->Machine learning is a field of computer science that uses statistical techniques to give computer systems the ability to "learn" (e.g., progressively improve performance on a specific task) with data, without being explicitly programmed.

->The name machine learning was coined in 1959 by Arthur Samuel. Evolved from the study of pattern recognition and computational learning theory in artificial intelligence, machine learning explores the study and construction of algorithms that can learn from and make predictions on data – such algorithms overcome following strictly static program instructions by making data-driven predictions or decisions, through building a model from sample inputs.

->Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms with good performance is difficult or infeasible; example applications include email filtering, detection of network intruders, and computer vision.

->Machine learning is sometimes conflated with data mining, where the latter subfield focuses more on exploratory data analysis and is known as unsupervised learning.

->An artificial neural network (ANN) learning algorithm, usually called "neural network" (NN), is a learning algorithm that is vaguely inspired by biological neural networks.

->Web development takes into account many security considerations, such as data entry error checking through forms, filtering output, and encryption.

->Malicious practices such as SQL injection can be executed by users with ill intent yet with only primitive knowledge of web development as a whole.

->Scripts can be used to exploit websites by granting unauthorized access to malicious users that try to collect information such as email addresses, passwords and protected content like credit card numbers.

->The increased usage of open-source content management systems and enterprise content management systems has extended web development's impact at online interaction and communication.

->Knowledge of HyperText Markup Language (HTML) or of programming languages is still required to use such software, but the basics can be learned and implemented quickly with the help of help files, technical books, internet tutorials, or face-to-face training.

->There are three kinds of web developer specialization: front-end developer, back-end developer, and full-stack developer.

->An **operating system (OS)** is system software that manages computer hardware and software resources and provides common services for computer programs.

->Time-sharing operating systems schedule tasks for efficient use of the system and may also include accounting software for cost allocation of processor time, mass storage, printing, and other resources.

->For hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and frequently makes system calls to an OS function or is interrupted by it.

->A single-tasking system can only run one program at a time, while a multi-tasking operating system allows more than one program to be running in concurrency.

->This is achieved by time-sharing, where the available processor time is divided between multiple processes.

->The first microcomputers did not have the capacity or need for the elaborate operating systems that had been developed for mainframes and minis; minimalistic operating systems were developed, often loaded from ROM and known as *monitors*.

->A **blockchain**, originally block chain, is a growing list of records, called *blocks*, which are linked using cryptography, Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data.
->For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks.
->Although blockchain records are not unalterable, blockchains may be considered secure by design and exemplify a distributed computing system with high Byzantine fault tolerance.
->Decentralized consensus has therefore been claimed with a blockchain.
Blockchain was invented by Satoshi Nakamoto in 2008 to serve as the public transaction ledger of the cryptocurrency bitcoin.
->The invention of the blockchain for bitcoin made it the first digital currency to solve the double-spending problem without the need of a trusted authority or central server.
->The bitcoin design has inspired other applications,and blockchains which are readable by the public are widely used by cryptocurrencies.
->Private blockchains have been proposed for business use. Some marketing of blockchains has been called "snake oil".

->Space technology is technology developed by space science or the aerospace industry for use in spaceflight, satellites, or space exploration.
->Many common everyday services such as weather forecasting, remote sensing, GPS systems, satellite television, and some long distance communications systems critically rely on space infrastructure.
->Of the sciences, astronomy and Earth science via remote sensing benefit from space technology.
->A booster rocket or engine is either the first stage of a multistage rocket or launch vehicle, or else a shorter-burning rocket used in parallel with longer-burning sustainer rockets to augment a space vehicle's takeoff thrust and payload capability.
->SpaceX has since developed the Falcon launch vehicle family and the Dragon spacecraft family, which both currently deliver payloads into Earth orbit
->A reusable launch system (RLS) is a space launch system intended to allow for recovery of all or part of the system for later reuse. To date, several fully reusable sub-orbital systems and partially reusable orbital systems have been flown.
->An aerobot is an aerial robot, usually used in the context of an unmanned space probe or unmanned aerial vehicle.

->The **Big Bang** theory is the prevailing cosmological model for the universe from the earliest known periods through its subsequent large-scale evolution.

->The model describes how the universe expanded from a very high-density and high-temperature state, and offers a comprehensive explanation for a broad range of phenomena, including the abundance of light elements, the cosmic microwave background (CMB), large scale structure and Hubble's law.

->If the known laws of physics are extrapolated to the highest density regime, the result is a singularity which is typically associated with the Big Bang.

->Physicists are undecided whether this means the universe began from a singularity, or that current knowledge is insufficient to describe the universe at that time.

->Detailed measurements of the expansion rate of the universe place the Big Bang at around 13.8 billion years ago, which is thus considered the age of the universe.

->Giant clouds of these primordial elements later coalesced through gravity in halos of dark matter, eventually forming the stars and galaxies visible today.

->The earliest phases of the Big Bang are subject to much speculation.

->The Big Bang is not an explosion of matter moving outward to fill an empty universe.

->A **hydrogen vehicle** is a vehicle that uses hydrogen as its onboard fuel for motive power.
->Hydrogen vehicles include hydrogen-fuelled space rockets, as well as automobiles and other transportation vehicles.
->The power plants of such vehicles convert the chemical energy of hydrogen to mechanical energy either by burning hydrogen in an internal combustion engine, or by reacting hydrogen with oxygen in a fuel cell to run electric motors.
->Widespread use of hydrogen for fuelling transportation is a key element of a proposed hydrogen economy.
->Integrated wind-to-hydrogen plants, using electrolysis of water, are exploring technologies to deliver costs low enough, and quantities great enough, to compete with hydrogen production using natural gas.
->The drawbacks of hydrogen use are high carbon emissions intensity when produced from natural gas, capital cost burden, low energy content per unit volume, production and compression of hydrogen, and the large investment in infrastructure that would be required to fuel vehicles.
->The problems in early fuel-cell designs at low temperatures concerning range and cold start capabilities have been addressed so that they "cannot be seen as showstoppers anymore".
->Hydrogen does not come as a pre-existing source of energy like fossil fuels but is first produced and then stored as a carrier, much like a battery.

->Nanotechnology is manipulation of matter on an atomic, molecular, and supramolecular scale.
->Nanotechnology may be able to create many new materials and devices with a vast range of applications, such as in nanomedicine, nanoelectronics, biomaterials energy production, and consumer products.
->The concepts that seeded nanotechnology were first discussed in 1959 by renowned physicist Richard Feynman**.**
->The invention of the scanning tunneling microscope in 1981 which provided unprecedented visualization of individual atoms and bonds, and was successfully used to manipulate individual atoms in 1989.
->Nanotechnology is the engineering of functional systems at the molecular scale.
->Areas of physics such as nanoelectronics, nanomechanics, nanophotonics and nanoionics have evolved during the last few decades to provide a basic scientific foundation of nanotechnology.