001:

BASIC MULTIMEDIA CONCEPTS

INTRODUCTION TO MULTIMEDIA:- TEXT, GRAPHICS, SOUND, VIDEO, ANIMATION IN A SINGLE APPLICATION

MULTIMEDIA APPLICATIONS / SYSTEMS AND APPLICATIONS

TuK

Bachelor Information Technology/Communications and Computing Networks Year 4 Semester 1

SUBJECT CODE: ECCI/ECII 4102

OVERVIEW

1. Lecture Introduction & Attendance Registration
2. Lecture Aims & Objectives
3. Lecture 1 Outline
4. Recommended Chapter from Recommended Reading List
5. Lecture 1 Topic
7. Q&A

LECTURE AIMS & OBJECTIVES

1) To introduce students to Multimedia text, graphic, sound, video & animation theories.
2) To equip students with the knowledge to develop and use multimedia text, graphics, sound, video, animation skills
3) To develop students' expertise in the use of Multimedia text, graphics, sound, video & animation tools and techniques
4) To design multimedia text, graphics, sound, video &animation applications
5) To implement the design, and maintain the implemented multimedia text, graphics, sound, video & animation systems while also supporting users
6) To enable graduates to find a wide variety of career opportunities in information technology related areas in both private and public sectors

BASIC MULTIMEDIA CONCEPTS

INTRODUCTION TO MULTIMEDIA

TEXT,
GRAPHICS,
SOUND,
VIDEO
&
ANIMATION IN A SINGLE APPLICATION

RECOMMENDED CHAPTER FROM RECOMMENDED READING LIST

Chapter 1-3 from

"Multimedia Foundations: Core Concepts for Digital Design" Costello; Vic, Focal Press, 2016

"Multimedia: Making It Work" Vaughan; Tay,McGraw-Hill Education, 9th Edition, 2014

"Multimedia-based Instructional Design: Computer-Based Training; Web-Based Training; Distance Broadcast Training; Performance-Based Solutions", Lee; William W, Owens; Diana L, Pfeiffer, 2004

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS **MULTIMEDIA**?

- Applications that combine
  - Text,
  - Images,
  - Sound,
  - Animation,
  - Video
- delivered by computer or other electronic or digitally manipulated means.

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

- When an end user(viewer of multimedia) controls what and when the combined Text/Images/Sound/Animation/video are delivered, it is called **INTERACTIVE MULTIMEDIA**
- People who understand how to make each multimedia element work together and know how to use multimedia computer tools and technologies are called **MULTIMEDIA DEVELOPERS**
- Preparing multimedia for present on computer or mobile phone is known as a **MULTIMEDIA PROJECT**

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INTRODUCTION TO MULTIMEDIA

- Multimedia projects can be linear and non-interactive i.e. starting at the beginning and running through to the end they are
- If users are given navigational control through the content at will, multimedia becomes non-linear and interactive.
- The opposite of multi-media is single(traditional) media i.e. use of only one medium e.g. only text in traditional newspapers

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INTRODUCTION TO MULTIMEDIA

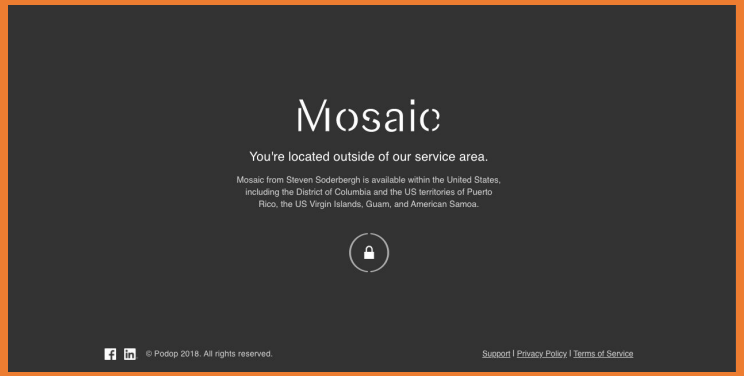
HISTORY OF MULTIMEDIA??

