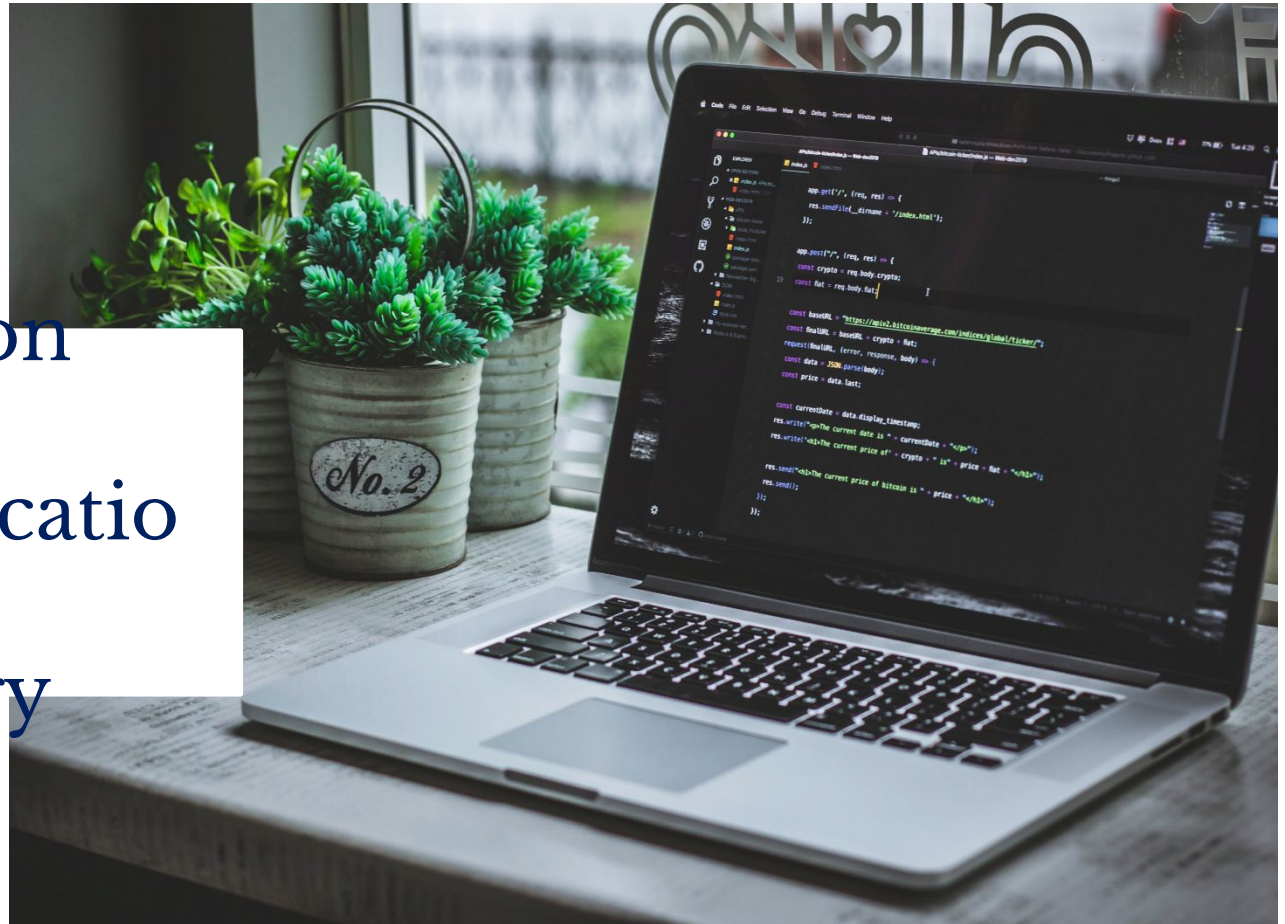




Information and Communicatio ns Technology



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ICT subject and its purposes

