**Course Outcome to be mentioned which is mapped with this lecture topic.**

Co5 :- To perform different operations on videos.

**Reading Material of this lecture topic.**

**Multimedia authoring**

Multimedia authoring is a process of assembling different types of media contents like text, audio, image, animations and video as a single stream of information with the help of various software tools available in the market. Multimedia authoring tools give an integrated environment for joining together the different elements of a multimedia production. It gives the framework for organizing and editing the components of a multimedia project. It enables the developer to create interactive presentation by combining text, audio, video, graphics and animation.

Features of Authoring Tools

* **Editing Features**- Most authoring environment and packages exhibit capabilities to create edit and transform different kinds of media that they support. For example, Macromedia Flash comes bundled with its own sound editor. This eliminates the need for buying dedicated software to edit sound data. So authoring systems include editing tools to create, edit and convert multimedia components such as animation and video clips.
* **Organizing Features**- The process of organization, design and production of multimedia involve navigation diagrams or storyboarding and flowcharting. Some of the authoring tools provide a system of visual flowcharting or overview facility to showcase your project's structure at a macro level. Navigation diagrams help to organize a project. Many web-authoring programs like Dreamweaver include tools that create helpful diagrams and links among the pages of a website.
* **Visual programming with icons or objects**- It is simplest and easiest authoring process. For example, if you want to play a sound then just clicks on its icon.
* **Programming with a scripting language**- Authoring software offers the ability to write scripts for software to build features that are not supported by the software itself. With script you can perform computational tasks - sense user input and respond, character creation, animation, launching other application and to control external multimedia devices.
* **Document Development tools**- Some authoring tools offers direct importing of pre-formatted text, to index facilities, to use complex text search mechanism and to use hypertext link-ing tools.
* **Interactivity Features**- Interactivity empowers the end users to control the content and flow of information of the project. Authoring tools may provide one or more levels of interactivity.
* **Simple branching**- Offers the ability to go to another section of the multimedia production.
* **Conditional branching**- Supports a go to base on the result of IF-THEN decision or events.
* **Playback Features**- When you are developing multimedia project, you will continousally assembling elements and testing to see how the assembly looks and performs. Therefore authoring system should have playback facility.
* **Supporting CD-ROM or Laser Disc Sources**- This software allows over all control of CD-drives and Laser disc to integrate audio, video and computer files. CD-ROM drives, video and laserdisc sources are directly controlled by authoring programs.
* **Supporting Video for Windows**- Videos are the right media for your project which are stored on the hard disk. Authoring software has the ability to support more multimedia elements like video for windows.
* **Hypertext**- Hypertext capabilities can be used to link graphics, some animation and other text. The help system of window is an example of hypertext. Such systems are very useful when a large amount of textual information is to be represented or referenced.
* **Cross-Platform Capability**- Some authoring programs are available on several platforms and provide tools for transforming and converting files and programs from one to the other.
* **Run-time Player for Distribution**- Run time software is often included in authoring software to explain the distribution of your final product by packaging playback software with content. Some advanced authoring programs provide special packaging and run-time distribution for use with devices such as CD-ROM.
* **Internet Playability**- Due to Web has become a significant delivery medium for multimedia, authoring systems typically provide a means to convert their output so that it can be delivered within the context of HTML or DHTML.

Authoring Tools Classification

Card or Page based authoring tools

In these authoring systems, elements are organized as pages of a book or a stack of cards. In the book or stack there are thousand of pages or cards available. These tools are best used when the bulk of your content consists of elements that can be viewed individually, for example the pages of a book or file cards in card file. You can jump from page to page because all pages can be interrelated. In the authoring system you can organize pages or cards in the sequences manner. Every page of the book may contain many media elements like sounds, videos and animations.