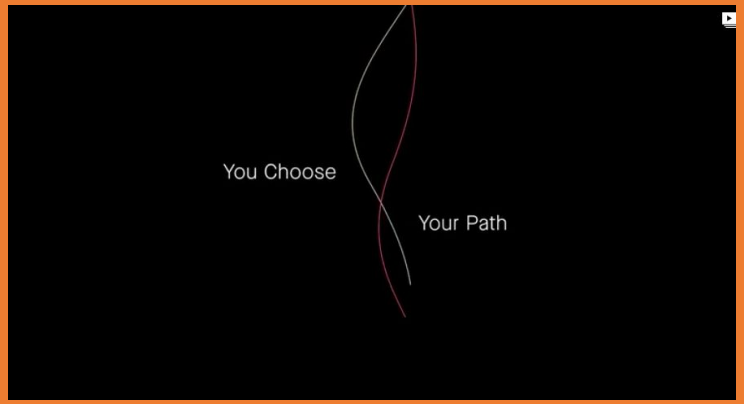
- Newspapers (first mass communication medium using text/graphics/images)

- **Douglas Engelbart and the NLS (Online System) 1968,**

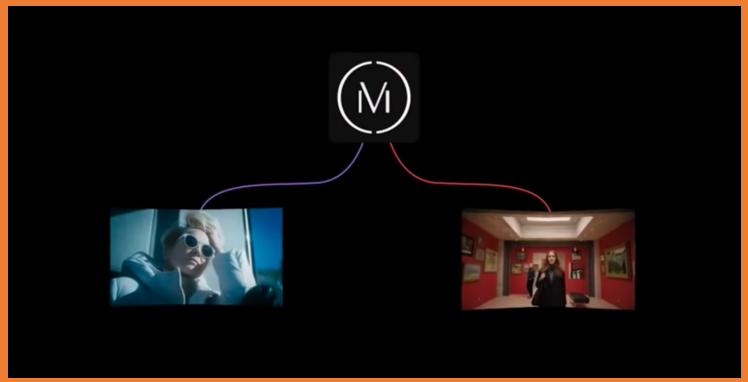
- **Tim-Berners Lee and the World Wide Web,**

APPLICATION:-MULTIMEDIA BRINGS TV VIEWING FREEDOM:- EXAMPLE SHAPE SHIFTING TV aka WATCH-IN-ANY-ORDER FORMAT





MULTIMEDIA BRINGS TV VIEWING FREEDOM
MOSAIC SHAPE SHIFTING TV aka WATCH-IN-ANY-ORDER FORMAT



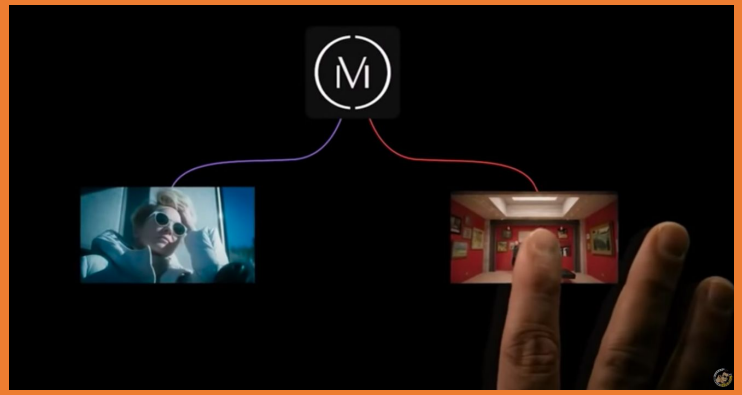
-Two pronged approach mini-TV series and interactive app both as murder mystery puzzles to be solved ✅

-Story has multiple different paths to follow but they all end up in the same place ✅

-Desgined for users to orient their own way through the narrative and experience it through the perspectives of different characters ✅

MULTIMEDIA BRINGS TV VIEWING FREEDOM

MAIN NAVIGATION FLOW BETWEEN MOSAIC SSTV



-Content has character viewpoints, titles and specific character icons ✅

-Some content is for future viewing, and unlockable.
-Viewed content is check-marked ✅

-Mosaic is both a tv show & app ✅ with no "control" over characters ✅

-Users choose which perspectives to follow at various branch points ✅

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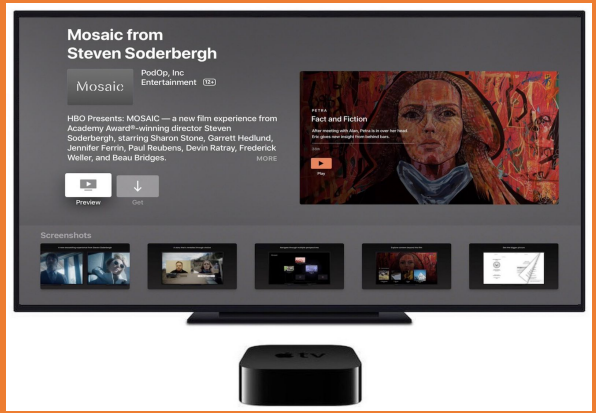
INTEGRATION BETWEEN SHAPE SHIFTING TV, S/W APP AND SMART TV H/W