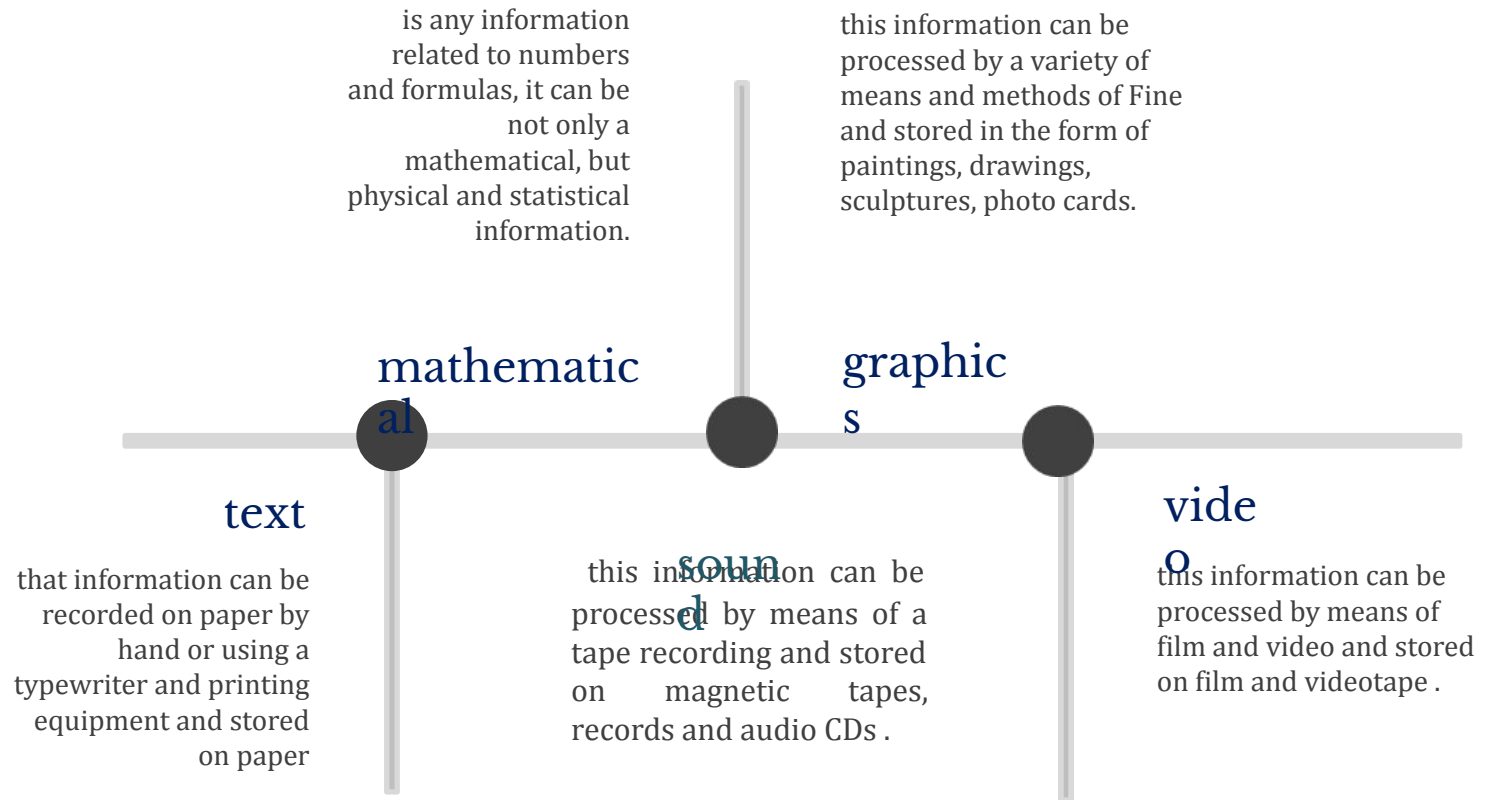
Information and communication technologies (ICT)-a set of methods, workflows and software and hardware tools that are integrated with the aim of collecting, processing, storage, distribution, display and use of information for the benefit of its members

The purpose of information and communication technologies is the production of information that will meet the information needs of a person.



What is information?

