage, and local storage (Cookies, localStorage).
- Send requests to the server, and retrieve data from it.
- Provide a remote service for client-side applications, such as software registration, content delivery, or remote multi-player gaming.

Example languages

- JavaScript (primarily)
- HTML*
- CSS*
- Any language running on a client device that interacts with a remote service is a client-side language.

Incorporating script into html

To get a feel for PHP, first start with simple PHP scripts. Since "Hello, World!" is an essential example, first we will create a friendly little "Hello, World!" script.

As mentioned earlier, PHP is embedded in HTML. That means that in amongst your normal HTML (or XHTML if you're cutting-edge) you'll have PHP statements like this:

```
<html>
<head>
<title>Hello World</title>
<body>
<?php echo "Hello, World!";?>
</body>
</html>
```

As mentioned earlier, PHP is embedded in HTML. That means that in amongst your normal HTML (or XHTML if you're cutting-edge) you'll have PHP statements like this: `<html>`

```
<head>
<title>Hello World</title>
<body>
<?php echo "Hello, World!";?>
</body>
</html>
```

It will produce following result:

```
Hello, World!
```

If you examine the HTML output of the above example, you'll notice that the PHP code is not present in the file sent from the server to your Web browser. All of the PHP present in the Web page is processed and stripped from the page; the only thing returned to the client from the Web server is pure HTML output.

TOPIC 6

COMPUTER ANIMATION

It will not be an exaggeration to say that animation can bring the dullest of the features to life. It has the magic of injecting energy and emotions into the most seemingly inanimate objects. Over the years the advancement of technology has made animation, a very attractive and much sought after component of multimedia.

What is Animation?

'To animate' literally means to give life to. Animating is moving something that cannot move on it's own. Animation adds to graphics the dimensions of time, which tremendously increase the potential of transmitting the desired information. In order to animate something the animator has to be able to specify directly or indirectly how the 'thing' has to move through time and space.

ANIMATION - Technique by which inanimate objects seem to come alive by flashing a series of minutely changed images, called "cells," at a rate which the brain interprets as movement. See also, Cell and Persistence of Vision (**Animation** is the process of making the illusion of motion and the illusion of change by means of the rapid display of a sequence of images that minimally differ from each other.)

Traditional Methods:

As is evident from the history, animators have used and invented a variety of different animation techniques. Traditionally most of the animation was done by hand. All the frames in an animation had to be drawn by hand. Since each second of animation requires 24 frames (film), the amount of work required to create even the shortest of movies, can be tremendous.

Some of the traditionally used methods are described below.

Key Frames: In this technique a storyboard is laid out and then the artists draw the major frames of the animation. These major frames are in which a lot of changes take place. They are the key points of animation. Later a bunch of artists draw in the frames in between. This technique is, of course, very time and effort intensive.

Cel Animation: In this technique each character is drawn on a separate piece of opaque paper. Then, at the time of shooting animation the different characters are overlaid on top of the background in each frame. This is relatively a less tedious process, as the artists do not have to draw in entire frames but just the parts that need to change such as individual character.

Rotascoping: Rotascoping is a technique where images are copied from a moving video into an animation. The animator draws the motion and shape of the object by referring to the video as opposed to imagining in his head. With the help of the rotascoping one can animate some complex scenes that would be hard to visualize otherwise. The disadvantage is that one will have to hunt for the exact video that one wants to animate.

Computer Animation techniques/methods

With time the technique of animation has become more and more computer -assisted and computer- generated. All of such techniques require a trade-off between the level of control that the animator has over the finer details of the motion and the amount of work that the computer does on its own.

Broadly, the computer animation falls into three basic categories: keyframing, motion capture, and simulation.

Keyframing: The significance of the term "Keyframing" can be traced back to traditional hand animation technique. Keyframing requires that the animator specify critical or key positions for the objects. The computer then automatically fills in the missing frames by smoothly interpolating between those positions. The characters for a movie called Toy Story made in 1995 were designed through key frame animation. It's believed that each character had as many as 700 controls. Keyframing requires that the animator has a well thought out plan of how the moving

objects are going to behave over time as well as the talent to express that information through keyframed information. The continued popularity of keyframing is a function of the degree of control that it allows the animator to exercise over the subtle details of the motion.

Motion Capture: Another technique is Motion Capture, in which magnetic or vision-based sensors record the actions of a human or animal object in three dimensions. A computer then uses these data to animate the object. This technology has enabled a number of famous athletes to supply the actions for characters in sports video games. Motion capture is pretty popular with the animators mainly because some of the commonplace human actions can be captured with relative ease. However, there can be serious discrepancies between the shapes or dimensions of the subject and the graphical character and this may lead to problems of exact execution.

Simulation: Unlike key framing and motion picture, simulation uses the laws of physics to generate motion of figures and other objects. Virtual humans are usually represented as a collection of rigid body parts. These models though physically plausible are only an approximation of the human body. With more research and complex models the simulations are becoming increasingly life like. Simulations can be easily used to produce slightly different sequences while maintaining physical realism while in other animations like key framing or motion capture a mere speeding up or slowing down the playback can spoil the naturalness of motion. Secondly real-time simulations allow a higher degree of interactivity where the real person can maneuver the actions of the simulated character. In contrast the applications based on keyframing and motion select and modify motions form a pre-computed library of motions. One drawback that simulation suffers from is the expertise and time required to handcraft the appropriate controls systems.

Hardware and Software

Hardware and software are two of the major factors that determine the quality of computer animation that is produced. As both of these components work in conjunction with each other it is important to make the right choice for a product that is of lasting quality and accuracy.

Hardware

Hardware comes in many shapes, sizes, and capabilities. Some hardware is specialized to do only certain tasks while other hardware are equipped for a variety of things. Some of the commonly used hardware are:

Silicon Graphics Inc.(SGI): The SGI platform is one of the most widely used platforms for quality computer animation productions. SGI computers operate using the wide spread UNIX system. Produced by Silicon Graphics these computers are extremely fast and produce excellent results. They come in a variety of types, ranging from the general purpose Indy to high power Indigo Extreme that is used for animations. Onyx is another type, which is suited to the complex calculations involved in rendering. Some of the software like Wavefront, Alias, and SoftImage are ran on SGI's.

PC's: PC's are very versatile machines combining flexibility and power. PC's have proven to be very useful for small companies and businesses as platforms to do computer animation. Applications such as 3DStudio and Animator Studio are used on PC's to make animations.

Macintosh: Mac's were originally designed for graphic and desktop publishing and hence are pretty useful platforms for producing computer graphics and animation software. Some of these applications that work well on Mac's are Adobe Products like; Photoshop and Premiere and Strata with Strata Studio Pro.

Amiga: Originally owned by Commodore, Amiga computers have held a position in the computer animation for long. The two software packages that Amiga is associated with are: Video Toaster, and Light Wave 3D. The new d'Amiga systems has been customized to be a great graphics machine.

Sophisticated hardware has to be coupled with a good software to produce good results. There are literally hundreds of computer animation and graphic software packages. However, only some are considered good enough.