

## SYSTEMS ANALYSIS & DESIGN

# SYSTEM MAINTENANCE

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# Chapter Description

## Expected Outcomes

- To explain types of system maintenance
- To identify factors that influence cost of maintenance
- To know several maintenance management issues

## References

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# System Maintenance

Maintaining system is the repeating SDLC but focusing on system change until the change is implemented.

The primary objective s associated with system maintenance are to correct errors or faults in the system.

System changes also to effect performance improvement , and adapt the system to changes in the operating or business environment.



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# Maintenance Process

Steps involve in maintenance process

- Obtain maintenance request
- Converting the request into modifications
- Designing modification
- Implementing modification



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# Maintenance Deliverables

Deliverables during maintenance phase are similar as deliverables during SDLC.

Basically maintenance phase is a subset of the activities in the whole development process.

The deliverables are the new version of the software and all documents which been created during maintenance.



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# Types of System Maintenance

## Definition:

System maintenance is an ongoing activity, which covers a wide variety of activities, including removing program and design errors, updating documentation and test data and updating user support.



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# Types of System Maintenance

Maintenance can be categorized into four classes:

- a. Corrective
- b. Adaptive
- c. Perfective
- d. Preventive



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# Corrective Maintenance

Corrective maintenance implies removing errors in a program, which might have crept in the system due to faulty design or wrong assumptions. Thus, in corrective maintenance, processing or performance failures are repaired.



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# Adaptive Maintenance

This type of maintenance focus on program functions are changed to enable the information system to satisfy the information needs of the user. It must be carried out if organizational changes involve:

- Change in organizational mission, objectives, policies etc.
- Change in organizational procedures
- Change in managers information needs
- Change in controls, security etc.



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# Perfective Maintenance

In perfective maintenance means adding new programs or modifying the existing programs in order to improve the performance of the information system.

This type of maintenance started to respond to user's additional needs which may be due to the modifications within or outside of the organization.

Outside changes are primarily environmental changes, which increase the information system effective and efficient.



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# Perfective Maintenance

These environmental changes may include:

New technology

Changes demand

Changes in economic and competitive conditions



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# Preventive Maintenance

In preventive maintenance changes made to a system to avoid possible future problem.



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# Maintenance Cost

Study shows that software maintenance cost is increasingly growing and estimates showed that about 90% of software life cost is related to its maintenance phase.

Factors that contribute to the cost of maintenance:

- System documents and output quality
- Hidden defects
- Maintenance staff conflict
- Unreliable tools
- etc.



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# Maintenance Issues

Numerous issues must be manage during maintenance phase such as:

Managing maintenance staff

Maintenance work always been viewed less priority

Development team always been rewarded more

Controlling maintenance requests

Handling configuration management



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# Maintenance Tools

Providing an effective tool for Software Maintenance is essential :

- Use suitable language for system maintenance and improve tools to use these languages.
- Use of system implementation such as CASE tools.
- Use of programming standards and protocols.
- Use of the principles, methods and modern programming techniques.



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