1. **Write a short note (3-5 lines) on**
2. **Garry Kasparov**

Garry Kimovich Kasparov (born Garik Kimovich Weinstein on 13 April 1963) is a Russian [chess grandmaster](https://en.wikipedia.org/wiki/Grandmaster_(chess)), former [World Chess Champion](https://en.wikipedia.org/wiki/World_Chess_Champion) (1985–2000), political activist and [writer](https://en.wikipedia.org/wiki/Writer). His peak [FIDE](https://en.wikipedia.org/wiki/FIDE) chess [rating](https://en.wikipedia.org/wiki/Elo_rating_system) of 2851, achieved in 1999, was the highest recorded until being surpassed by [Magnus Carlsen](https://en.wikipedia.org/wiki/Magnus_Carlsen) in 2013. From 1984 until his retirement from regular competitive chess in 2005, Kasparov was ranked world no. 1 for a record [255 months overall](https://en.wikipedia.org/wiki/List_of_FIDE_chess_world_number_ones#Player_statistics). Kasparov also [holds records](https://en.wikipedia.org/wiki/Garry_Kasparov#Other_records) for the most consecutive professional tournament victories (15) and [Chess Oscars](https://en.wikipedia.org/wiki/Chess_Oscar).

1. **Deep Blue**

Deep Blue was a [chess-playing](https://en.wikipedia.org/wiki/Computer_chess) [expert system](https://en.wikipedia.org/wiki/Expert_system) run on a unique purpose-built [IBM](https://en.wikipedia.org/wiki/IBM) [supercomputer](https://en.wikipedia.org/wiki/Supercomputer). It was the first computer to win a game, and the first to win a match, against a reigning world champion under regular time controls. Development began in 1985 at [Carnegie Mellon University](https://en.wikipedia.org/wiki/Carnegie_Mellon_University) under the name [ChipTest](https://en.wikipedia.org/wiki/ChipTest" \o "ChipTest). It then moved to IBM, where it was first renamed [Deep Thought](https://en.wikipedia.org/wiki/Deep_Thought_(chess_computer)), then again in 1989 to Deep Blue. It first played world champion [Garry Kasparov](https://en.wikipedia.org/wiki/Garry_Kasparov) in a [six-game match](https://en.wikipedia.org/wiki/Deep_Blue_versus_Garry_Kasparov) in 1996, where it lost four games to two. It was upgraded in 1997 and in a six-game re-match, it defeated Kasparov by winning two games and drawing three. Deep Blue's victory is considered a milestone in the [history of artificial intelligence](https://en.wikipedia.org/wiki/History_of_artificial_intelligence) and has been the subject of several books and films.

1. **Alan Turing**

Alan Mathison Turing [OBE](https://en.wikipedia.org/wiki/Officer_of_the_Order_of_the_British_Empire) [FRS](https://en.wikipedia.org/wiki/Fellow_of_the_Royal_Society) (23 June 1912 – 7 June 1954) was an English mathematician, [computer scientist](https://en.wikipedia.org/wiki/Computer_scientist), [logician](https://en.wikipedia.org/wiki/Logic), [cryptanalyst](https://en.wikipedia.org/wiki/Cryptanalysis), philosopher and [theoretical biologist](https://en.wikipedia.org/wiki/Mathematical_and_theoretical_biology). Turing was highly influential in the development of [theoretical computer science](https://en.wikipedia.org/wiki/Theoretical_computer_science), providing a formalisation of the concepts of [algorithm](https://en.wikipedia.org/wiki/Algorithm) and [computation](https://en.wikipedia.org/wiki/Computation) with the [Turing machine](https://en.wikipedia.org/wiki/Turing_machine), which can be considered a model of a [general-purpose computer](https://en.wikipedia.org/wiki/General-purpose_computer). He is widely considered to be the father of theoretical computer science and [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence).

1. **John McCarthy**

John McCarthy (September 4, 1927 – October 24, 2011) was an American [computer scientist](https://en.wikipedia.org/wiki/Computer_scientist) and [cognitive scientist](https://en.wikipedia.org/wiki/Cognitive_scientist). He was one of the founders of the discipline of [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence). He co-authored the document that coined the term "[artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence)" (AI), developed the [programming language](https://en.wikipedia.org/wiki/Programming_language) family [Lisp](https://en.wikipedia.org/wiki/Lisp_(programming_language)), significantly influenced the design of the language [ALGOL](https://en.wikipedia.org/wiki/ALGOL), popularized [time-sharing](https://en.wikipedia.org/wiki/Time-sharing), and invented [garbage collection](https://en.wikipedia.org/wiki/Garbage_collection_(computer_science)).

