

# Logging and Management in Java SE 17

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What Logging Is and How to Use It



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# Version Check



**This version was created by using:**

- Java 17
- IntelliJ IDEA 2021.3.2 (Ultimate Edition)



# Version Check



**This course is 100% applicable to:**

- Java 11 through Java 17
- Any version of IntelliJ



Not Applicable



**This course is NOT applicable to:**

- Anything before Java 1.4



## Relevant Notes



### A note on frameworks and libraries:

- It's important to use the latest version with the latest security updates
- Certain versions of Apache Log4J contain high risk vulnerabilities



# Overview



- **What is logging?**
- **Why and when do we need logging?**
- **Inspect an example**
- **Carved Rock Fitness user sign up problem**





**Logging is the act of writing information about events in the application to a file, also called the log file.**



Logging happens during the execution of the application.





**Logs show what happened in the application**

- Events
- Exceptions and errors
- Happy path

**Accessible after the execution of the application**



Software developers decide  
what is written to the log.





**Logging that the JVM does**

**Server logs**

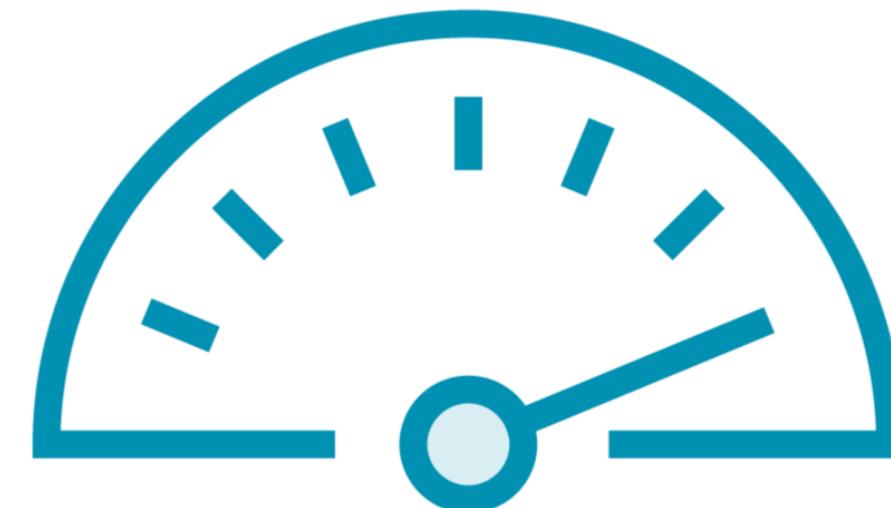
**System logs**



# Why Logging?



Troubleshooting



Performance analytics



Auditing

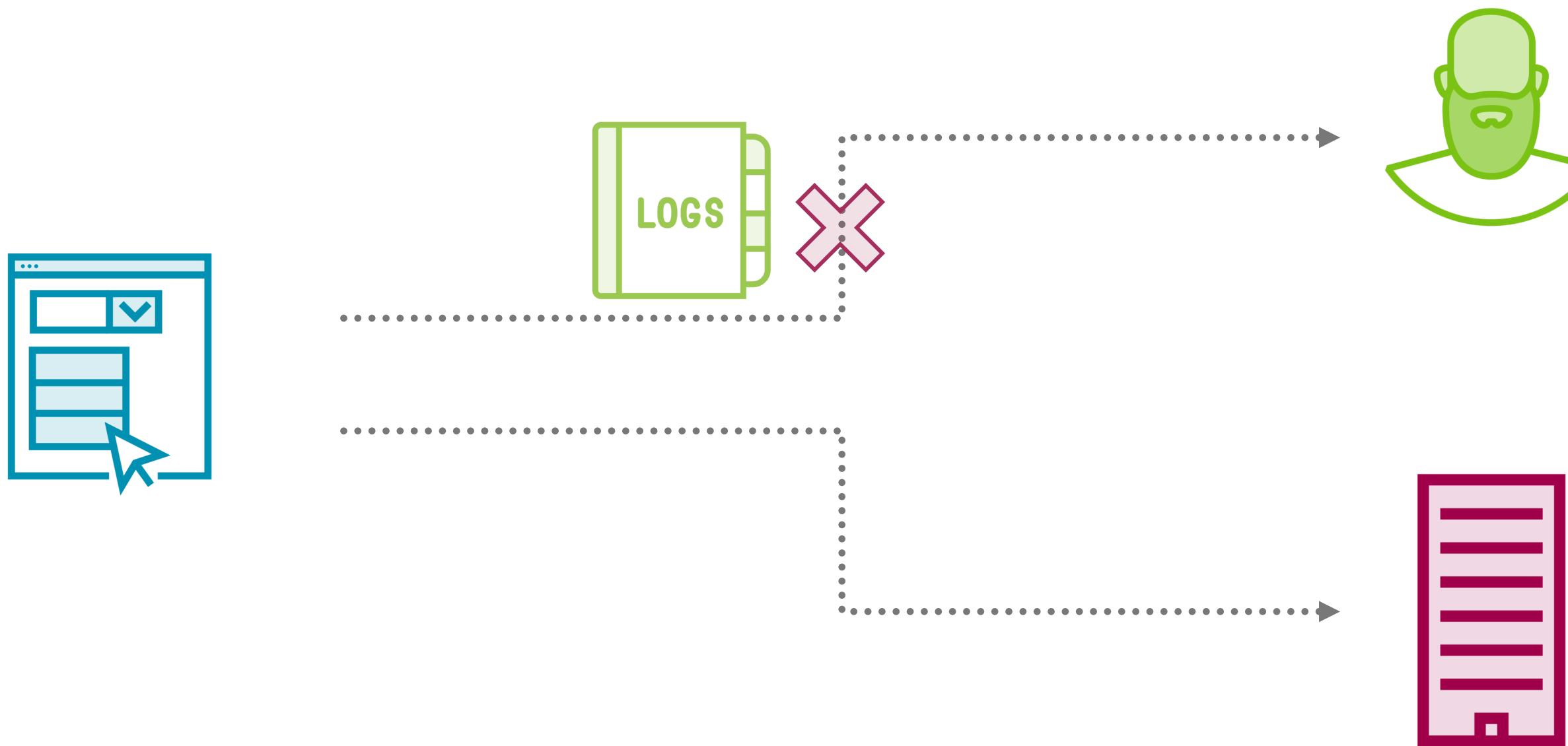


**Information on what is  
happening**

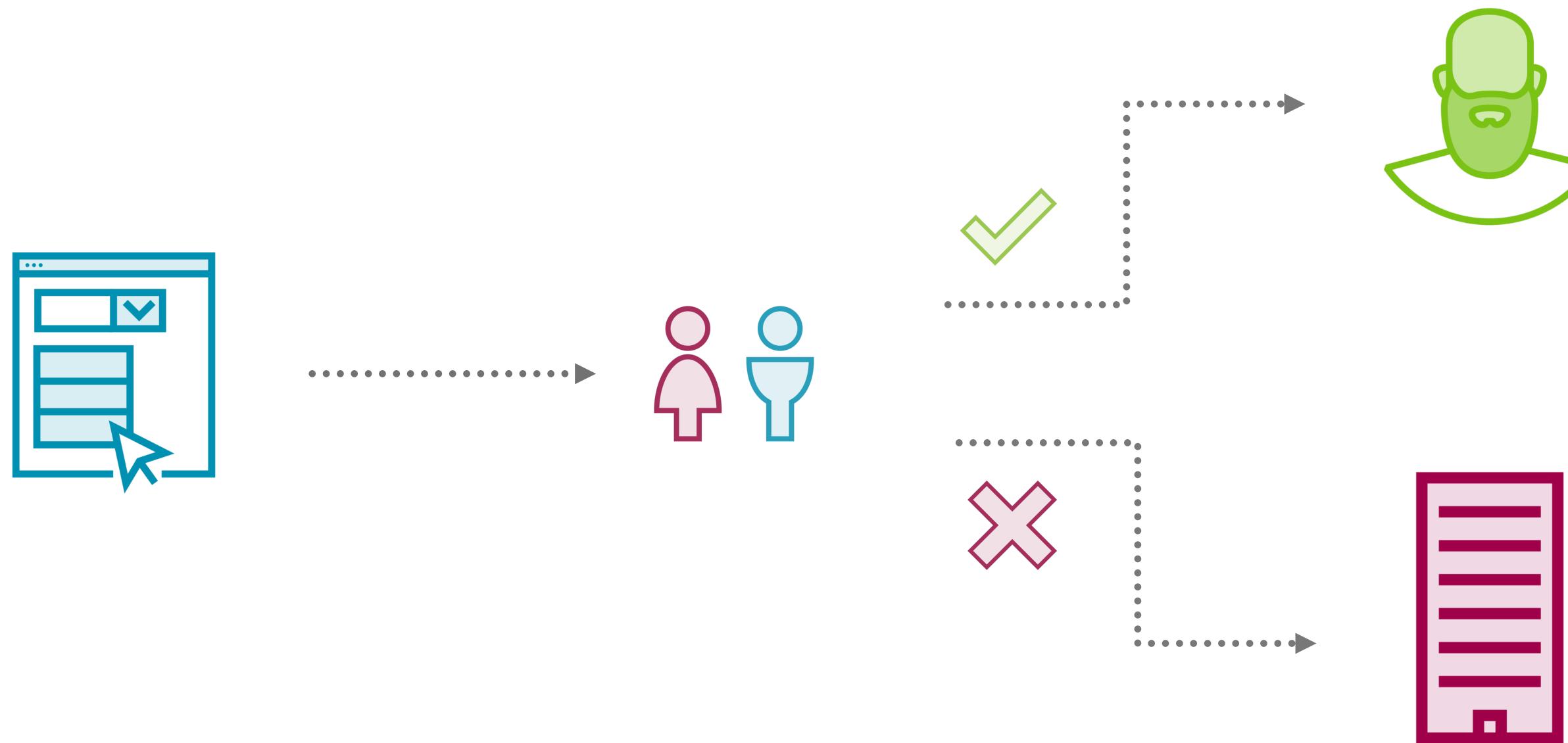
**Necessary for healthy  
applications**