One page may have a hyperlink to another page that comes at a much later stage and by clicking on the same you might have effectively skipped several pages in between. Some examples of card or page tools are:

* Hypercard (Mac)
* Tool book (Windows)
* PowerPoint (Windows)
* Supercard (Mac)

Advantages

Following are the advantages of card based authoring tools.

* Easy to understand.
* One screen is equal to 1card or 1page.
* Easy to use as these tools provide template.
* Short development time.

Disadvantages

Following are the disadvantages of card based authoring tools.

* Some run only on one platform.
* Tools not as powerful as equivalent stand alones.

Icon based or Event driven authoring tools

Icon-based tools give a visual programming approach to organizing and presenting multimedia. First you build a structure or flowchart of events, tasks and decisions by dragging appropriate icons from a library. Each icon does a specific task, for example- plays a sound, open an image etc. The flowchart graphically displays the project's logic. When the structure is built you can add your content text, graphics, animation, video movies and sounds. A nontechnical multimedia author can also build sophisticated applications without scripting using icon based authoring tools. Some examples of icon based tools are:

* Authorware Professional (Mac/Windows)
* Icon Author (Windows)

Advantages:

Following are the advantages of icon/event based authoring tools.

* Clear Structure.
* Easy editing and updating

Disadvantages:

Following are the disadvantages of icon/event based authoring tools.

* Difficult to learn.
* Expensive.

Time based authoring tools

Time based authoring tools allow the designer to arrange various elements and events of the multimedia project along a well defined time line. By time line, we simply mean the passage of time. As the time advances from starting point of the project, the events begin to occur, one after another. The events may include media files playback as well as transition from one portion of the project to another. The speed at which these transitions occur can also be accurately controlled. These tools are best to use for those projects, wherein the information flow can be directed from beginning to end much like the movies. Some example of Time based tools are:

* Macromedia's Director
* Macromedia Flash

Advantages

Following are the advantages of time based authoring tools.

* Good for creating animation.
* Branching, user control, interactivity facilities.

Disadvantages

Following are the disadvantages of time based authoring tools.

* Expensive
* Large file size
* Steep learning curve to understand various features.

Object-Oriented authoring tools:

Object oriented authoring tools support environment based on object. Each object has the following two characteristics:

1. **State or Attributes** - The state or attributes refers to the built in characteristics of an object. For example, a color T.V has the following attributes:
   * Color receiver
   * Volume control
   * Picture control
   * 128 channels
   * Remote control unit
2. **Behavior or Operations** - The behavior or operations of an object refers to its action. For example, a T.V can behave in any of the following manner at a given point of time:
   * Switched on
   * Switched off
   * Displays picture and sound from
     + A TV cable connection
     + A TV transmitter
     + A DVD
     + A VCR

In these systems, multimedia elements events are often treated as objects that live in a hierarchical order of parent and child relationships. These objects use messages passed among them to do things according to the properties assigned to them. For example, a video object will likely have a duration property i.e how long the video plays and a source property that is the location of the video file. This video object will likely accept commands from the system such as play and stop. Some examples of the object-oriented tools are:

* + mTropolis (Mac/Windows)
  + Apple Media Tool (Mac/Windows)
  + Media Forge (Windows)

Macromedia Flash 8

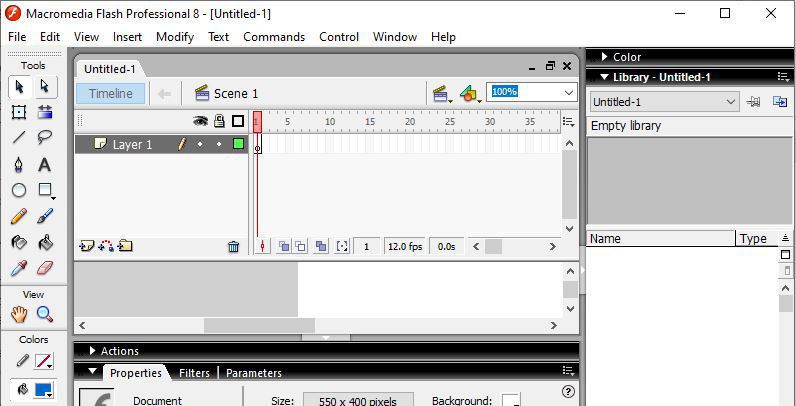
The best technology that exist today for children and their entertainment is the creation of animation. Animation includes watching animated cartoons, playing animated games, etc. Animation is not only for fun but also used for educational purposes. Children now not only need to be amazed by animation but can easily create an animation of their own. This can be done with the help of a software known as Flash. Let’s learn in more detail about this software,