McCarthy spent most of his career at [Stanford University](https://en.wikipedia.org/wiki/Stanford_University). He received many accolades and honors, such as the 1971 [Turing Award](https://en.wikipedia.org/wiki/Turing_Award) for his contributions to the topic of AI, the United States [National Medal of Science](https://en.wikipedia.org/wiki/National_Medal_of_Science), and the [Kyoto Prize](https://en.wikipedia.org/wiki/Kyoto_Prize).

1. **Geoffrey Hinton Go**

Geoffrey Everest Hinton [CC](https://en.wikipedia.org/wiki/Order_of_Canada) [FRS](https://en.wikipedia.org/wiki/Fellow_of_the_Royal_Society) [FRSC](https://en.wikipedia.org/wiki/Fellow_of_the_Royal_Society_of_Canada) (born 6 December 1947) is a British-Canadian [cognitive psychologist](https://en.wikipedia.org/wiki/Cognitive_psychologist) and [computer scientist](https://en.wikipedia.org/wiki/Computer_scientist), most noted for his work on [artificial neural networks](https://en.wikipedia.org/wiki/Artificial_neural_networks). From 2013 to 2023, he divided his time working for Google ([Google Brain](https://en.wikipedia.org/wiki/Google_Brain)) and the [University of Toronto](https://en.wikipedia.org/wiki/University_of_Toronto), before publicly announcing his departure from Google in May 2023 citing concerns about the risks of [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence) (AI) technology. In 2017, he co-founded and became the chief scientific advisor of the Vector Institute in Toronto.

1. **Lee Sedol**

Lee Sedol (born 2 March 1983), or Lee Se-dol, is a former [South Korean](https://en.wikipedia.org/wiki/South_Korea) professional [Go](https://en.wikipedia.org/wiki/Go_(board_game)) [player](https://en.wikipedia.org/wiki/Go_players) of [9 Dan rank](https://en.wikipedia.org/wiki/Go_ranks_and_ratings).As of February 2016, he ranked second in [international titles](https://en.wikipedia.org/wiki/List_of_professional_Go_tournaments#International) (18), behind only [Lee Chang-ho](https://en.wikipedia.org/wiki/Lee_Chang-ho) (21). His nickname is "The Strong Stone". In March 2016, he played a notable [series of matches](https://en.wikipedia.org/wiki/AlphaGo_versus_Lee_Sedol) against the program [Alpha Go](https://en.wikipedia.org/wiki/AlphaGo) that ended in Lee losing 1–4.

On 19 November 2019, Lee announced his retirement from professional play, stating that he could never be the top overall player of Go due to the increasing dominance of [AI](https://en.wikipedia.org/wiki/Artificial_intelligence). Lee referred to them as being "an entity that cannot be defeated".

1. **DeepMind ALPHAGO**

Alpha Go is a [computer program](https://en.wikipedia.org/wiki/Computer_program) that plays the [board game](https://en.wikipedia.org/wiki/Board_game) [Go](https://en.wikipedia.org/wiki/Go_(game)). It was developed by the London-based [DeepMind](https://en.wikipedia.org/wiki/DeepMind) Technologies, an acquired subsidiary of [Google](https://en.wikipedia.org/wiki/Google) (now [Alphabet Inc.](https://en.wikipedia.org/wiki/Alphabet_Inc.)). Subsequent versions of Alpha Go became increasingly powerful, including a version that competed under the name [Master](https://en.wikipedia.org/wiki/AlphaGo_Master).[[3]](https://en.wikipedia.org/wiki/AlphaGo#cite_note-3) After retiring from competitive play, Alpha Go Master was succeeded by an even more powerful version known as [Alpha Go Zero](https://en.wikipedia.org/wiki/AlphaGo_Zero), which was completely [self-taught](https://en.wikipedia.org/wiki/Self-play_(reinforcement_learning_technique)) without learning from human games. Alpha Go Zero was then generalized into a program known as [Alpha Zero](https://en.wikipedia.org/wiki/AlphaZero), which played additional games, including [chess](https://en.wikipedia.org/wiki/Chess) and [shogi](https://en.wikipedia.org/wiki/Shogi). Alpha Zero has in turn been succeeded by a program known as [MuZero](https://en.wikipedia.org/wiki/MuZero) which learns without being taught the rules.

1. **Move 37 (Alpha Go and Lee Sedol)**

In Game 2, Alpha Go made a move at Move 37, an unusual move that shocked Go experts across the world. Lee took 15 minutes to respond. He even left the room for a few minutes. Move 37 was a move that no human would have ever considered because it had a one in ten thousand chance. Move 37 has forever redefined the future.

