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Student Name: Subarna Karki

London Met ID: 20049059

College ID: np01cp4s210089

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1. Introduction

Technology is the implementation of scientific understanding to real-world problems, whether it be in industry or in our daily lives. Essentially, we employ technology anytime we apply our scientific knowledge to attain a certain goal. Any change, upgrade, or modification to the operation of information technology services that increases the effectiveness and capacity of the present technology is referred to as technological evolution. Database have emerged as one of the outcome of technological evolution. A database is a structured collection of data. They allow for digital data storage and processing, making data management simple. The introduction of search engines must be another key outcome of technological advancement. A search engine is a web-based service that helps people find information on the web. Google and MSN Search are examples of popular search engines. Both databases and search engines can do data searches and handle queries. To arrange and retrieve data, each technology adopts a distinct model. Search engines can search unstructured text, whereas databases can collect and store a large quantity of organized data (thunderstone, 2019). Among various search engines available, Elastic search engine is one of the most famous search engine.

Elasticsearch which released in 2010 and based on Apache Lucene by Elasticsearch N.V.is a distributed, open-source search and analytics engine that can handle textual, numerical, geographical, structured, and unstructured data. It is well-known for its simple REST APIs, networked architecture, speed, and extensibility. Elasticsearch enables you to easily store, search, and analyze large amounts of data in near real-time, with responses arriving in milliseconds. Instead of searching the text directly, it searches an index allowing it to provide quick search results.

2. Background

More than 108 million users signed in the online casino registration form. Personal information such as usernames, passwords, dates of birth, account balances, IP addresses, browser and operating system data, and last login information were included in the registration. They had signed up for the online form to bet and gamble. The online casino was well reputed and had used ElasticSearch server as their search engine. ElasticSearch server is a distributed search and analytics engine built on Apache Lucene. It was one of the most popular search engine and is commonly used for log analytics, full-text search and security intelligence.

The online casino form disclosed all of the registered user's personal information via the ElasticSearch server. The data was leaked since the ElasticSearch server was left online without a password. It was one of the largest ElasticSearch database breaches, affecting millions of individuals psychologically and negatively impacting the online casino form. The strange aspect is that it is still unknown how long the server was left accessible, if anybody else visited it, and if users were alerted that their personal information was exposed. This data leak was unprecedented, and it was the largest data breach yet. A U.K.-based security business mistakenly disclosed its "Data breach Database," which contained massive amounts of information relating to security breaches from 2012 to 2019 without password protection. After the discovery of leaky database by Security researcher Bob Diachenko, it was revealed that it contained a large amount of previously reported and unreported security incident details, including hashtype, leakyear, password, email, email domain, and source of the leak, and the database was taken offline immediately after the security alarm was elevated.

3. Legal Issues

A legal issue is something that occurs that has legal ramifications and may require legal assistance to resolve (sra.org.uk, 2017). It needs a court's decision. It can also apply to a situation in which the evidence is clear and the decision is determined by the court's understanding of the constitution. In every area of the data breach, the security team behind the ElasticSearch server shown a great deal of carelessness and a lack of work ethics. They also failed to follow the organization's legal guidelines, which may have reduced the likelihood of a data breach and its impact on the government and people's lives.

The following are some of the legal issues that the ElasticSearch server has induced: -

(i)   Violation of GLB Act's Safeguards Rule: The GLB Act safeguard regulation was violated since the online casino, as a financial hub, failed to preserve the confidentiality and integrity of consumer information. The Gramm-Leach-Bliley Act (GLB) implies that financial institutions protect the confidentiality of their clients' personally identifiable information. The casino, as a major financial center, installed an ElasticSearch server that lacked risk mitigation measures, frequent testing, and the deployment of in-built security controls, in violation of the GLB Act Safeguards Rule.