-Scenes were written and filmed for both app and TV
-App released first for download
-Inaccessible via VPN or other masking technology
-You don't need access to app to watch TV series



-App is an engaging "choose-your-own-adventure" experience allowing interaction with different characters' points-of-view, clues and documents.
-TV series functions as a stand-alone TV show. It is straightforward
-You can't change the ending of the app or TV series

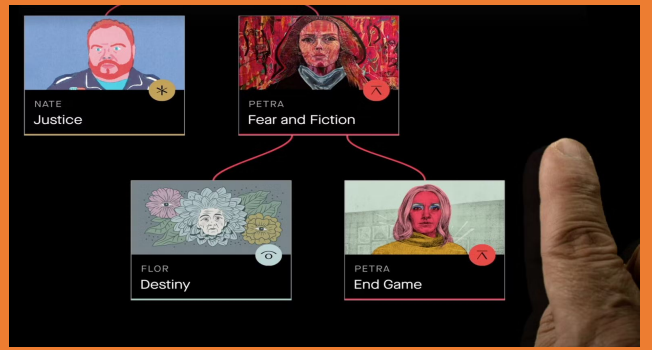
INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTEGRATION BETWEEN SHAPE SHIFTING TV, THE APP AND SMART TV

-The app was available on Apple and Android devices
-Watch a chapter on the app and be given a choice via a story map to follow the arc of a particular character

-Embedded within the digital app are interactive clues and video clips called “discoveries”.

-As you watch a chapter you’ll receive a brief push notification that if you engage with it will briefly take you away from the current scene



Small Group Work:-DESCRIBE KALEIDOSCOPE NETFLIX SHAPE SHIFTING TV aka WATCH-IN-ANY-ORDER FORMAT

y → P → 

1-5 ALL IN A SINGLE APPLICATION -small group work (MULTIMEDIA BRINGS TV FREEDOM).

Your task is to think about and explain how best to watch KALEIDOSCOPE Netflix

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MULTIMEDIA AUTHORING AND BUILDING TOOLS

EXAMPLES OF MULTIMEDIA AUTHORING AND BUILDING TOOLS AND TECHNIQUES

- https://www.canva.com/
- https://www.visme.co/
- https://pixlr.com/
- https://www.coreldraw.com/en/
- https://www.adobe.com/products/animate.html
- https://www.blender.org/

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INTRODUCTION TO MULTIMEDIA

CHARACTERISTICS OF MULTIMEDIA

- Increases impact (of the message or user) on the audience
- Interactivity
- Structured to build on previous learning
- Can give feedback on performance
- Can be repeated

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS INTERACTIVITY?

- dialogue between user and application (i.e. expectation of behaviour)
- User should be able to respond immediately to the application/system and modify processes
- The feeling of involvement directly with a world of objects rather than just communicating through an intermediary

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS INTERACTIVITY?

- Result? linear or non-linear path through the application/system

- Has 7 stages of action:-
  - Goal
  - Intention
  - Action specifications
  - Execution
  - Perception
  - Interpretation
  - Evaluation

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INTRODUCTION TO MULTIMEDIA

TYPES OF INTERACTIVITY:-

- Dynamic linear or dynamic non-linear interactivity:-

(where the system / application changes depending on action by either the author and / or the user)