# Example



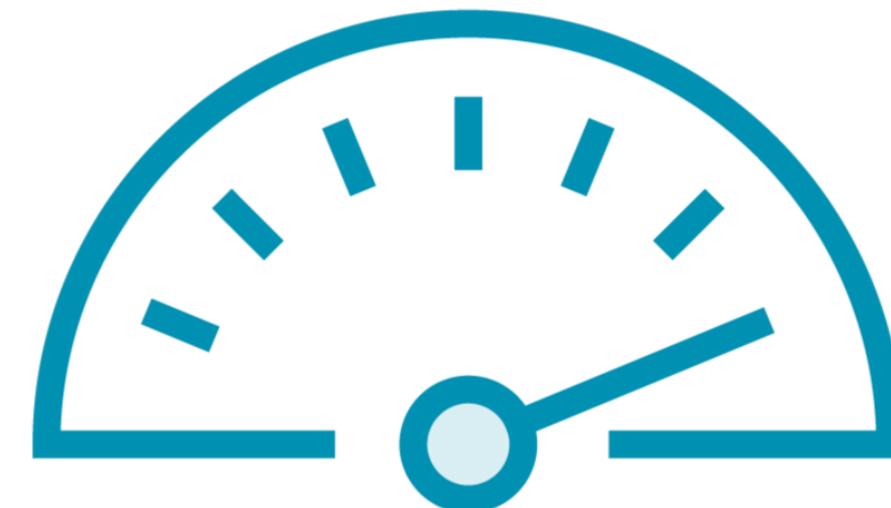
# Example



# Why Logging?



Troubleshooting



Performance analytics



Auditing





## Who Will Benefit From Logging?

**Software developers**

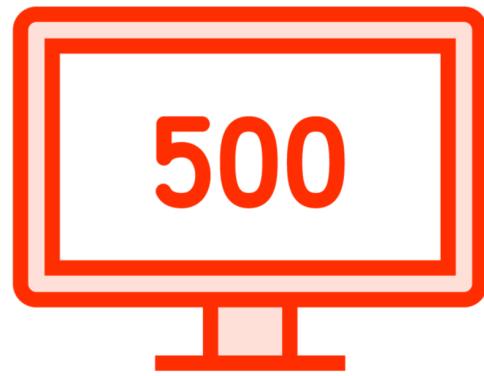
**System administrators**

**Support team**

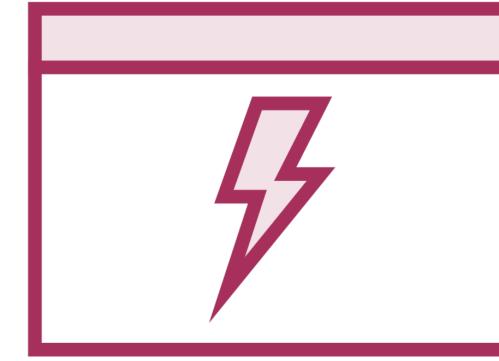
**End users!**



# When to Use Logging



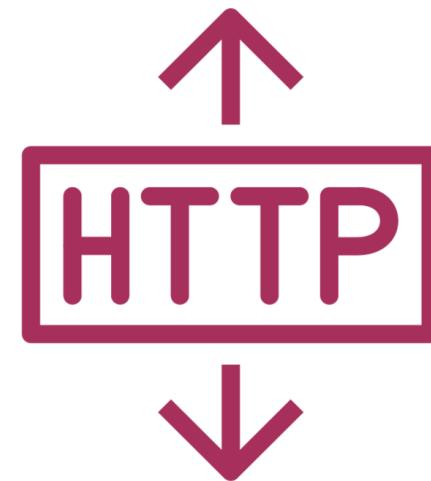
