

1. Project Idea: An IoT based Smart Waste Management System using RFID.

Quality Attributes	H	M	L	Justification
Availability		✓ (3)		The system should be available and ready to mask or repair its faults since the faults and failures can cause excessive garbage to be cumulated. The system should continue working if one or few modules malfunction. And no single point of failure in system would affect the performance and safety.
Performance			✓ (5)	The system to support the interoperable attribute would be possible with the cost of computing resources and cause a decreased performance. However, interoperable is crucial for an IoT project.
Usability	✓ (2)			Generally, the garbage management system would be read by the drivers who collect garbage who might not have sufficient background knowledge. Therefore, the system should be very easy to interact and user-friendly. Else, the goal of entire system fails.
Interoperability	✓ (1)			The system encompasses various devices, and the interoperability attribute is indispensable and given the highest priority.
Modifiability		✓ (4)		The system may also be expanded across regions and it would be upscaled in the future. Thus, this should be modifiable over time. But it is a less prioritized attribute.
Security			✓ (6)	Security is important. Rather, multiple level of security measures would impact usability and performance. Hence, the usability is prioritized over security.

2. Project Idea: Online Shopping Cart System, a web-based application to purchase things online.

Quality Attributes	H	M	L	Justification
Availability		✓ (5)		Generally, the system becomes unavailable as it encounters any attack or hardware failure. A number of acknowledging backups can be created to let the system continue functioning but it impacts the performance. Thus, performance is chosen over availability since customers need a quick response in an available system.
Performance		✓ (4)		Performance continues to be a fundamentally an important quality attribute and the tradeoff with scalability makes it less priority here. The growing system should be scalable and this may cause a delay in performance.
Usability	✓ (1)			New users should also be able to use, learn and understand quickly. Therefore, this quality is very important since the success of the software is in usage level of users and the emergence of internet has created varying types of users and generally this system lack the time for training the users.

*Order of Priority decreases with the increase in number where 1 depicts the high priority.

Modifiability		✓ (6)	The system needs to be active 24*7 to cater the needs of its users. Therefore, modifications are not certainly welcomed in short spans.
Scalability	✓ (3)		With the growing of this software, there will be addition of many users, many products, and many vendors. Thus, the system needs to be scalable. This might trade off performance, but the success of this software depends on growing many users and making more businesses online. So, scalability is prioritized over Performance.
Security	✓ (2)		User emails and can be maliciously stolen by man in the middle. There arises an issue of privacy and the users would hesitate to use. However, use of security mechanisms such as encryption or other security protocols would come at the cost of computing resources and affect performance. However, security gets prioritized over performance.

3. Project Idea: Reference Management System to manage referencing scholarly articles.

Quality Attributes	H	M	L	Justification
Performance		✓ (4)		The up scaling of the system would cause a delay in performance. However, the up scaling is unavoidable and it is least prioritized over Modifiability.
Usability			✓ (5)	The system usability is trade off with interoperability as the interfaces might turn complex to support interoperability and portability. However, interoperability is prioritized over usability since the potential users would have a sufficient or minimum background knowledge to use referencing.
Interoperability	✓ (3)			This can be a stand-alone system. However, if this can be used as an add-on with word processing software, that is interoperable, makes the system much usable.
Maintainability / Modifiability	✓ (1)			The system should be able to support to upgrade for new features and new technologies over time. Due to the growing list of publications the system must adhere and to be updated time to time. This quality attribute cannot be tradeoff with any other. Thus, highly prioritized.
Portability	✓ (2)			It is the ability to transfer a document from one environment to a different environment. This is also an important quality of this system since the generated references need to be added in different documents.

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