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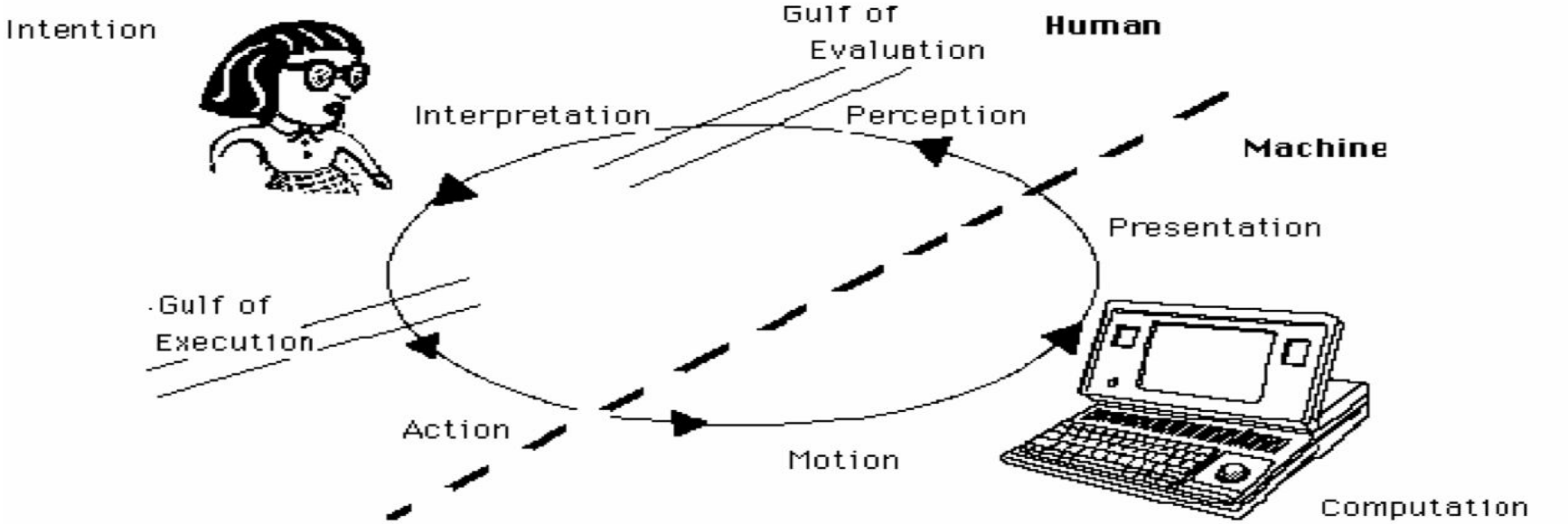
THE INTERACTION CYCLE



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INTRODUCTION TO MULTIMEDIA

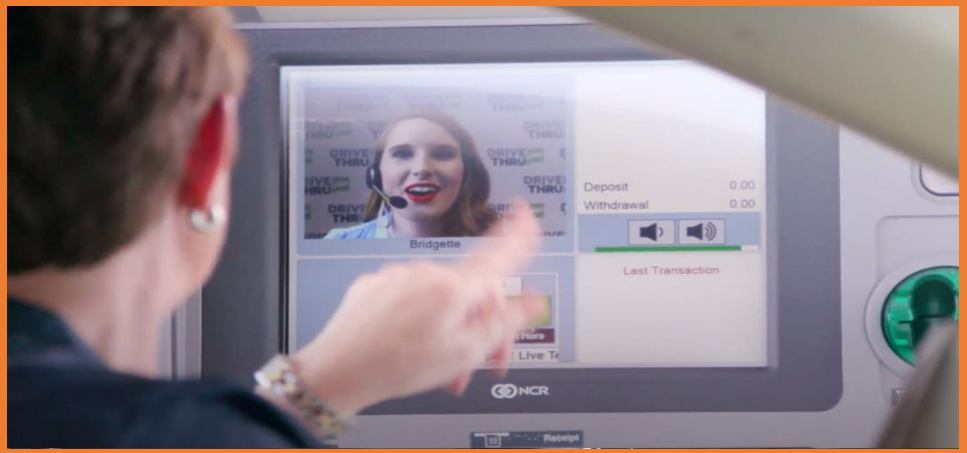
THE INTERACTIVITY CYCLE:-

- *Gulf of evaluation:-* the thinking required to understand what is being perceived i.e. turning raw sensory data into understanding of objects, properties and events.