Exceptions and errors



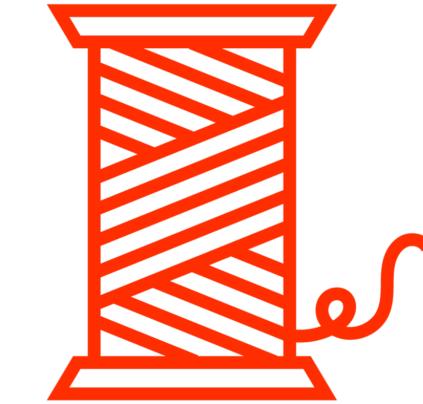
Events and states



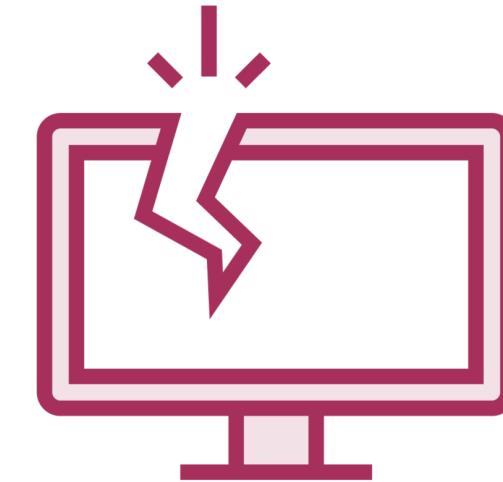
Debug info



HTTP requests



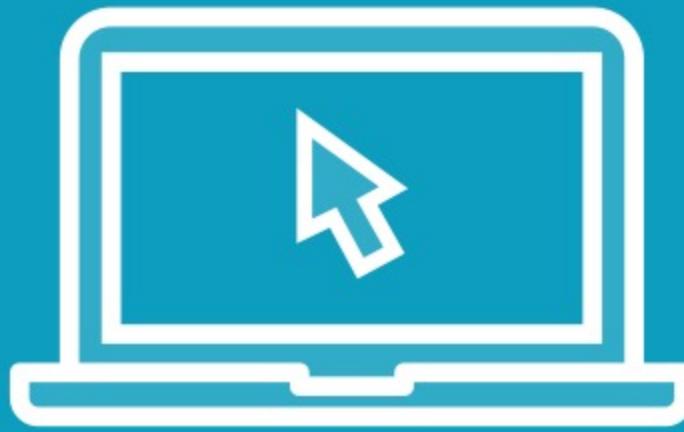
Thread usage



Frontend errors



# Demo



- **Carved Rock Fitness order problem**
- **No error message on the frontend**
- **Users cannot order after sign up**
- **Where to find this demo code**





What can we help you find?

