**IT Infrastructure Management**

**Week 10 Assignment**

1.List out the preferred characteristics of a performance and tuning process owner? Explain in detail.

## Answer 1: Performance and Tuning

Performance and tuning is the process of measuring, analyzing, and optimizing the performance of a system or an application. Performance refers to how well the system or the application meets the requirements and expectations of the users and the stakeholders in terms of speed, reliability, scalability, availability, etc. Tuning refers to the actions taken to improve the performance by adjusting the configuration, parameters, code, design, or architecture of the system or the application.

**Performance and Tuning Process Owner**

A performance and tuning process owner is the person who is responsible for overseeing and managing the performance and tuning process in an organization. The performance and tuning process owner defines the performance goals and objectives, plans and executes the performance tests, monitors and analyzes the performance results, identifies and resolves the performance issues, and reports and communicates the performance status and recommendations.

**Preferred Characteristics of a Performance and Tuning Process Owner**

Some of the preferred characteristics of a performance and tuning process owner are:

* **Subject matter expertise**: A performance and tuning process owner should have a deep knowledge and understanding of the system or the application under test, as well as the tools, techniques, and best practices for performance testing and tuning. A performance and tuning process owner should also be familiar with the business requirements, user expectations, service level agreements, and key performance indicators for the system or the application [1](https://www.knowledgehut.com/blog/quality/process-owner).
* **Analytical skills**: A performance and tuning process owner should have strong analytical skills to collect, interpret, and visualize the performance data, identify the performance bottlenecks, root causes, and impacts, and propose effective solutions for performance improvement. A performance and tuning process owner should also be able to use various tools and methods for performance analysis, such as load testing tools, profiling tools, monitoring tools, log analysis tools, etc [2](https://www.oreilly.com/library/view/it-systems-management/9780136123521/ch08.html).
* **Problem-solving skills**: A performance and tuning process owner should have excellent problem-solving skills to troubleshoot and resolve the performance issues in a timely and efficient manner. A performance and tuning process owner should also be able to prioritize the issues based on their severity, urgency, frequency, and business impact, and apply appropriate techniques for performance tuning, such as code optimization, parameter tuning, resource allocation, caching, load balancing, etc [3](https://k6.io/blog/performance-testing-vs-performance-tuning/).
* **Communication skills**: A performance and tuning process owner should have effective communication skills to coordinate and collaborate with various stakeholders involved in the performance testing and tuning process, such as developers, testers, architects, managers, users, etc. A performance and tuning process owner should also be able to document and report the performance test plans, results, issues, recommendations, etc., in a clear and concise manner .

2.An online banking application encompasses a complete IT infrastructure management system. For such an application, identify the impact of the major five resource environments and list out the probable performance issues in each of the five major resource environments.

## Answer2: Resource Environments

Resource environments are the components or layers of an IT infrastructure that support the functioning of an online banking application. They include hardware, software, network, database, and human resources. Each resource environment can have an impact on the performance of the online banking application, and can also face various performance issues that need to be addressed.

## Impact and Performance Issues

Here is a table that summarizes the impact and performance issues of each resource environment for an online banking application.

| **Resource Environment** | **Impact** | **Performance Issues** |
| --- | --- | --- |
| Hardware | Hardware resources provide the physical devices and components that run the online banking application, such as servers, storage, processors, memory, etc. They affect the speed, capacity, reliability, and availability of the application. | Some of the performance issues that can occur in hardware resources are: - Hardware failures or malfunctions that cause downtime or data loss - Hardware bottlenecks or resource contention that cause slow response or poor throughput - Hardware configuration or compatibility issues that cause errors or instability - Hardware obsolescence or degradation that cause reduced performance or security |
| Software | Software resources provide the operating systems, applications, middleware, frameworks, libraries, etc. that enable the functionality and features of the online banking application. They affect the usability, security, scalability, and maintainability of the application. | Some of the performance issues that can occur in software resources are: - Software bugs or defects that cause errors or crashes - Software inefficiencies or memory leaks that cause high CPU or memory usage - Software vulnerabilities or misconfigurations that cause security breaches or data theft - Software updates or changes that cause compatibility or performance issues |
| Network | Network resources provide the connectivity and communication between the online banking application and its users, as well as between its internal components. They affect the accessibility, availability, reliability, and security of the application. | Some of the performance issues that can occur in network resources are: - Network congestion or latency that cause slow or intermittent access - Network failures or outages that cause unavailability or data loss - Network attacks or intrusions that cause security breaches or data theft - Network configuration or optimization issues that cause errors or poor performance |
| Database | Database resources provide the data storage and management for the online banking application. They affect the accuracy, consistency, integrity, and availability of the data. | Some of the performance issues that can occur in database resources are: - Database corruption or damage that cause data loss or errors - Database contention or locking that cause slow queries or transactions - Database design or indexing issues that cause inefficiencies or inconsistencies - Database security or backup issues that cause data theft or unavailability |
| Human | Human resources provide the personnel and skills that develop, maintain, operate, and support the online banking application. They affect the quality, productivity, efficiency, and satisfaction of the application. | Some of the performance issues that can occur in human resources are: - Human errors or mistakes that cause faults or failures - Human skills or knowledge gaps that cause delays or defects - Human communication or collaboration issues that cause misunderstandings or conflicts - Human motivation or morale issues that cause dissatisfaction or turnover |