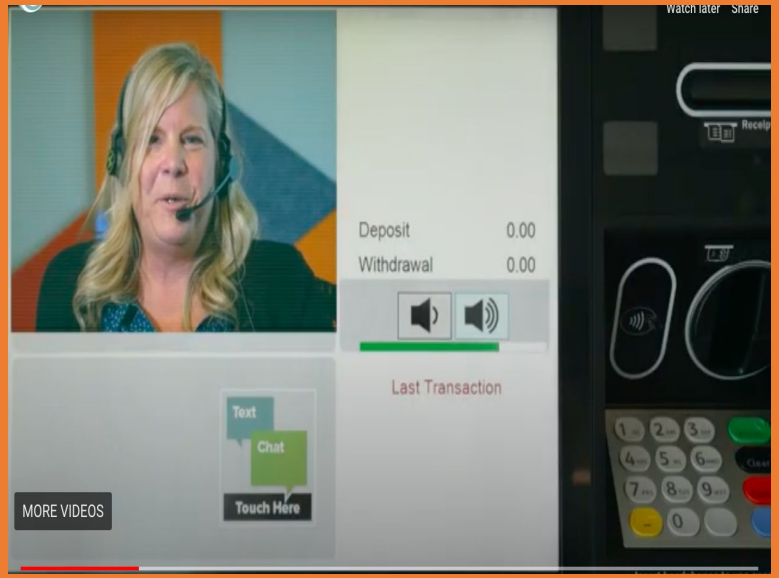
- *Gulf of execution:-* the thinking required to figure out how to get something done i.e. turning the high-level intention into specific physical actions

APPLICATION:-MULTIMEDIA BRINGS FINANCIAL CONVENIENCE:-

EXAMPLE A.T.M. WITH LIVE TELLER VIDEO CHAT aka INTERACTIVE TELLER MACHINE



INTERACTION CYCLE APPLICATION:-MULTIMEDIA BRINGS FINANCIAL CONVENIENCE:-
EXAMPLE A.T.M. WITH LIVE TELLER VIDEO CHAT aka INTERACTIVE TELLER MACHINE



- **Card reader**: Reads chip or magnetic stripes on cards.
- **Keypad**: Input (PIN), type of transaction, amount of transaction.
- **Cash dispenser**: Dispense cash through a slot connected to a safe at the bottom of ATM.

- **Printer**: Print receipts showing type of transaction, amount, account balance etc

- **Screen: Traditional ATM screens issue prompts that guide through the process of executing the transaction, transmit Information e.g. account information and balances** or **display Live Video through which you can perform everyday teller transactions with a real person via two-way video and built-in speakers. To activate, select "Live Teller option"**

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EVALUATING THE INTERACTION OF STREAMING INTERACTIVE VIDEO ON A SMARTPHONE

SMALL GROUP WORK:-

- Which parts are Direct manipulation?
- Which parts are Reducing distance?
- Which parts offer Engagement?
- Perceived affordances
- Natural mappings
- Constraints
- Feedback
- Avoiding error

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TRADITIONAL TEXT Vs MULTIMEDIA/HYPERTEXT

DEFINITION OF TRADITIONAL(PRINTED PAGE) TEXT:-

- A string of printable alphanumeric characters (letters, numbers, symbols etc) specified in the keyboard and separated by whitespace characters
- Has 2 layers:-Syntax layer (grammatical structure) and Semantic layer (meaning being conveyed)
- Syntax layer(Physical layer) is the standard character encoding of target alphanumeric characters
- Semantic layer (abstraction layer) sits immediately above physical layer

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA/HYPERTEXT

DEFINITION OF TRADITIONAL(PRINTED PAGE) TEXT

- Read linearly i.e. from start to finish

- The print industry uses a standard 72 points per inch when printing books, newspapers etc.

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TRADITIONAL TEXT Vs MULTIMEDIA/HYPERTEXT

MULTIMEDIA HYPERTEXT

- When text is in a computer instead of printed pages, it is called hypertext
- Hypertext can be defined as the organized cross-linking of words to other words and associated images, video clips, sounds, exhibits etc.
- Hypertext links words, sections and thoughts enabling users to navigate through in a nonlinear way quickly and intuitively
- It creates a computer supported non-linear information environment which adds to our appreciation of text, apes the mental agility of the human mind and allows navigation along patterns of association

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TRADITIONAL TEXT Vs MULTIMEDIA/HYPERTEXT

MULTIMEDIA HYPERTEXT

- Consists of nodes (the conceptual element of text, graphics, sounds, or related information in the knowledge base), links (to the nodes) and anchors (reference from one document to another document, image, sound, or file on the Web)

- The art of hypermedia design lies in the visualization of these nodes and their links so that they make sense and form the backbone of a knowledge access system.