SEARCH

CLOTHING FOOTWEAR EQUIPMENT BAGS & TRAVEL TRAIL REVIEWS

John Doe

Your Cart | log out



## Gear in your cart ...



### Headlight Helmet

\$59.95

Protect your noggin and light your way. The best of both worlds.

< 2 >  
Quantity

**\$119.90**

[Edit Item](#) | [Remove Item](#) | [Move to Wish List](#)



### Ultimate Dreamline Kayak

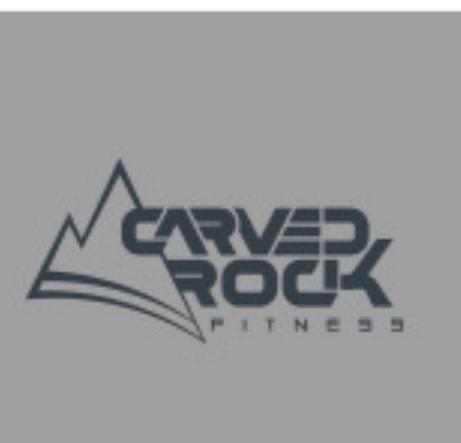
\$649.99

Carbon fiber body with platinum hooks make this the perfect gift for that ...

< 1 >  
Quantity

**\$649.99**

[Edit Item](#) | [Remove Item](#) | [Move to Wish List](#)



### Carved Rock Tee

\$15.00

Protect your noggin and light your way. The best of both worlds.

< XL >  
Size

< 1 >  
Quantity

**\$15.00**

[Edit Item](#) | [Remove Item](#) | [Move to Wish List](#)

## Order Summary

3 Items in cart: \$784.89

Est. Shipping & Handling: \$100.00

Est. Total **\$884.89**

**CHECKOUT**

# Demo



- **Get a logger**
- **Log!**
- **Adding basic logging to our case**



Up Next:  
Adding a Logger and Creating Log Messages

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# Adding a Logger and Creating Log Messages

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# Overview



- Overview of `java.util.logging`
- Log levels
- Log handler
- Different log methods
- Improve the Carved Rock Fitness user problem using logging along the way





**Different loggers available**

**Very popular library: log4j**

**Since Java 1.4: java.util.logging**



# Managing and Configuring Logging

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# Overview



- **Organizing our logging**
- **Logging to a file**
- **Log formatters**
- **Log filters**
- **Log Manager and configuration**
- **Happy client Carved Rock Fitness**



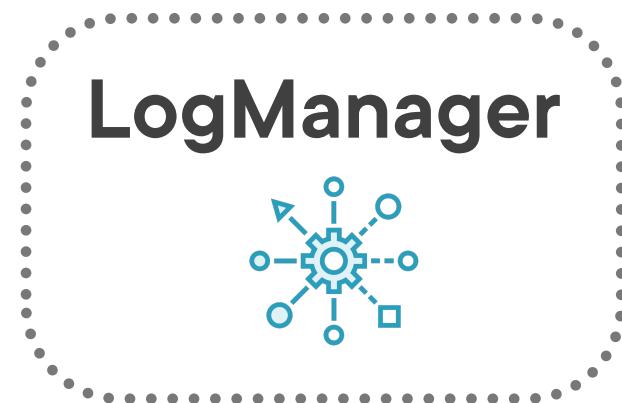
# Demo



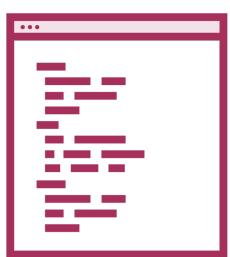
- Great we have logging
- But oh oh... It's a mess!
- And it's not even logging to a file...
- Change our logging so that it's logging to a file



