

Book Questions

Chapters 7

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7.1 Using the tabular notation shown in Figure 7.3, specify the weather station use cases for Report status and Reconfigure. You should make reasonable assumptions about the functionality that is required here.

Ans:

System	Weather station
Use case	Report status
Actors	Weather information system, weather station
Data	The Weather Information System receives a report from the weather station about the status of it's equipment.
Stimulus	The Weather Information System receives it's stimuli from the weather station through electromagnetic radio waves.
Response	The Weather Station sends the report of the current weather to the Weather Information System
Comments	This use case occurs often as the weather station has to send reports regularly too the Weather Information System

System	Weather station
Use case	Reconfigure
Actors	Weather Information System, Weather Station
Data	The Weather Station receives requests from the Weather Information System to reconfigure the current data which it will report.
Stimulus	The Weather Station receives it's stimuli from the Weather Information System via electromagnetic radio waves
Response	The Weather Information System confirms that it had received reconfiguration information from the Weather Station
Comments	This use case is seen when there are changes which need to be made to the software of the Weather Information System

7.3 Using the UML graphical notation for object classes, design the following object classes, identifying attributes and operations. Use your own experience to decide on the attributes and operations that should be associated with these objects.

- a messaging system on a mobile (cell) phone or tablet

- a printer for a personal computer
- a personal music system
- a bank account
- a library catalogue

Ans:

Messaging system on a mobile (cell) phone
Message (body, sender) Attachments
Create_message() Send_message() Edit-message() Copy_message() Notify() View_attachment()

Printer for a personal computer
document ink level paper error view
setup() print() cancel()

Personal music system
Song Loudness Play now Recent Playlists Display
play() stop() song() display_loudness() playlist() search() repeat()

Bank account
Account number Account type Balance Savings Transfer
open() debit() credit() transaction_type() transfer() close()

Library catalogue
Book Title Date created Date withdrawn Search Publication
search() new_book() delete_book() record_usage()

7.9 Using examples, explain why configuration management is important when a team of people are developing a software product.

Ans: Configuration management is an integral part of software development.

- a. By having a backup system, free from bugs or errors a specific system version can be used by all the software developers to refer to.
- b. Different components of the system have different versions. A configuration management software would be required to bring together the different components of the system, including different operating systems which component might be running on.
- c. Configuration management prevents redundancy in written code. For example, if a certain component in the system is upgraded to a newer version but if a member of the software development team corrects an error or bugs without knowing of the new component version release, it would lead to redundancy.

7.10 A small company has developed a specialized software product that it configures specially for each customer. New customers usually have specific requirements to be incorporated into their system, and they pay for these to be developed and integrated with the product. The software company has an opportunity to bid for a new contract, which would more

than double its customer base. The new customer wishes to have some involvement in the configuration of the system. Explain why, in these circumstances, it might be a good idea for the company owning the software to make it open source.

Ans: Open source software provides many different advantages:

- a. By providing an open source platform, the company would not be required to recruit new software developers. Doing so might strain their financial requirements.
- b. The company can collect royalty fees on any changes, modifications or improvements made to the system. The company would always hold rights or the patent on the original software development release.
- c. If the original software becomes outdated, the newer changes or improvements would still allow the customers to enjoy using the software.
- d. Using an open source model would allow for detection and resolution of bugs or errors in the system by external input. This may result in a higher quality product delivery.