SOLID Principles & Clean Code

Proiect cofinantat din Fondul Social European prin Programul Operaţional Capital Uman 2014-2020

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AGENDA

1. Why and what is S.O.L.I.D
2. S.O.L.I.D. deep dive
3. Bonus clean code principles
4. Clean code guidelines
5. References

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Why and what is S.O.L.I.D

- Are a set of rules that enable developers to write software that is easily extendable, maintainable easy to read and easy to adapt to changing requirements
- If we don’t conform to these standards the code can become inflexible and more brittle, small changes in the software can result in bugs

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SINGLE RESPONSIBILITY PRINCIPLE

How to identify

- A class or method has more than one responsibility

Good

- Less complexity(one thing per class, more readable, easy to test)
- Methods become highly related (work together to do one thing well - coherent)
- Classes less dependent on each other(decupled)

Downsides

- What is "one reason to change"? Where to draw the line?
- In legacy projects is difficult to implement, takes time
- Explosion of tiny methods, take in consideration better organizing and grouping of files

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OPEN CLOSE PRINCIPLE

How to identify

- A class or function is always open for modification, in other words always allows adding more logic to it

Good

- Lower chances to introduce bugs
- Only test and deploy new features

Downsides

- Sometimes just can't be applied and you need to modify existing functionality
- When that happens try to make as few changes as possible

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LISKOV SUBSTITUTION PRINCIPLE

How to identify

- CREATE A BEHAVIOR THAT IS NOT SPECIFIED IN THE BASE CLASS
- USE UNEXPECTED BEHAVIORS THAT DO NOT POSE AN ISSUE AT RUNTIME, BUT DON'T WORK FUNCTIONALLY

Good

- Keep functionality intact and still be able to use a subclass as a substitute for a base class
- Code reusability
- Prevents problems emerging at runtime but rather at build time

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INTERFACE SEGRAGATION PRINCIPLE

How to identify

- Classes MUST IMPLEMENT PARTS OF INTERFACE THAT THE NOT NEED
- WE PASS NULL (OR SIMILAR) AS A PARAMETER
- METHOD THROWS NOT IMPLEMENTED EXCEPTION

Good

- A client is not forced to implement parts of interfaces that are not used
- Easier to implement
- Methods are highly related to each other
- Better readability and maintainability
- Easier to test, not need to mock so much

OBSERVATIONS

- By violating this we also violate single responsibility principle

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DEPENDENCY INVERSION PRINCIPLE

Good

- Easy to swap implementations
- Easy to test (mock dependencies you don't care of)
- Avoid using new in code
- Don't be tight coupled to other classes
- Parallel development is possible
- Can use DI
- Can use a container to register all dependencies

Observations

- Use interfaces
- Dependency inversion is the principle
- Dependency injection is used to make the principle work

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BONUS CLEAN CODE PRINCIPLES

- DRY
- Don’t Repeat Yourself

KISS

- Keep It Simple Stupid/ Keep It Stupid Simple

YAGNI

- You Aren’t Gonna Need It

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CLEAN CODE GUIDELINES

- Follow S.O.L.I.D Principles
- Code should readable (spacing, formatting)
- Code should be easy to understand (naming conventions)
- Code should be well structured (solutions, namespaces, folders)
- Code should be highly testable, extendable and easy to maintain
- Be consistent
- Avoid comments
- Try to write code that unfolds like a story when is read

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REFERENCES

- Clean Code A Handbook of Agile Software Craftsmanship by **Robert C. Martin** (added with the presentation)

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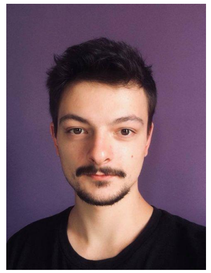
Thank you!



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