



Welcome to this session: Software Maintenance and Refactoring

The session will start shortly...

Questions? Drop them in the chat.
We'll have dedicated moderators
answering questions.





What is Safeguarding?

Safeguarding refers to actions and measures aimed at protecting the human rights of adults, particularly vulnerable individuals, from abuse, neglect, and harm.



To report a safeguarding concern reach out to us via email:
safeguarding@hyperiondev.com

Live Lecture Housekeeping:

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly.
- No question is daft or silly - ask them!
- For all non-academic questions, please submit a query:
www.hyperiondev.com/support
- To report a safeguarding concern reach out to us via email:
safeguarding@hyperiondev.com
- If you are hearing impaired, please kindly use your computer's function through Google chrome to enable captions.



Stay Safe Series:

Mastering Online Safety One Week/step at a Time

While the digital world can be a wonderful place to make education and learning accessible to all, it is unfortunately also a space where harmful threats like online radicalisation, extremist propaganda, phishing scams, online blackmail and hackers can flourish.

As a component of this BootCamp the **Stay Safe Series** will/is designed to guide you through essential measures in order to protect yourself & your community from online dangers, whether they target your privacy, personal information or even attempt to manipulate your beliefs.

Security Tip

"Enable login alerts for all your online accounts."

Why?

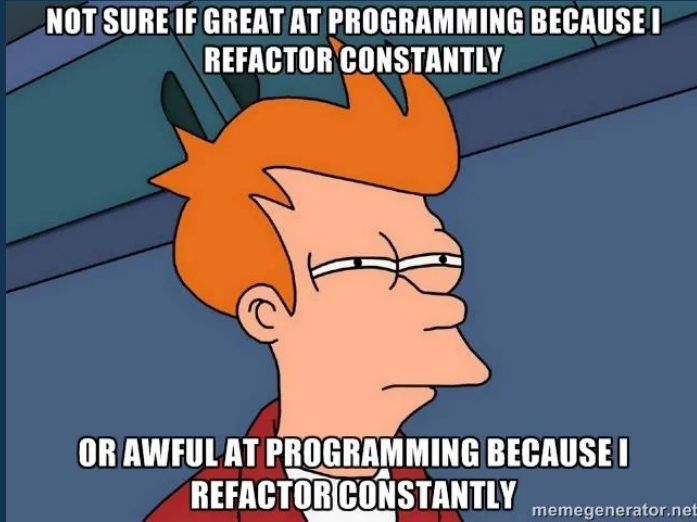
Login alerts notify you immediately if your account is accessed from an unrecognized device or location. This early warning system allows you to take quick action—such as changing your password or enabling multi-factor authentication (MFA)—to secure your account before further damage is done.

How to Enable:

- Check your account security settings for an option like "Login Alerts" or "Account Activity Notifications."
- Ensure the alerts are sent to a secure email or phone number that only you can access.

Stay proactive and keep hackers out by staying informed!

Maintenance and Refactoring



Learning Outcomes

- ❖ Explain the importance of software maintenance.
- ❖ Explain what refactoring is and how it improves software.
- ❖ Apply basic refactoring techniques using Python.
- ❖ Recognise code smells and propose refactoring solutions.



Software Engineering

Why do you think software needs maintenance after it has been developed?



Software Engineering

Can you think of a real-world example where a software update improved or fixed a program you use?



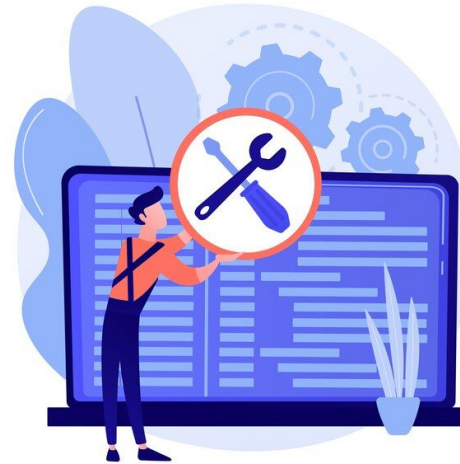
Software Maintenance

- Software maintenance refers to the process of modifying and updating a software system after its initial delivery to the customer.



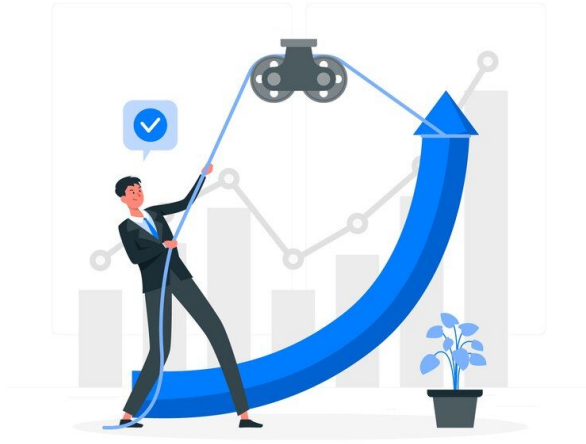
Aspects of Software Maintenance

- Bug Fixing
- Enhancements
- Optimisation
- Porting
- Re-engineering
- Documentation