(ii)   Abuse of FTC Act: ElasticSearch server was found to be in violation of FTC (Federal Trade Commission) regulations in a number of ways, including failing to deliver appropriate security for vulnerable personal data, processed, preserved, or stored in its database or computer networks, which constituted Unfair Acts or Practices relating to ElasticSearch server's Data Security procedures. The Federal Trade Commission's objective is to safeguard consumers and competition by eliminating unfair competition, misleading, and unfair business activities through law enforcement, advocacy, and education while not unfairly crippling lawful economic activity. Even after the casino's data breach, they had other data breaches from other organizations, making them even more hostile to the FTC (Federal Trade Commission).

(iii)   <u>Breach of Contract</u>: The FTC alleged the ElasticSearch server for failing to secure the massive amount of private credentials, leading to a data breach. The FTC further claimed that the ElasticSearch server held network credentials and passwords, as well as other sensitive consumer information, in plain text which was supposed to be in a hash type, and failed to take the necessary steps that may have prevented the breach which affected approximately 180 million registered users.

(iv)   <u>Identity Theft</u>: As the server was exposed open without the password all the user's credentials were leaked and those credentials might have gone into the hands of hackers who could have exploited the user's identity to commit illegal activities which is a case of Identity fraud. The identity fraud caused by ElasticSearch server violates the Identity Theft and Assumption Deterrence Act which was passed on 1998, and this violation can carry a maximum term of 15 years' imprisonment, a fine, and criminal forfeiture of any personal property used or intended to be used to commit the offense.

(v)   <u>Violation of law of defamation</u>: The online casino had chosen ElasticSearch as its search engine because of its security and reliability. However, the online casino's data leak via ElasticSearch server had resulted in a case of defamation. The casino's reputation had been tarnished, which has had a severe influence on its business and customer relationships. Since ElasticSearch server's reckless actions were in violation of the defamation law, fines ranging from $500 to $5,000 and potential prison sentences ranging from six months to one year may be imposed.

So, these were the five legal issued caused by the data breach via ElasticSearch server.

4. Social Issues

A social issue is a societal problem that makes it difficult for individuals to grow and thrive (study.com, 2019). Poverty, unemployment, uneven opportunity, and racism are all instances of social issues, but data leakage is also one of them. The data leak caused chaos on society by impacting customers in every way. The data breach will have a long-term impact on society, since it will cause consumer difficulties for many years to come. 180 million Americans have been affected by the data breach, which has had a financial and physical impact on them all.

The following are the numerous forms of societal issues generated by data breach: -

(i)   Psychological effects: By disclosing sensitive information, data breaches harm both individuals and corporations. For the person who has had their data compromised, this can cause a lot of problems, such as changing passwords often, putting credit freezes or identity monitoring in place, and so on. Psychologically and socially, the individual may be greatly impacted. Invasion of privacy, victimization, depression, eating and sleeping problems, and social phobia are all common psychological repercussions. The stress of a data breach can lead to other well-known negative life occurrences, such as the need to relocate, lose a job, relationship problems, and separation from friends and family.

(ii)   Consumer mistrust: People and the online casino business had put their faith in the ElasticSearch server. They had trusted the server with all of their fundamental and vital information such as genuine names, home addresses, contact information, email addresses, birthdates, site usernames, account balances, and many other details, but the data breach had broken their faith. People, as well as the online casino organization, had to suffer greatly, resulting in a mistrust of ElasticSearch server, which might lead to a negative perception of ElasticSearch server among users affecting its business and flow of revenue negatively.

(iii)   False claims: For more than 180 million registered users, the ElasticSearch server structured, assimilated, and analyzed data. It claimed to rely on its capacity to swiftly store and search vast amounts of data, as well as its ability to build complicated queries to search for anything we wanted. The server's assurance garnered the faith of all users and the casino itself. However, the server's guarantees proved to be false when it was unable to securely retain user data, impacting millions of users as well as the casino itself.

(iv)   <u>Reputational Damage</u>: The data leak severely damaged the online casino's credibility. People were highly cautious of the casino once their privacy trust was destroyed by the casino. The casino's operations suffered as a result of its bad reputation spreading over the world via people and media. Even after the data leak incident, users were hesitant to enroll in that respective online casino and instead looked for alternative gambling and betting sites.

