Appreciate the roles and responsibilities of computer professionals.

Computer professionals are in charge of designing, developing, and maintaining software and hardware systems that are necessary in today's world. Their roles and responsibilities differ depending on their position-specific area of expertise. However, the following are some general tasks that computer professionals are typically in charge of: (Colorado State University Global, n.d.):

1. **Developing software:** Computer professionals are responsible for developing software applications that meet the needs of their clients. This may involve programming, testing, and debugging software to ensure it functions correctly and efficiently (Perry, 2007).
2. **Maintaining hardware:** Computer professionals are also responsible for maintaining the hardware components of computer systems. This includes repairing or replacing damaged or malfunctioning parts, upgrading hardware to improve performance and ensuring that hardware is up-to-date with the latest technology (CMRP, 2014).
3. **Providing technical support:** Computer professionals are often the first point of contact for users experiencing technical issues with their computer systems or software. They are responsible for promptly diagnosing and resolving technical problems to minimise downtime and keep systems running smoothly (AccessEngineering | McGraw-Hill Education - Access Engineering, n.d.).
4. **Securing systems:** Computer professionals must ensure that computer systems are secure and protected from unauthorised access. This involves implementing security measures such as firewalls, antivirus software, and encryption to prevent hacking and other cyber threats (Bandari, 2023).
5. **Analysing data:** Computer professionals often analyse and use data to inform business decisions. This may involve collecting, organising, and interpreting data from various sources and using it to develop insights and recommendations (Langer, 2007).
6. **Managing projects:** Computer professionals often manage software development projects from start to finish. This may involve coordinating teams of programmers, designers, and other professionals, setting project timelines and goals, and ensuring that projects are completed on time and within budget (McManus, 2012).

Overall, computer professionals play a critical role in ensuring that computer systems and software are developed, maintained, and operated effectively to meet the needs of their users.

Examine the various challenges and threats a computer professional may face.

Computer professionals face a variety of challenges and threats in their work, including:

1. **Cybersecurity threats:** Cyber-attacks are an ever-present threat to computer systems, and professionals must constantly be vigilant to prevent data breaches, theft of sensitive information, and other forms of cybercrime. They must also be aware of the latest cybersecurity threats and trends and take steps to keep their systems and data safe (The Changing Face of Cyber-Attacks: Understanding and preventing both external and insider security breaches Russell Miller CA Security Management, 2013).
2. **Hardware and software failures:** Computer systems can fail due to a variety of reasons, including hardware malfunctions, software bugs, and natural disasters. When this happens, computer professionals must work quickly to diagnose and fix the problem to minimise downtime and prevent data loss (AccessEngineering | McGraw-Hill Education - Access Engineering, n.d.).
3. **Complexity of technology:** Technology constantly evolves, and computer professionals must keep up with the latest developments to stay ahead. This can be challenging, as new technologies can be complex and difficult to implement, requiring significant training and expertise (Greenhalgh et al., 2017).
4. **User error:** Even the most well-designed computer systems can only be helpful if users make errors or follow proper procedures. Computer professionals must ensure that users are adequately trained and educated on using methods and developing processes and policies to prevent user errors (Léger et al., 2011).
5. **Regulatory compliance:** Many industries are subject to regulatory requirements, such as data protection laws, which can be complex and challenging to navigate. Computer professionals must ensure that their systems comply with all relevant regulations and keep up-to-date with changes to these regulations over time (Pearson, 2009).
6. **Organizational resistance:** Some organisations may resist change, making it difficult for computer professionals to implement new technologies or processes. They must effectively communicate the benefits of these changes to management and other stakeholders and work to overcome resistance and opposition (Lorenzi & Riley, 2000).

To be successful, computer professionals must manage these challenges and threats effectively while staying up-to-date with the latest developments in their field. They must be skilled problem-solvers, able to work quickly and effectively under pressure, and dedicated to improving their systems and processes.

Apply professional ethics and code of conduct in computing practices.

Professional ethics and a code of conduct are essential in computing practices to ensure that professionals adhere to ethical principles and behaviour. More importantly, based on BCS (2022), here are some fundamental principles of professional ethics and code of conduct in computing practices:

1. **Confidentiality**: Computer professionals must ensure the confidentiality of sensitive information, such as personal data, financial information, and intellectual property. This includes protecting the data against unauthorised access, use, or disclosure.
2. **Integrity**: Computer professionals must be honest and trustworthy and avoid conflicts of interest. They must not engage in any activities that could compromise their objectivity or act in a way that is not in the best interests of their clients or employers.
3. **Professionalism**: Computer professionals must conduct themselves professionally and maintain high competence and knowledge. They must keep up-to-date with the latest technological developments and seek professional development and learning opportunities.
4. **Respect for others:** Computer professionals must respect the rights and dignity of all individuals and avoid engaging in discriminatory or harassing behaviour. They must also be aware of cultural differences and respect diversity in the workplace.
5. **Responsibility**: Computer professionals must take responsibility for their work and meet their obligations to their clients or employers. They must also take responsibility for the impact of their work on society and the environment and strive to minimise any negative consequences.
6. **Compliance with laws and regulations:** Computer professionals must comply with all relevant laws and regulations, such as data protection laws, intellectual property laws, and software licensing agreements.

By adhering to these principles, computer professionals can ensure that they conduct themselves professionally and ethically and maintain the trust and respect of their clients, employers, and society. Additionally, adherence to these principles can help prevent legal and ethical violations, improve the quality of work, and contribute to the overall success of the computing industry.

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