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# 软件工程

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# 8.1

## Maintenance is Necessary

# Maintenance

## ◆ Maintenance

➤ *Any* change to *any* component of the product (code, data, documentation) after it has passed the acceptance test and is delivered to the client and users.

## ◆ Why maintenance ?

# Types of maintenance

## 1. Corrective maintenance

- To correct residual faults ----

**Requirements, analysis, design,  
implementation, documentation, or any  
other types of faults**

- On average, 17.5% of maintenance

# Types of maintenance

## 2. Perfective maintenance

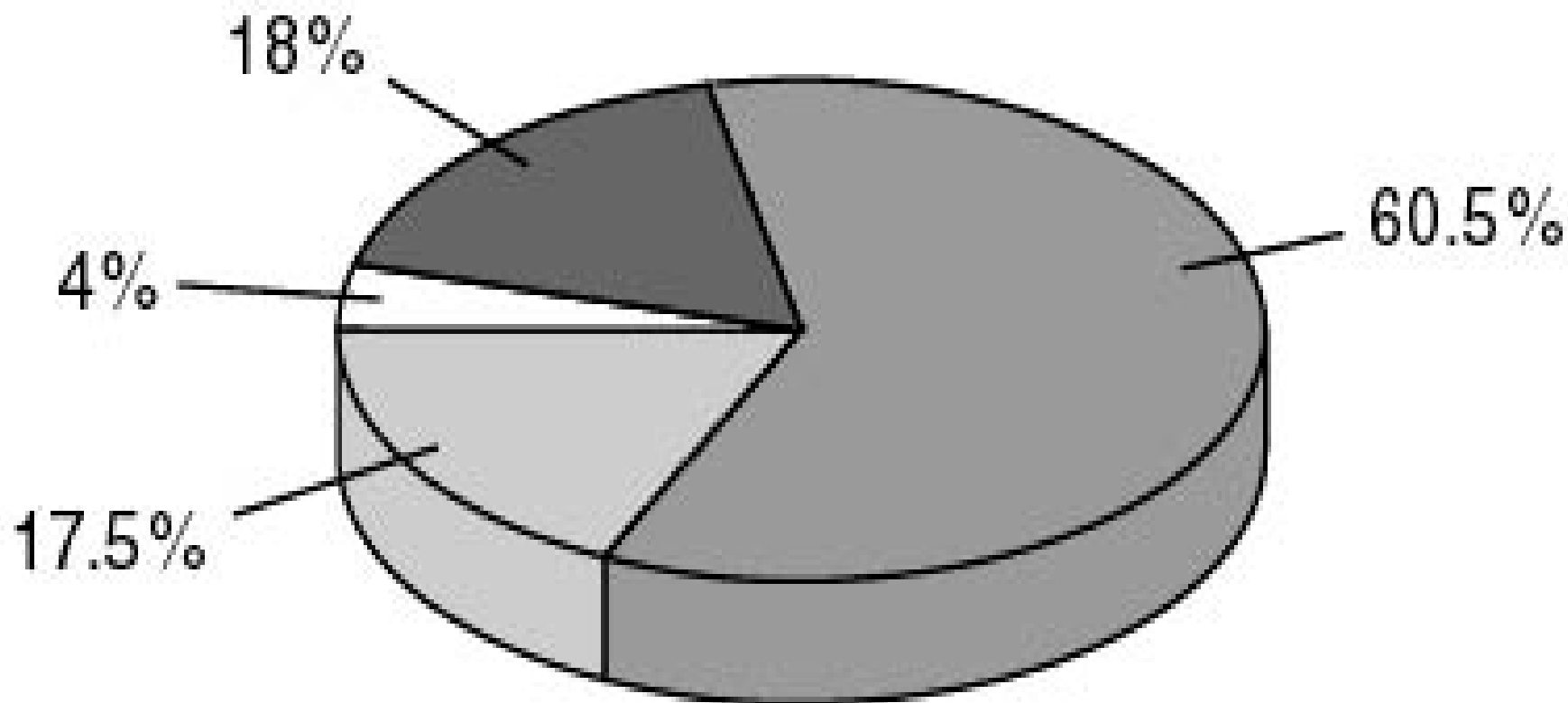
- **Client requests changes to improve product effectiveness**
  - **Add additional functionality**
  - **Make product run faster**
  - **Improve maintainability**
- **On average, 60.5% of maintenance**

# Types of maintenance

## 3. Adaptive maintenance

- **Responses to changes in environment in which product operates**
  - **Product ported to new compiler, operating system, and/or hardware**
  - **Change of tax code**
  - **5-digit ZIP codes change to 9-digit**
  - **ID changed from 15 bits to 18 bits**
- **On average, 18% of maintenance**

# Types of maintenance



 Corrective     Perfective     Adaptive     Other

# Is maintenance important?

- Yes, maintenance is **necessary**.
- While, is it **important**? For users? For client?  
For development organization?





# Importance of Maintenance

- ◆ **Maintenance keeps software alive  
---- in service.**
- ◆ **About 75% of the total cost of a product accrues during the maintenance phase.**
- ◆ **Maintenance is a major income source.**
- ◆ **SW organization's reputation.**



# Discuss

**If you were the manager in charge of post-delivery maintenance in a large software organization, what qualities do you look for when hiring new employees?**