Information - a collection of information about the properties of an object or process to digest the subject in the form of knowledge. All the information which is used by people, can be divided into the following types:



ICT Tools

By means of modern information and communication technologies to understand the software, firmware and hardware, as well as devices that operate on the basis of a microprocessor, computer technology

The concept of IT includes

Microelectronics, development and production of computers and software, connection and telephony, mobile services, providing Internet access, providing information resources of the Internet



The role of ICTs in key sectors of society

The role of ICT in industry is the production of modern telecommunications services, the production of electronic equipment , more powerful computing equipment and software.

The field of ICT has significantly changed the process of education. Thanks to access to the global network, the Internet has the opportunity to use a large number of free information.

The use of ICT capabilities in healthcare has increased its efficiency due to improved information sharing and closer contact between doctors and patients. To date , e-health has received it is widely distributed in developed countries.



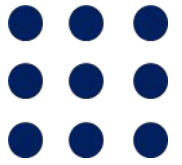
Computers in health

Computers now can control lab equipment, blood pressure monitors, heart rate monitors, and other important medical equipment, as well as notify staff if something is not right. In some cases, computers can aid doctors in procedures, making situations more safe and convenient for both the patient and the personnel.

- Hospital pharmacists have used computers for drug distribution, financial analysis and inventory control, drug interaction detection, pharmacokinetic dosing, drug information, and drug therapy monitoring. Expert systems are being developed in several areas of drug therapy. Pharmacy educators have developed interactive courseware to help students learn problem-solving skills in the areas of calculations, therapeutics, and drug information



ICT standards



There are many state and interstate standards in the field of information technologies in the Republic of Kazakhstan.

The ICT industry has a great responsibility for the further development of society. Effective state innovative development of ICT is the basis for improving the efficiency

The main legislative acts that are legal relations in the field of IT include:

- 1) The Entrepreneurial Code of the Republic of Kazakhstan dated October 29, 2015.
- 2) The Code of the Republic of Kazakhstan about violations of the law of July 5, 2014.



There are two technical committees for standardization in the information communications industry of the Republic of Kazakhstan:

- 1) TC 34 "Information Technologies" on the basis of the OUL "Kazakhstan Association of IT Companies".
- 2) TC 63 "Info-communication systems, tools and services" based on OUL "National Telecommunications Association of Kazakhstan".

Technical committees for standardization take part in the development of national, preliminary national, international, regional, interstate standards, as well as in the formation of a national standardization program. Kazakhstan has also approved national standards in the field of Smart City. And there are ISO standards, including ISO/IEC 27031: 2011 "Information technologies. Methods of providing protection. Guidelines on the readiness of information and communication technologies for doing business", which describes the concepts and principles of the readiness of information and communication technologies (ICT) to provide





-Allow communication and sharing of information

-Allow computing systems and software to interoperate (at both hardware and software levels)

-Sometimes standards arbitrary and have some «blast from the past»(due to historial evolution)



The link between ICT and the achievement of the Millennium Sustainable Development Goals

The Millennium Declaration is an official document adopted members of the United Nations in 2000, in which the heads of state and government have made commitments to achieving the Millennium development goals in the field of peace and security; development; environmental protection ; rights man, democracy and governance; protecting the vulnerable; to meet needs of Africa; strengthening the UN.

The relationship between information and communication technologies (ICT) and the achievement of the Development Goals set out in The declaration is obvious. For example, the use of ICT in the fight against poverty it can focus on organizing income-generating opportunities. It is also possible to ensure the involvement of women in economic activities.

When implementing the goal of improving the level of education by ICTs use digital technologies to increase accessibility while simultaneously promoting the possibility of interactivity among students, between teachers and students at a lower cost. The impact of ICT is most noticeable in the small and medium- sized business sector, with the help of which small enterprises have the opportunity to improve the quality of their work by reducing the costs associated with the organization of internal and external relations.

In achieving the goal of reducing the level of child mortality, ICT plays an indirect role, allowing us to provide modern equipment for laboratory testing for HIV tests / AIDS and the delivery of results in the shortest possible time. Environmental degradation is also a concern . Here, the connection with ICT is also obvious and is indirect, as a tool in achieving the set goal.