**Animation:**

When pictures are displayed in series, they create motion. The simulation of movement created by these pictures is known as Animation. The most common example of animation is cartoons. Animation is used in multimedia presentations and in many softwares. One such software is Flash, lets learn more about flash,

**What is Flash?**

Flash, also known as Adobe Flash is a multimedia graphic software that is used to create animations. The animations are made for so many purposes, for example, movies, games, desktop presentations, web applications, etc. Flash is compatible with all web browsers and is one of the most popular technologies on the internet. It was created by Macromedia, and initially, it was created for web applications only.



**How to start Flash?**

In order to start Flash, these steps are required:

* Click on the **Start**button on the computer.
* Select or search for **Programs** on the sub-menu.
* In the Programs section, click on the **Macromedia** section.
* Now select **Macromedia Flash 8**.

**Uses of Flash**

With the use of Flash, animations can be easily created and almost all types of animations can be created. The beauty of this software is that it keeps on getting better, every new version of Flash is better and has more features than the previous one. Flash was created to overcome one of the biggest shortcomings faced by the web, that is,**Dynamism**. Dynamism is not only limited to animation but also to interactive animations on the web that keep the viewer/learner interested and their time is more invested on the web. Keeping the interactions attractive and removing the static nature of the pages was successfully done by Flash.

Web designers must learn how to use Flash and keep it in their to-do list as Flash not only has animation creation ability, but it is able to be helpful at many more places. Flash is really easy to use, anyone can sit on the software and spend hours learning and having fun with the creation.

**Features of Flash**

* Flash 8 offers so many attractive designs that allow neglecting the creation of animation for the visual effects.
* The Software offers a wide range of font sizes and helps in Font Optimization.
* From a Single Panel, a wide range of existing objects can be searched from the library. Therefore, flash offers consolidated library.
* The animation is getting better and better, with flash 8, the power of animation has become even more, with a good control over the editing mode, such as velocity of rotation, shape changing, color and movement, the animations are getting easier to create and modify.
* Flash 8 provides high quality independent Codec, completely skinnable, it helps on easier video importing and improvement in the video formats.
* Mobile devices emulators are introduced with Flash 8.

**Symbols and Instances**

Using the tools provided by Flash 8, the different objects are created for the animation, they are known as **Symbols**. Suppose the object is created, now in order to use it in a movie or any other movie for some other time, these objects are transformed into Symbols by including them in a library at the moment of creation. Hence, in this way, the object can be used for the movie.

What is an Instance? Now, so far it is clear that when a symbol is created, it is saved by Flash in a library. Every time, this object is required to be used in a movie, it is converted into an **Instance**.

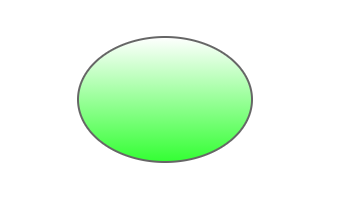
Both the terms seem almost similar, but there is a slight difference, the symbol is used while creating a movie and after everything is done, on modifying, the instance will be updated. However, the object is still intact just like it was at the start so that it can be further approached in case it is needed to be used in another movie.

**Creating Animation with the help of Flash 8**

It might sound like a very tedious job, creating animations. While creating animations, multiple objects are needed to be created, and they are created at different positions each time in order to show the motion going on in the object, and more the objects are created, the movie created with the help of these objects will be better and flawless.