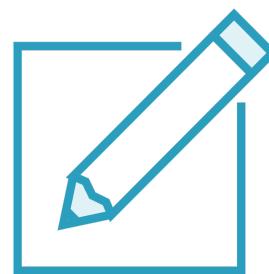
# Overview Java Logging



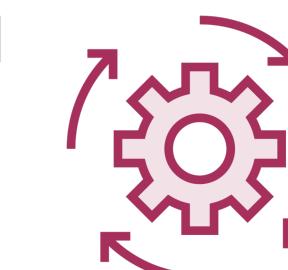
**App**



**Logger**



**LogRecord**



**External log file**



**Filter**

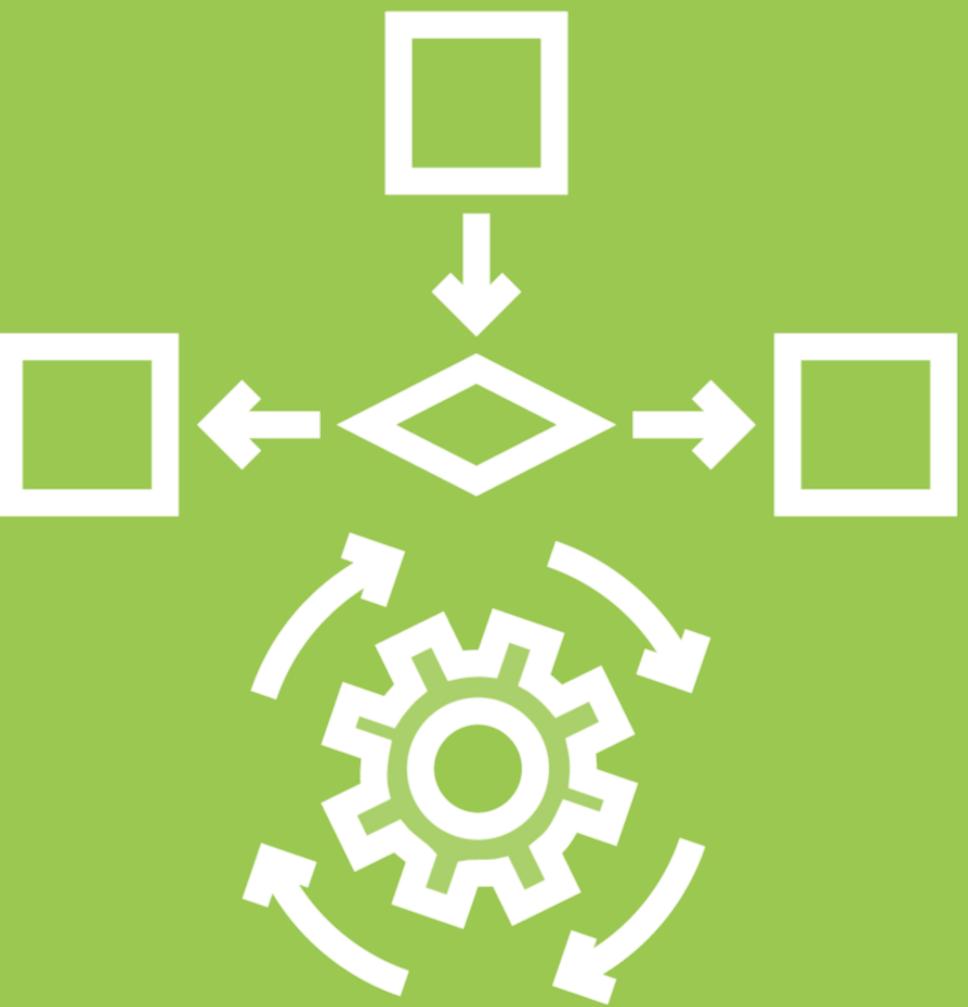


**Filter**



**Formatter**





# Log Formatters

Log formatters change the structure of the log message.



