1. **would you say that Deep Blue was intelligent? Explain.**

Whether Deep Blue, IBM's chess-playing computer, can be considered "intelligent" is an interesting and nuanced question. Deep Blue’s capability to play chess at a high level involved analyzing massive numbers of potential moves and outcomes, evaluating each option, and selecting the one that would maximize its chances of winning. It even defeated world chess champion Garry Kasparov in 1997, a feat that was groundbreaking at the time. However, defining its actions as "intelligence" depends on what we mean by intelligence.

**1. Algorithmic Processing vs. General Intelligence**

Deep Blue was essentially a specialized machine designed to play chess and nothing else. It was not adaptable; it couldn’t apply its abilities to other tasks or learn in a way that resembles human intelligence. It followed an algorithm, programmed with a vast amount of chess knowledge and rules, to make its decisions. This differs significantly from general intelligence, which involves adapting to new problems, learning from a variety of experiences, and thinking abstractly.

**2. Calculative Power vs. Understanding**

Deep Blue’s strength came from brute-force processing. It could evaluate around 200 million chess moves per second, an ability no human could match. However, this was more about computational power than understanding. Deep Blue didn't "know" it was playing chess, nor did it understand the meaning of a victory. It simply followed the logic laid out in its programming.

**3. Absence of Learning**

Unlike modern AI systems, Deep Blue did not use machine learning; it didn't improve its performance based on previous games but rather relied on a fixed set of rules and evaluative functions crafted by its programmers. True intelligence, as many would define it, often involves the capacity to learn and adapt, which Deep Blue lacked.

**4. Narrow AI vs. General AI**

Deep Blue is an example of narrow AI—it was highly competent within a specific domain (chess) but had no ability outside of it. In contrast, human intelligence is general; humans can transfer knowledge across domains, apply reasoning, and adapt to new and unknown scenarios. Many definitions of intelligence hinge on this adaptability and flexibility, which Deep Blue did not possess.

**Conclusion: Not Intelligent in the Human Sense**

Deep Blue was undoubtedly a powerful, sophisticated system for its time, displaying what could be called *computational skill* rather than *intelligence*. While it showcased the capability of machines to process information and execute complex tasks, it did not demonstrate the understanding, adaptability, or learning we typically associate with intelligence. So, in the human or even broader AI sense, Deep Blue would not be considered "intelligent" by most definitions.

**2.what contributed to Deep Blue's success and how? Who/what should get credit for it?**

Deep Blue’s success in defeating Garry Kasparov in 1997 was a groundbreaking achievement in computer science and artificial intelligence. However, the credit for its success is not solely due to the machine itself. Here are the main factors that contributed to Deep Blue's victory and who or what should get credit for it:

**1. Human Expertise in Chess and Programming**

* **Credit**: IBM engineers, computer scientists, and chess grandmasters.
* **Explanation**: Deep Blue was programmed by a team of IBM scientists and chess experts who embedded vast amounts of chess knowledge into the system. They created intricate evaluation functions, enabling Deep Blue to assess positions on the board in ways similar to how a skilled human player might. Grandmasters like Joel Benjamin consulted with IBM to refine Deep Blue's understanding of chess strategies, positions, and endgames.

**2. Massive Computational Power**

* **Credit**: IBM’s hardware development team.
* **Explanation**: Deep Blue’s ability to analyze up to 200 million chess positions per second was essential to its success. This computational power allowed it to "brute force" its way through possible moves and counter-moves, evaluating potential outcomes far beyond human capability. The IBM team had to design and build specialized processors and parallel computing capabilities specifically for this task, ensuring Deep Blue had the raw processing power required.

**3. Search Algorithms and Heuristics**

* **Credit**: IBM’s AI and computer science researchers.
* **Explanation**: Deep Blue used advanced search algorithms, such as the alpha-beta pruning technique, which allowed it to reduce the number of moves it needed to evaluate. It also had sophisticated heuristics to prioritize certain moves or board configurations based on probability and historical success. Without these algorithms, it would have been impossible for Deep Blue to navigate the vast number of possible moves in a chess game efficiently.

**4. Specific Programming for Kasparov’s Style**

* **Credit**: IBM’s team and the Deep Blue chess consultants.
* **Explanation**: IBM’s team adjusted Deep Blue’s strategies to handle Kasparov’s unique playing style. They studied his past games and made adjustments to exploit perceived weaknesses. This strategic tailoring meant that Deep Blue’s programming was not purely generic but specifically fine-tuned to challenge Kasparov.

**5. Psychological Impact on Kasparov**

* **Credit**: Kasparov’s mindset and human psychology.
* **Explanation**: Kasparov had to contend with the pressure of playing against a machine known for relentless precision. After Deep Blue’s surprise victory in Game 1, Kasparov reportedly grew more cautious and altered his usual style. This shift affected his performance, and his psychological struggle became a part of Deep Blue’s advantage. In this way, Kasparov’s response to playing against an unorthodox opponent (a machine) indirectly contributed to Deep Blue's success.

**Who Should Get the Credit?**

* **Primary Credit**: IBM’s engineering team, computer scientists, and chess consultants who designed, programmed, and optimized Deep Blue should receive most of the credit. The machine’s success was a direct result of their expertise in both computer science and chess.
* **Secondary Credit**: Deep Blue itself deserves recognition as a powerful computational system. While it didn’t think or understand chess as humans do, its performance marked a major milestone in computing, showcasing the potential of AI to achieve highly specialized tasks.
* **Tertiary Credit**: Kasparov’s psychological response contributed in some small way to Deep Blue’s success. Facing a machine that didn’t respond to tactics the way human opponents would likely influenced his performance.

**Conclusion**

Deep Blue’s success was largely a product of human ingenuity, algorithmic sophistication, and specialized hardware design. The team behind Deep Blue deserves most of the credit, as they transformed an advanced computer into a formidable chess opponent. The match demonstrated not just the power of computers but the heights that human-engineered systems could reach, underscoring a collaborative achievement rather than an autonomous one.