(v)   <u>Investment fear</u>: Before investing in any company, a fundamental and technical analysis is conducted. The casino's reputation had already been severely tarnished, which had a negative influence on its investment flow. Since operating a casino necessitates a large sum of capital, investment is crucial. However, investors were hesitant of investing in such a shady firm whose users' data had been breached and manipulated, which had a negative impact on the casino's business and stake holders.

So, these were the five Social issued caused by the data breach via ElasticSearch server.

5. Ethical Issues

Ethics is a set of moral ideas and beliefs about what is good and wrong. A conflict between right (ethical) or wrong (unethical) or a scenario placing alternatives on an entity pursuing ethical action is referred to as an ethical issue.

The following are some of the ethical issues raised by data breach: -

Figure 1: Deontology Theory

(i)   Security Liability: The ElasticSearch server's goal was to store, search, and analyze massive amounts of data in near real-time and provide results in milliseconds. According to the deontology theory, the server breach that occurred via the Elasticsearch server was totally unethical. As per Deontology theory, individuals should follow their rules and regulations regardless of the scenario, but the security researcher and the team working behind the server were unable to follow their primary rule, which was to keep the data properly and securely, and instead the data was leaked, causing the people to suffer.

Figure 2: Utilitarianism Theory

(ii)   <u>Carelessness in data security</u>: ElasticSearch server took the unethical decision to leave data accessible online without a password, resulting in the exposing of millions of users' private data. The security team of the ElasticSearch server's activities show an obvious disregard for customers and the general welfare of society. This is a blatant breach of utilitarianism, which argues that the most ethical action is one that brings the greatest amount of happiness to the largest number of people the data leak bought the harm and misery to people. The massive scale of the data leak exemplifies the impact of ElasticSearch server's operations on society.

Figure 3: Right Theory

(iii)   <u>Violation of Privacy</u>: Every individual has the right to privacy. People can have private information, photos, videos and their online credentials like username, password, account number, email address. Everyone keeps all of their private credentials safe and secure since a breach of private credentials might have serious implications. According to Right theory, the data leak by ElasticSearch server is plainly unethical. Our right to privacy was violated by the data breach in which millions of sensitive records were released online.

Figure 4: Virtue Theory

(iv)   <u>Risking customer data</u>: According to the virtue theory, leaking millions of crucial user data from an online gambling business via an ElasticSearch server was completely unethical. As per virtue theory, an individual or a firm should constantly do the right thing in order to get positive results. People had sent all of their credentials to the online casino organization, and the casino was certain that the ElasticSearch server would protect and secure their user data. The server's purpose was to safeguard the data from all threats and keep it safe and secure, but it failed to do so, and this was not the right thing. The right thing to do would be to uphold their commitment and keep the data safe and secure.

So, these were the four Ethical issued caused by the data breach via ElasticSearch server.

6. Professional Issues

Professional ethics are standards that regulate a person's or a group's behavior in the workplace (psychology.fandom, 2015). Professional issues are disputes concerning ethical or practical behavior that support competent professional activity. Due to ElasticSearch server's lack of professionalism in terms of cybersecurity, an online casino was the victim of a data breach. This was not the first or last data breach via ElasticSearch server, demonstrating the unprofessionalism and negligence of the team of employees in charge of millions of customers' data.

The following are some of the professional issues brought on by the data breach on the ElasticSearch server:-

(i)   Privacy: Professionals should be respectful of the privacy of others and protect the personal information and data, according to the IEEE professional code of conduct. However, the data leak via ElasticSearch server broke this very professional rule of conduct. Millions of confidential records were exposed, revealing the unprofessional nature of the ElasticSearch server's developers. The security team for the ElasticSearch server took the privacy of millions of registered users extremely lightly and managed it in an unprofessional manner, which might have highly negative and detrimental effects for those people, including identity theft, blackmailing, and many other issues.