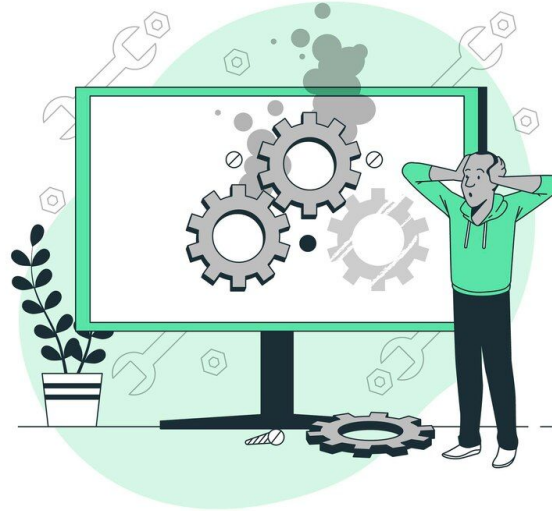
Software Maintenance

- Corrective
- Adaptive
- Perfective
- Preventive



Challenges

- High Cost
- Complexity
- Changing Requirements
- Interoperability Issues
- Lack of Documentation
- Legacy Code



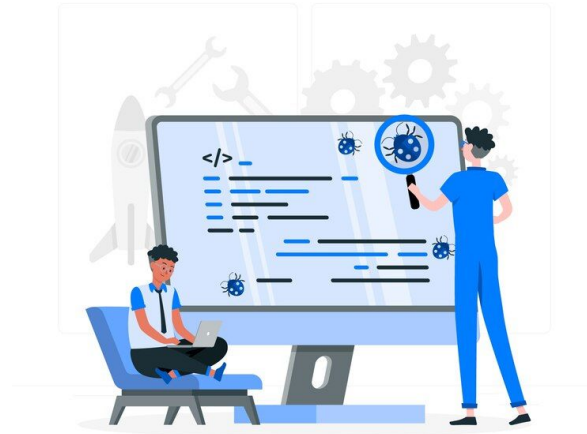
Advantages

- Improved Software Quality
- Enhanced Security
- Increased User Satisfaction
- Extended Software Life
- Cost saving



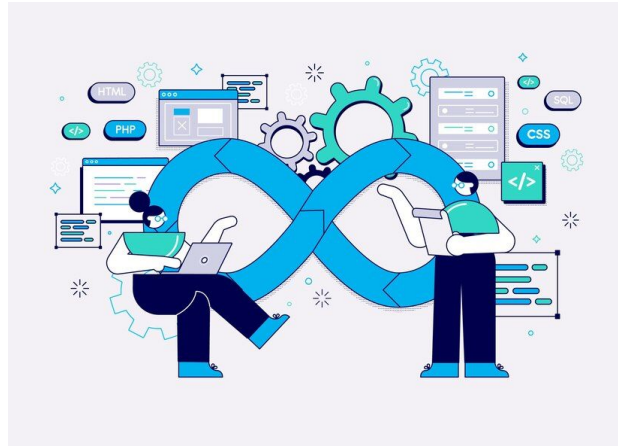
Disadvantages

- Cost
- Schedule Disruptions
- Complexity
- New Bugs
- User Resistance



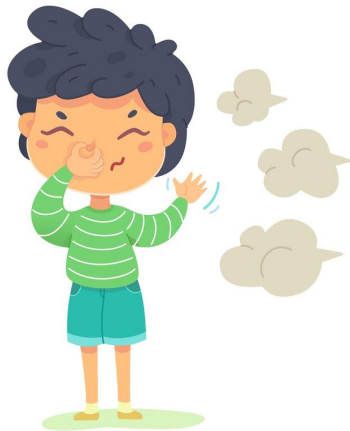
Refactoring

- Refactoring is the process of restructuring existing source code without changing its external behaviour



Code Smells

- Code smells are indicators in the our code that points to potential problems or areas for improvement.



Polls

Please have a look at the poll notification and select an option.

What is the main purpose of software maintenance?

- A. To rewrite the entire software from scratch
- B. To remove all features that users don't like
- C. To fix bugs, improve performance, and adapt to changes
- D. To test the software once before release

Polls

Please have a look at the poll notification and select an option.

What is refactoring in software development?

- A. Changing code structure to improve readability and efficiency without altering behavior
- B. Completely rewriting an application from scratch
- C. Adding new features to an existing program
- D. Fixing only syntax errors in the code

Polls

Please have a look at the poll notification and select an option.

Which of the following is a sign that code needs refactoring?

- A. The code is easy to read and well-structured
- B. The program has redundant or duplicated code
- C. The software runs without any issues
- D. The code follows best practices and is well-documented

Q & A SECTION

**Please use this time to ask
any questions relating to the
topic, should you have any.**

Thank you
for attending



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