Data processing applications

Data processing is, generally, "the collection and manipulation of items of data to produce meaningful information." [1] In this sense it can be considered a subset of information processing, "the change (processing) of information in any manner detectable by an observer." [note 1]

The term Data Processing (DP) has also been used to refer to a department within an organization responsible for the operation of data processing applications. [2]



Manufacturing applications

Manufacturing applications transform industrial workflows into data collection tools, digital processes that combine operator, machine, and sensor data to achieve business goals. Manufacturing is the production of goods through the use of labor, machines, tools, and chemical or biological processing or formulation. It is the essence of secondary sector of the economy.



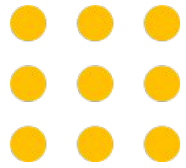
Learning Management System (LMS)

A learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. It is used for E-Learning practices and, in its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by instructors, students and administrators.



Benefits of LMS

- the ability to monitor user progress and performance;
- increased eLearning accessibility without geographic limitations;
- the ability to personalize the online training and learning experience;
- the ability to easily and efficiently update eLearning modules and activities;
- the ability to easily ensure online training and learning materials are being distributed effectively; and
- the use of automation that allows users to forget about tedious, repetitive tasks such as user enrollment and certification distribution and focus on more important activities.
- Time and money management



Booking system

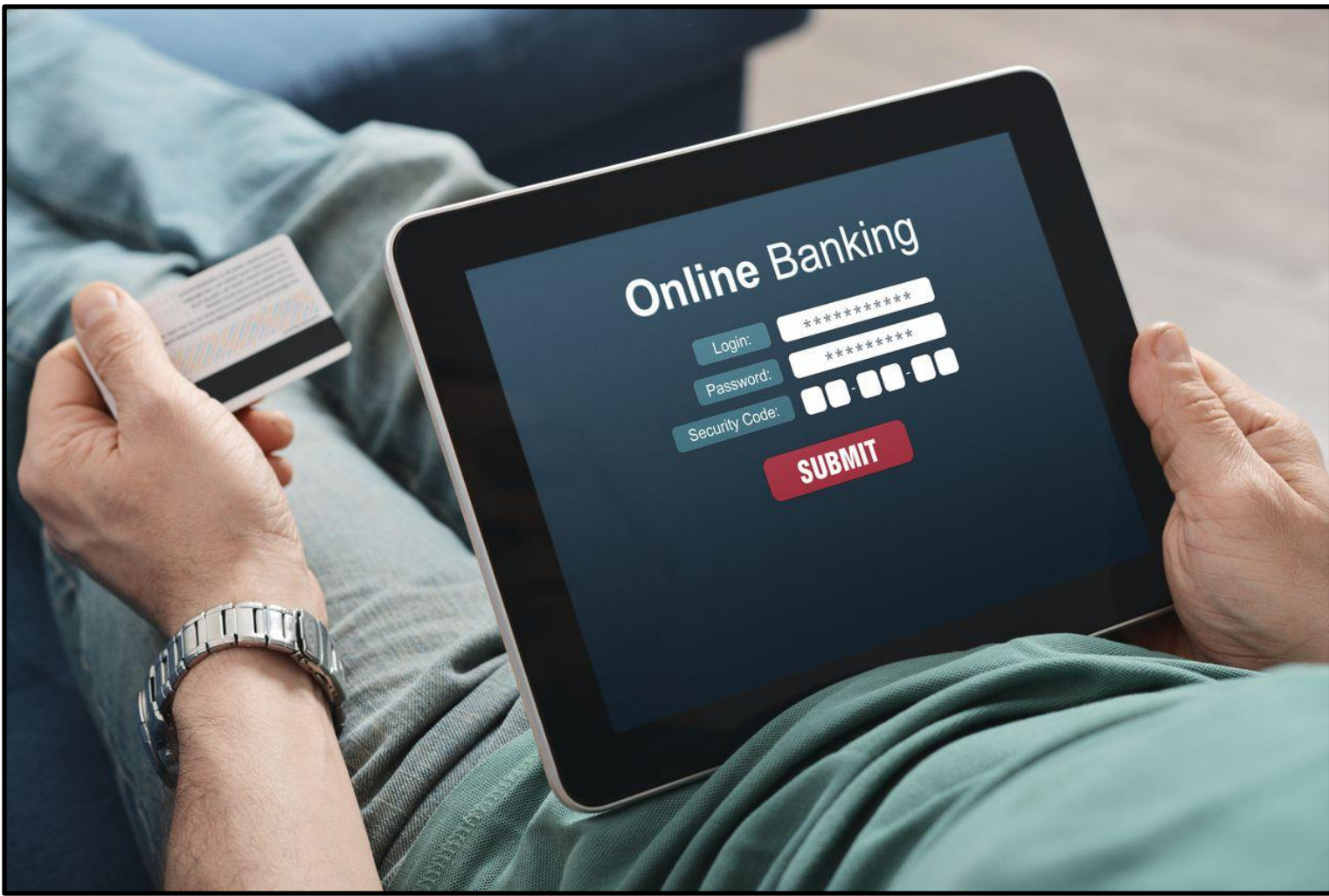


Computers are often used to book (reserve) air flights, seats in the cinema, rooms in a hotel, tables in a restaurant, etc.

In all of the above examples, there are a limited number of items (seats on a plane, rooms in a hotel, etc.) which need to be allocated.

It is very important that any booking system prevents the same item being booked twice (double-booking).

INTERNET BANKING



BANKING APPLICATIONS

It is now very common for bank customers to access their bank account from home using on-line banking services.

Customers use a computer and connect to the bank's secure (encrypted) website where they login (usually with a username and a password)

- Customers can use the on-line banking system to...
- Check the balance of bank accounts
- Pay bills
- Transfer money between accounts (using EFT)
- Apply for loans, or other services