# Built-in Formatters



**SimpleFormatter**  
**Human readable way of depicting  
the log message**



**XMLFormatter**  
**Write the log message to standard  
XML format**



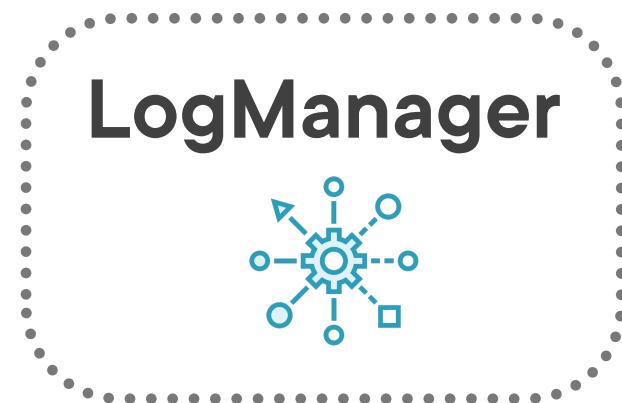
## Demo



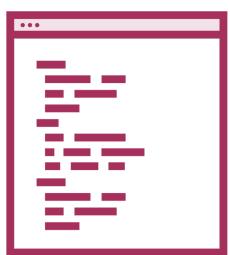
- Change our formatter



# Overview Java Logging



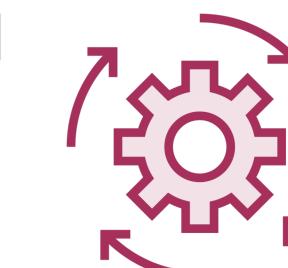
**App**



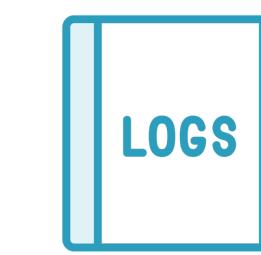
**Logger**



**LogRecord**



**External log file**



**Filter**



**Filter**



**Formatter**



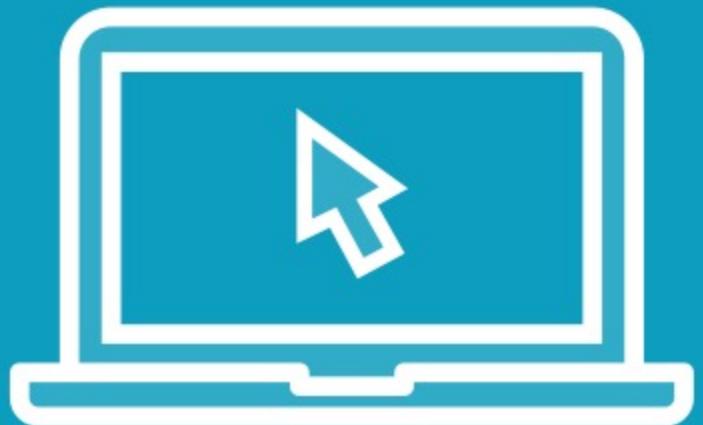
```
Filter filterAll = s -> false;  
fileHandler.setFilter(filterAll);
```

## Logging Filter

**Filter is an interface. The isLoggable method must be implemented. If it returns true for a certain log message, it will be sent to the handler and will be logged. If it returns false, it will be ignored.**