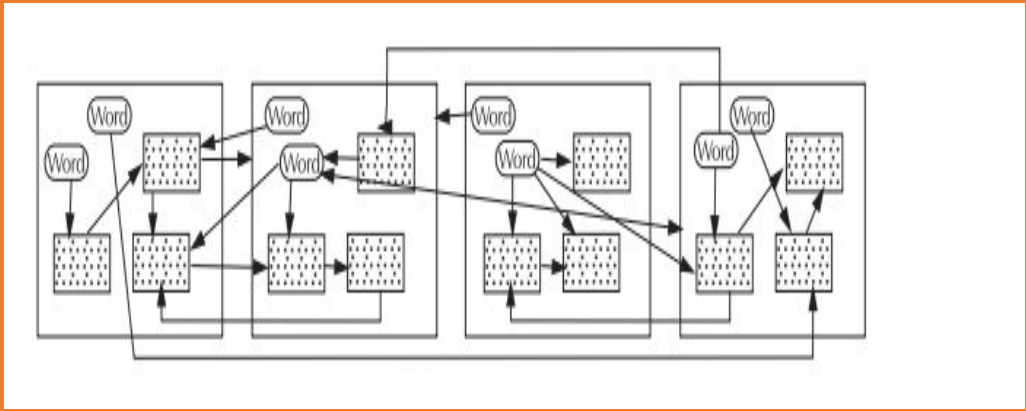
INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA/HYPERTEXT

MULTIMEDIA/ HYPERTEXT

Has:-

- A Typeface (family of graphic characters with serif or sans serif i.e. little decoration at the end of a letter stroke or no decoration)



- A Font (collection of characters of a single size and style belonging to a particular typeface family e.g. Times New Roman, Arial, Calibri etc)
- A Font style (e.g. boldface, italic,) and size
- An Attribute (e.g. underlining, outlining colour, etc.)

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TRADITIONAL TEXT Vs MULTIMEDIA TEXT

MULTIMEDIA TEXT EXAMPLE

- When text is in a computer instead of printed pages, it is called hypertext (words, sections, and thoughts are linked and users can navigate through hypertext in a nonlinear way, quickly and intuitively)
- Computer processing capabilities applied to text make it more accessible and meaningful.
- Example:-the standard document format used for displaying text pages on the Web is called Hypertext Markup Language (HTML).
- In an HTML document you can specify typefaces, sizes, colors, and other properties

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TRADITIONAL TEXT Vs MULTIMEDIA TEXT

MULTIMEDIA TEXT

- In HTML using CSS you can specify a base font size, color, and other attributes for displaying text on a web page,
- No guarantee that a font is installed in a user's system.
- If a font is missing a browser will attempt to substitute a similar font
- The look is not guaranteed to be the same as the one you have designed.
- If the right look is important to you, provide a way to download the font to the end user's computer.

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TRADITIONAL TEXT Vs MULTIMEDIA TEXT

MULTIMEDIA TEXT

- Requires protocols to handle its transmission
- Forms the basis for computing software languages with more complex structures and standards.
- Can integrate with other languages,
- Can be manipulated on both client and server side.

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INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- The process of generating animated images using computer graphics to exploit persistence of vision and produce a series of moving images that look animated

- Manipulating a series of still images gives the appearance of movement or life like motion. Computer generated imagery refers to both static scenes and dynamic images

- Use multimedia authoring and computer animation programs to design and draw characters that blink, talk and walk with simple frame-by-frame animation.

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INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- Has a frame rate (determines the persistence of vision and smoothness of image to the user)

- HOW TO MAKE A GIF ON ANDROID
- OPEN GOOGLE PHOTOS
- SELECT ALL THE PICTURES FOR YOUR GIF
- TAP THE + sign BUTTON AND SELECT “ANIMATION” FROM THE MENU

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INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- 2 Types of animation:- Cell-based animation
  Path-based animation

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INTRODUCTION TO MULTIMEDIA-ANIMATION

CELL-BASED ANIMATION

- Creation of individual images in cells (frames) which produce motion when played
- Traditional type of animation method

PATH-BASED ANIMATION

- The start and end point and path for the object to follow are defined by vectors
- The background is fixed
- Saves memory and processing time especially if the image is an object

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INTRODUCTION TO MULTIMEDIA-ANIMATION

APPLICATIONS OF ANIMATION

- GIFS

GROUP WORK

How would you evaluate the multimedia interactivity of an ipod classic?

QUESTION AND ANSWER SESSION

ANY

QUESTIONS

?

http://elearning.tukenya.ac.ke