1. **Atlas by Boston Dynamics**

Atlas is a bipedal humanoid robot primarily developed by the American robotics company Boston Dynamics with funding and oversight from the U.S. Defense Advanced Research Projects Agency

1. **Charles Babbage**

Charles Babbage [KH](https://en.wikipedia.org/wiki/Knight_of_the_Royal_Guelphic_Order) [FRS](https://en.wikipedia.org/wiki/Fellow_of_the_Royal_Society) (26 December 1791 – 18 October 1871) was an English [polymath](https://en.wikipedia.org/wiki/Polymath). A mathematician, philosopher, inventor and mechanical engineer, Babbage originated the concept of a digital programmable computer.

Babbage is considered by some to be "[father of the computer](https://en.wikipedia.org/wiki/List_of_pioneers_in_computer_science)".Babbage is credited with inventing the first [mechanical computer](https://en.wikipedia.org/wiki/Mechanical_computer), the [Difference Engine](https://en.wikipedia.org/wiki/Difference_Engine), that eventually led to more complex electronic designs, though all the essential ideas of modern computers are to be found in Babbage's [Analytical Engine](https://en.wikipedia.org/wiki/Analytical_Engine), programmed using a principle openly borrowed from the [Jacquard loom](https://en.wikipedia.org/wiki/Jacquard_loom).

1. **Ada Lovelace**

Augusta Ada King, Countess of Lovelace (Byron; 10 December 1815 – 27 November 1852) was an English mathematician and writer, chiefly known for her work on [Charles Babbage](https://en.wikipedia.org/wiki/Charles_Babbage)'s proposed mechanical general-purpose [computer](https://en.wikipedia.org/wiki/Computer), the [Analytical Engine](https://en.wikipedia.org/wiki/Analytical_Engine). She was the first to recognize that the machine had applications beyond pure calculation.

1. **Mars Rover**

A Mars rover is a remote-controlled [motor vehicle](https://en.wikipedia.org/wiki/Motor_vehicle) designed to travel on the surface of [Mars](https://en.wikipedia.org/wiki/Mars). [Rovers](https://en.wikipedia.org/wiki/Rover_(space_exploration)) have several advantages over stationary [landers](https://en.wikipedia.org/wiki/Lander_(spacecraft)): they examine more territory, they can be directed to interesting features, they can place themselves in sunny positions to weather winter months, and they can advance the knowledge of how to perform very remote [robotic](https://en.wikipedia.org/wiki/Robot) vehicle control. They serve a different purpose than orbital spacecraft like [*Mars Reconnaissance Orbiter*](https://en.wikipedia.org/wiki/Mars_Reconnaissance_Orbiter). A more recent development is the [Mars helicopter](https://en.wikipedia.org/wiki/Mars_helicopter).

1. **Aristotle**

**Aristotle** an [Ancient Greek](https://en.wikipedia.org/wiki/Ancient_Greece) [philosopher](https://en.wikipedia.org/wiki/Philosopher) and [polymath](https://en.wikipedia.org/wiki/Polymath). His writings cover a broad range of subjects spanning the [natural sciences](https://en.wikipedia.org/wiki/Natural_science), [philosophy](https://en.wikipedia.org/wiki/Philosophy), [linguistics](https://en.wikipedia.org/wiki/Linguistics), [economics](https://en.wikipedia.org/wiki/Economics), [politics](https://en.wikipedia.org/wiki/Politics), [psychology](https://en.wikipedia.org/wiki/Psychology) and [the arts](https://en.wikipedia.org/wiki/The_arts). As the founder of the [Peripatetic school](https://en.wikipedia.org/wiki/Peripatetic_school) of philosophy in the [Lyceum](https://en.wikipedia.org/wiki/Lyceum_(classical)) in [Athens](https://en.wikipedia.org/wiki/Athens), he began the wider [Aristotelian](https://en.wikipedia.org/wiki/Aristotelianism) tradition that followed, which set the groundwork for the development of modern [science](https://en.wikipedia.org/wiki/Science).  
**2. What is the reason for two AI winters?**

Expert systems fell prey to the qualification problem, and that caused a collapse of funding in AI funding because the systems could not achieve much of what it promised. The Second AI Winter began with the sudden collapse of the market for specialized AI hardware in 1987. Desktop computers from IBM and Apple were steadily gaining market share. But 1987 became the turning point for these AI manufacturers when Apple’s and IBM’s computers became more powerful and cheaper.   
**3. What are the challenges related to AI?**

* Lack of understanding
* Privacy concerns
* Processing power requirements
* Lack of data
* Unreliable results
* Lack of trust
* Unclear goals
* Technical difficulties

4. **Define AI paradigm to solve a real-world complex problem**.

The ultimate aim of artificial intelligence is to create systems that can solve real-world problems. It does this by employing efficient and logical algorithms, utilizing polynomial and differential equations, and executing those using modeling paradigms.