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THE IMPACT OF PROGRAMMING ON THE BRAIN

Programming exerts profound effects on the brain's cognitive functions. Engaging in programming tasks necessitates intricate problem-solving strategies, encourages the development of precise logical thinking, and nurtures creative ideation. These cognitive processes have been demonstrated to stimulate brain plasticity, enhancing an individual's capacity for analytical reasoning and fostering heightened creativity. This cognitive transformation, driven by the demands of programming, underscores the profound and far-reaching implications of this skill in fostering intellectual growth and problem-solving competence. The purpose of the work is to explore how programming affects the brain and discuss the potential cognitive benefits associated with this activity.

Software engineering requires particular cognitive abilities, regardless of one's specialized domain within the field, whether it is website development or machine learning. These cognitive proficiencies are crucial across the spectrum of software development. Fortunately, people can develop these essential skills through learning programming languages.

Cognitive skills are crucial in the field of software engineering, surpassing the boundaries of specialization. Whether it's web development or machine learning, cognitive skills continue to be undeniably needed. These abilities involve problem-solving, critical thinking, algorithmic reasoning, and abstraction. For example, a web developer must proficiently design user interfaces and maintain a smooth user experience. Meanwhile, an expert in machine learning must use sophisticated mathematical concepts to build complex algorithms. In each situation, the ability to analyze, plan and invent is crucial.

The positive aspect of software engineering is that these cognitive abilities can be obtained by anyone who is committed to studying and mastering programming languages. These languages function as a gateway towards grasping and applying these skills. Acquiring a programming language is comparable to obtaining a new set of tools, providing a way to attain creative

and technical goals. As one explores the realm of coding, they not only acquire comprehension of syntax and semantics but also assimilate the logical constructs that underpin software engineering. The following aspects influence cognitive function in a particular way.

Algorithmic Thinking and Procedural Logic:

Understanding algorithms and procedural logic is fundamental to programming. Engaging with these concepts enhances algorithmic thinking, promoting structured, step-by-step problem-solving approaches in everyday situations, thus improving analytical and methodical thinking.

Creativity and Innovation:

Contrary to the misconception that programming is purely technical, it involves a considerable amount of creativity. Programmers need to devise innovative solutions and think outside the box to develop efficient and elegant code. The process of creating and optimizing code allows individuals to express themselves creatively within the confines of a structured programming language.

Enhanced Memory:

Learning programming languages and concepts necessitates memory retention. As programmers accumulate knowledge and experience, they enhance their memory capacity, enabling them to recall and utilize a wide range of programming techniques and methodologies.

Learning and Perseverance:

The process of learning programming languages and problem-solving in this domain requires perseverance and dedication. Programming encourages individuals to persistently engage with complex concepts, promoting continuous learning and the development of a patient, determined approach toward mastering new skills.

Error Analysis and Troubleshooting:

Debugging code requires thorough error analysis and troubleshooting. Engaging in this process enhances critical thinking skills, encouraging individuals to approach challenges with a systematic and analytical mindset, ultimately improving problem-solving capacities.

Spatial and Abstract Thinking:

Creating software often involves envisioning abstract concepts and representing them in a structured manner. This cultivates spatial and abstract thinking, facilitating the visualization of complex systems and relationships, vital for creativity and problem-solving in multiple domains.

To conclude, programming develops algorithmic thinking, creativity, and critical skills. It emphasizes the improvement of memory through learning programming languages and the importance of perseverance in mastering these skills. The role of error analysis in sharpening critical thinking and developing spatial and abstract reasoning, which are essential for problem-solving and creativity in various domains, should be highlighted. Programming offers multiple cognitive benefits, making it a valuable skill for everyone.

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FINANCIAL PAYMENT CARD FRAUD IN THE CONTEXT OF INFORMATION TECHNOLOGY

The relevance of this topic is due to the fact that along with the increase in the activity of using banking services, fraud in the banking sector is also increasing. Therefore, this problem requires special attention, as the risks of fraud significantly undermine trust in banking and carry the risk of destabilizing the entire economic system.

Bank cards are a universal, multifunctional and highly demanded retail product, which today is an integral part of a wide range of services offered by credit organizations in the information society. The infrastructure for accepting bank cards is constantly expanding, and the marketing and service aspects of doing business are developing.

Along with a long list of advantages, bank cards also have certain disadvantages. The most significant of which is their vulnerability to unauthorized influence by third parties, with the aim of illegal access to the owner's account and subsequent theft of funds. The problem of ensuring security when carrying out financial transactions using bank cards, namely, reducing the risk of fraud, is rightfully considered global, since all participants in the world market of payment instruments are involved in the process of solving it [1, p. 3].

The most common method of fraud in transactions with payment cards is fraud schemes using ATMs, offline payment equipment, as well as online payment systems. The technology of Internet fraud consists in stealing personal confidential data, such as access passwords, bank card data, etc.

Thus, in 2021, the amount of losses from fraudulent activities decreased to 40 hryvnias for one million hryvnias of expenditure transactions using payment cards in the retail network compared to 2020, which amounted to 61 hryvnias; in ATMs - from 33 hryvnias in 2020 to 29 hryvnias in 2021, but the volume of losses for transactions with payment cards made on the Internet increased from 61 hryvnias in 2020 to 114 hryvnias in 2021 [2, p. 3].