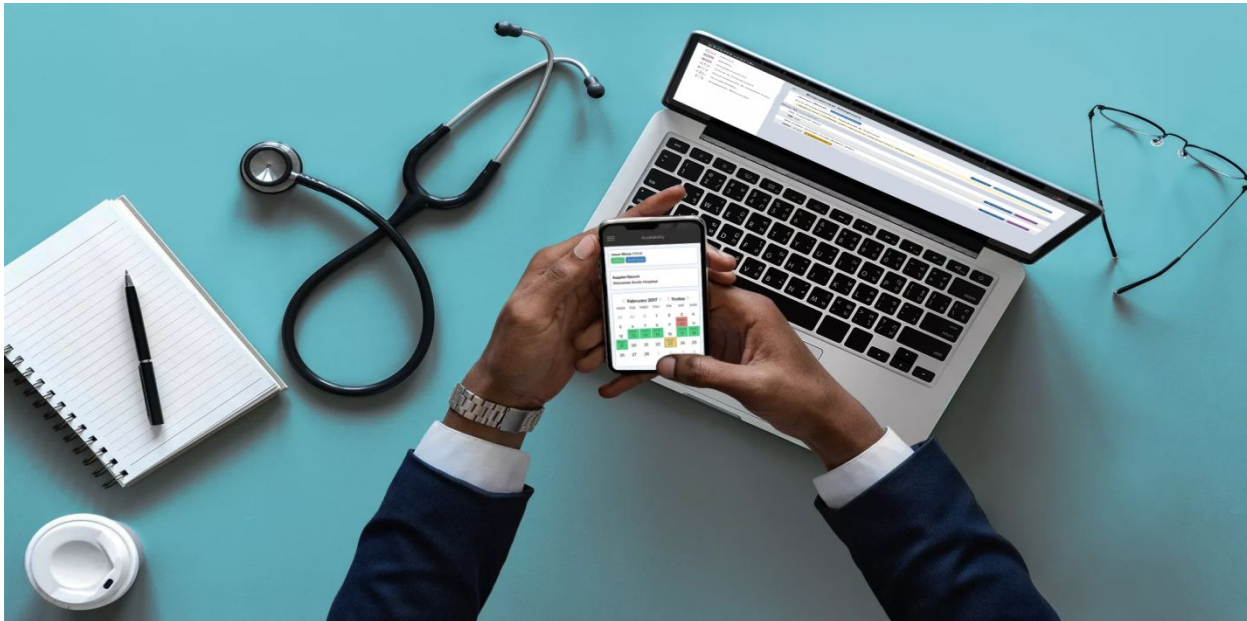
Uses of Computers in libraries

- Encoding and storing books and materials by means of computers can, on one hand, make it easier to add and delete book entries through operations on the computers, and on the other hand, enhance the efficiency and use value of library resources management through quickly and accurately getting information
- The library's public computers allow users to search a variety of electronic resources. Library resource computers are exclusively for searching the library's holdings and selected electronic databases. Internet computers provide information beyond the confines of the library's collection
- The role of computer in the library catalog Cataloging work can not only improve the convenience of the reader of books retrieval and reading, but also have a good role to share for the library resources . The data collection in computer catalogue can be used to search or browse

Expert systems

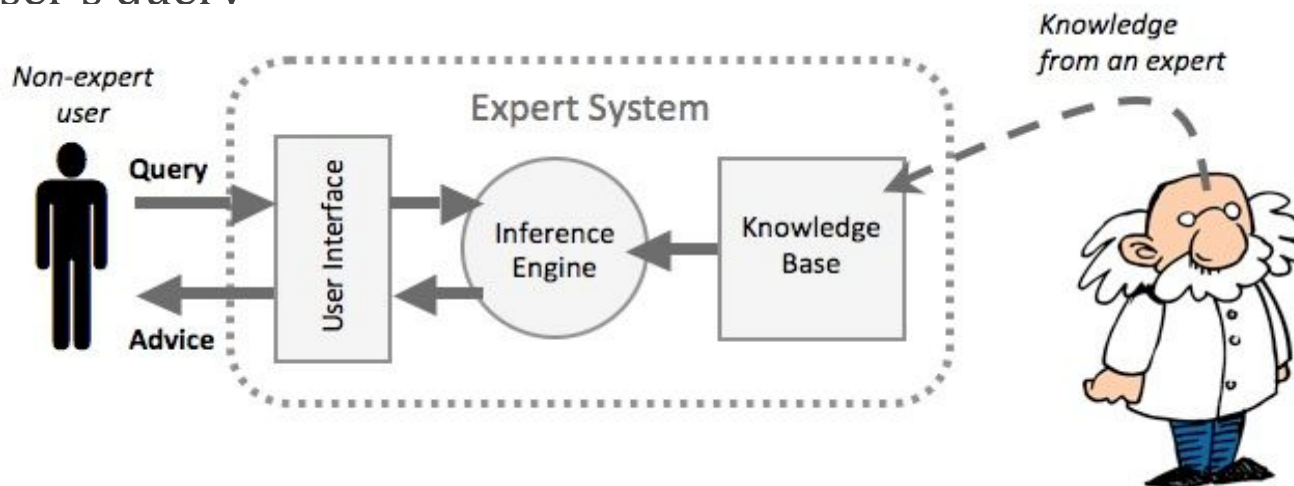
- **What is an Expert System?**
- An expert system is computer software that attempts to act like a human expert on a particular subject area.

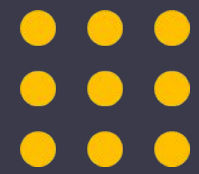
Expert systems are often used to advise non-experts in situations where a human expert is unavailable (for example it may be too expensive to employ a human expert, or it might be difficult to reach location).