(ii)   Damage to personal property: According to the professional code of conduct developed by IEEE, professional people shouldn't provide harm to others personal property. But the ElasticSearch server and the online casino form bought harm to the millions of personal property i.e. credentials in the form of data breach. The harm had several negative consequences to the people and casino itself affecting the mental health and business respectively.

(iii) Honesty: One of the most fundamental professional codes of conduct is honesty. ElasticSearch server was not honest about its high security and handling millions of data safely and securely to the online casino form. They offered and guaranteed their effectiveness and sophisticated technology to manage and safeguard millions of data, but it all turned out to be false promises and optimistic statements designed to impress the online casino form. The casino's action of leaving

the server open online without the password was extremely dishonest and unprofessional, resulting in the breach of millions of records. Customers felt betrayed and cheated as a result of the casino's lack of security.

(iv)   Advocacy: ElasticSearch servers benefit the public by serving as responsible advocates for those who are represented. They claimed to store and search massive amounts of data in real time, and to respond in milliseconds. Since they were unable to meet their advocacy of adequately keeping data, their advocacy and strong vows to their work ethics became phony and hollow, resulting in one of the largest data breaches in recent history. ElasticSearch's activities appear to imply that they were confined to making false promises and were negligent with their work ethics, which destroyed their relationships with their clients.

(v)   Obedience of the law: Protecting sensitive customer data is a legal requirement for businesses. The security of a user's personal data serves as a foundation of trust between the user and any business, which can lead to the flourishing or drowning of any business. According to the law, the casino was required to protect all sensitive client information, for which they chose ElasticSearch as their search engine. However, the server's negligence resulted in a data breach, which ultimately resulted in the online casino breaking the law, which counted as a violation of IEEE's professional code of conduct.

So, these were the five Professional issued caused by the data breach via ElasticSearch server.

7. Conclusion

To conclude, the issue involving the ElasticSearch server was examined and reported in terms of legal, social, ethical, and professional ethics. Books, journals, and research materials were quite useful in fully comprehending the scandal and determining if it was an ethical or unethical activity. Along with books and journals, tutors' study materials available on Google Classroom were really useful, and the tutors themselves were extremely helpful in resolving all of the course's ambiguities and dilemmas.

The harm to the ElasticSearch server may have been minimized if the server's security team had followed their rules and regulations. According to the deontology theory, everyone should carry out their obligations and duties, no matter how great or minor their duty are. If the security crew understood their responsibilities and work ethics, they would not leave the server up without a password. As a result, the security team should learn from their past mistakes and carelessness and recognize that they bear a significant amount of responsibility for handling users' data safely and securely by focusing on built-in protections such as secure authenticated sign-in, proper encryption, layered security, and audit logging.

8. References

psychology.fandom. (2015, 12 25). Retrieved from https://psychology.fandom.com: https://psychology.fandom.com/wiki/Professional_issues_in_clinical_psychology#:~:text=Profes sional%20issues%20are%20areas%20of,that%20underpin%20good%20professional%20practice .

sra.org.uk. (2017). Retrieved from https://www.sra.org.uk/consumers/choosing/legal-issue/#:~:text=A%20legal%20issue%20is%20something,or%20resolved%20by%20the%20law.

study.com. (2019, 05 11). Retrieved from https://study.com: https://study.com/academy/lesson/social-issues-definition-examples.html

technologyevaluation. (2019, 09 11). *technologyevaluation*. Retrieved from www3.technologyevaluation.com: https://www3.technologyevaluation.com/solutions/53717/drawio

techopedia. (2012, 08 13). *techopedia*. Retrieved from /www.techopedia.com: https://www.techopedia.com/definition/3818/inter-process-communication-ipc

techtarget. (2019, 05 10). *techtarget*. Retrieved from www.techtarget.com: https://www.techtarget.com/searchsoftwarequality/definition/collaboration-diagram

thunderstone. (2019, 08 24). Retrieved from https://www.thunderstone.com/blog/archive/what-is-the-difference-between-a-database-and-a-search-engine/#:~:text=Databases%20and%20search%20engines%20are,engines%20can%20search%2 0unstructured%20text.