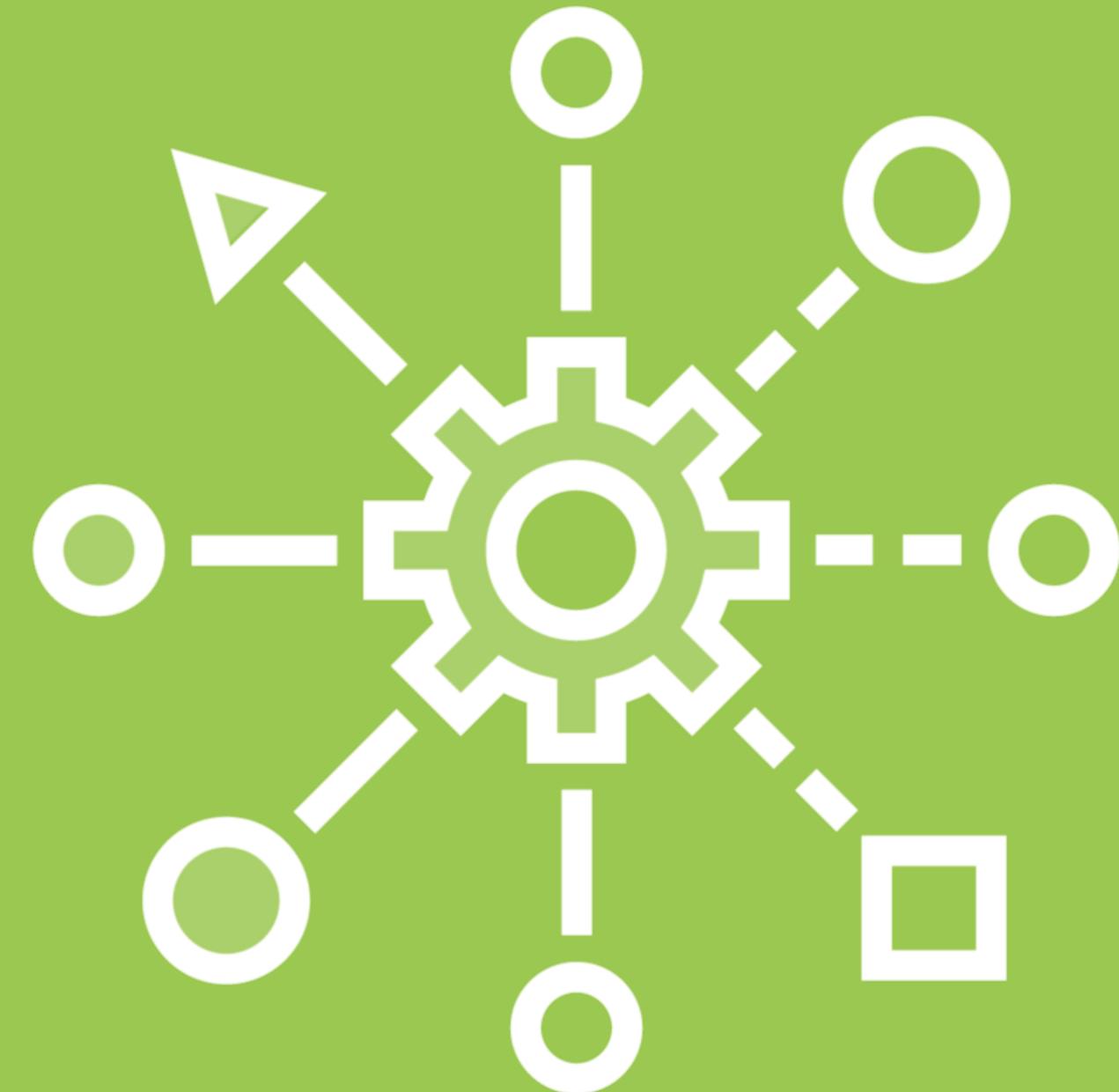
**Filter can be set on the logger.**

# Demo



– Add filtering





## LogManager

The LogManager is the class responsible for managing the logger hierarchy. It loads the configuration for all the loggers.



# Configuration File



**Load custom logging.properties**  
**Don't change the one in JRE home**  
**Custom file can be read by LogManager**



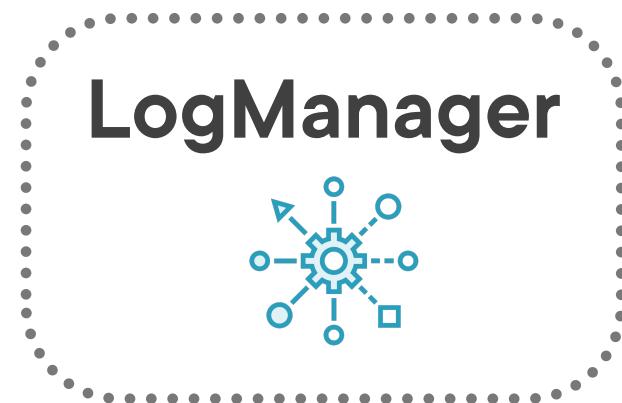
# Demo



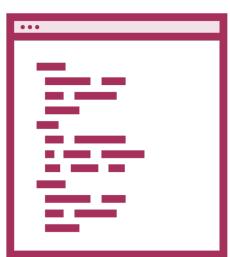
- **Write custom configuration file**
- **Create a LogManager**
- **Use the custom configuration file**



# Overview Java Logging



**App**



**Logger**



**LogRecord**



**External log file**



**Filter**



**Filter**



**Formatter**



# Summary



- **Organizing our logging**
- **Logging to a file**
- **Log formatters**
- **Log filters**
- **Log Manager and configuration**
- **Happy client Carved Rock Fitness**



A photograph of a diverse group of professionals in business attire, including men in suits and women in blouses and skirts, sitting in rows and clapping their hands. They appear to be attending a conference or seminar. The background is slightly blurred.

Case closed.

Up Next:  
Logging Best Practices

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