An expert system is made up of three parts:

- ◉ A user interface - This is the system that allows a non-expert user to query (question) the expert system, and to receive advice. The user-interface is designed to be as simple to use as possible.
- ◉ A knowledge base - This is a collection of facts and rules. The knowledge base is created from information provided by human experts
- ◉ An inference engine - This acts rather like a search engine, examining the knowledge base for information that matches the user's query





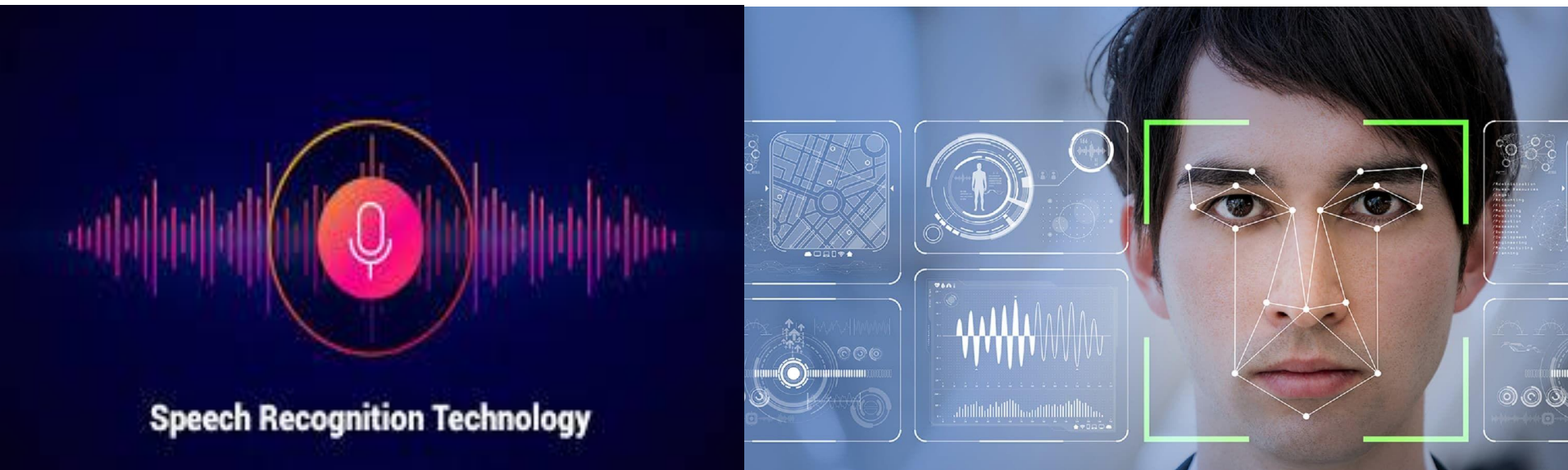
COMPUTER RETAIL

- Electronic point of sale systems are computer systems that electronically track the sales of goods in a retail environment. The bar-codes on goods are scanned at the checkout and each item is added automatically to the total bill. The computer then displays the total cost and the customer either pays with cash (in which case the change required is automatically calculated) or by credit/debit card (in which case an Electronic Funds Transfer is conducted).
- After the transaction has finish the companies stock database is automatically updated. The database is later searched automatically and more stock is ordered automatically



RECOGNITION SYSTEMS

- Recognition of human individuals, or biometrics, used as a form of identification and access control. Facial recognition system, a system to identify individuals by their facial characteristics. Fingerprint recognition, automated method of verifying a match between two human fingerprints.



Types of recognition systems in technology

- Biometric
- Linguistic
- Textual
- In neuroscience and psychology
- In arts and entertainment
- In law



MONITORING AND TRACKING SYSTEM

- Monitoring and tracking system is a real-time system that allow you to observe someone or something. -It needs to have a device that can specify the location and send the location to your device



PURPOSES

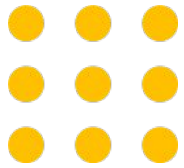
There are many reasons why we use this system such as:

- ⦿ -Employer can check the current locations of their employees.
- ⦿ -CCTV camera can used in case of crime or suspect activities.
- ⦿ -Elderly person can be tracked to ensure their safety.
- ⦿ Cookies
- ⦿ Key-logging
- ⦿ Tagging device

Satellite systems

- The satellite system is used to transmit data from one part of the planet to another. Due to the often great distances, cables would be too costly and there is also the problem of signal deterioration over long distances. Satellite systems are used to transmit telephone, internet and television data around the world.
- Global Positioning Satellite (GPS) systems are used to determine the exact location of a number of modes of transport (airplanes, cars, ships, etc). Cars usually refer to GPS as satellite navigation systems





Any question?