Hence, it is simple logic that in order to create so many objects with precise detailing, a lot of time and hours are to be consumed. Nevertheless, Flash 8 is famous for its simplicity and straightforwardness and it is the reason how the animations are created with the least effort and in very much less time than estimated.

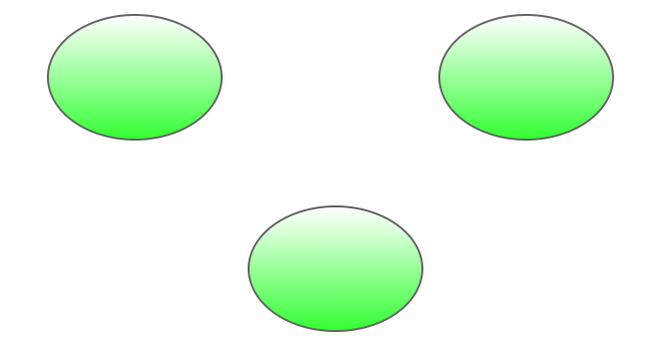
Let’s suppose a globe that is moving up and down is required to be made for a short animation, now it looks like a process that could take hours since it is better to create a globe at each and every point very precisely and timing it in a way to make it look flawless, more the number of globes created, more likely for the animation to look real and better.



***Globe is the object required to create***

As shown above, in order to show this globe moving up and down, so many globes are required in order to make it look more real, but with the help of Flash 8, the entire animation can be beautifully created just by using 3 frames.

The first frame has to be in the initial position, it is where the globe is at the topmost position. Then, the second position has to be created in which the globe is touching the ground and is present at its lowermost position and finally as a final frame where the globe is back at its initial position, which can be easily created with the help of the first frame.



***The three frames created for the movement of the******globe***

Now, in order to create movement, the duration of each movement is needed to be determined which is done by setting proper time between the moments when the globe is at the top and when it is at the bottom-most point. Finally, flash creates the animation of movement between those two frames.

**Macromedia Director**

**Macromedia Director** (now called **Adobe Director**) is a media application created by [Macromedia](https://macromedia.fandom.com/wiki/Macromedia)—now part of [Adobe Systems](https://macromedia.fandom.com/wiki/Adobe_Systems). It allows users to build applications built on a movie [metaphor](http://en.wikipedia.org/wiki/Metaphor), with the user as the "director" of the movie. Originally designed for creating animation sequences, the addition of a powerful scripting language called [Lingo](https://macromedia.fandom.com/wiki/Lingo) made it a popular choice for creating CD-ROMs and standalone kiosks. Adobe Director supports both 2D and 3D multimedia projects.

* ***Relevant Video links for this lecture topic.***
* [Macromedia Flash 8 basic tutorial - YouTube](https://www.youtube.com/watch?v=nzzbMluMCHY)
* ***Any web-link to be attached relevant to the topic.***

https://www.bing.com/search?q=macromedia+flash+8&cvid=f989e4a10a2a44faadc56722a679b7ab&aqs=edge.1.69i59j0j69i57j0l5j69i60.5551j0j1&pglt=297&FORM=ANNTA1&PC=HCTS

* **TEXT BOOKS**

1. Tay Vaughan, “Multimedia making it work”, Tata McGraw-Hill, 2008.
2. Rajneesh Aggarwal & B. B Tiwari, “Multimedia Systems”, Excel Publication, New Delhi, 2007.
3. Li & Drew, “Fundamentals of Multimedia”, Pearson Education, 2009.

* **REFERENCE BOOKS**

1. Parekh Ranjan, “Principles of Multimedia”, Tata McGraw-Hill, 2007
2. Anirban Mukhopadhyay and Arup Chattopadhyay, “Introduction to Computer Graphics and Multimedia”, Second Edition, Vikas Publishing House.