1. 10 Advantages of an IDE Compared to a Simple Text Editor

* Syntax highlighting for multiple programming languages, making code easier to read and debug.
* Code completion and intelligent suggestions that speed up writing and reduce errors.
* Integrated debugging tools to set breakpoints, inspect variables, and step through code.
* Project management features such as file explorers and build systems.
* Refactoring tools to safely rename variables, extract methods, and restructure code.
* Integrated version control support (e.g., Git) for managing code changes and collaboration.
* Built-in terminal or command line access for running scripts and commands.
* Error detection and real-time linting to catch mistakes as you type.
* Code templates and snippets to automate repetitive coding tasks.
* Integration with build and deployment tools for streamlined development workflows.

2. Siehe code

3. Siehe github

4. Magic ist installiert

5. Siehe magic project

6. Define the term software design. Explain how this differs from software analysis.

**Software design** is the process of specifying the architecture, components, interfaces, and other characteristics of a software system based on the requirements gathered during analysis. It translates the “what” (requirements) into the “how” (solution) by creating a blueprint for developers to follow during implementation.

**Difference from software analysis:**

* *Software analysis* focuses on understanding, gathering, and documenting what the system must do-its requirements and constraints.
* *Software design* takes those requirements and determines how the system will fulfill them, specifying the structure and behavior of the solution.  
  In summary, analysis is about understanding the problem, while design is about creating the solution.

7. Explain why a software design is necessary for a software project. Can you think of a project without this step? What could be the consequences?

A software design is necessary because it provides a structured plan for developers, ensuring that the system will be maintainable, scalable, and meet all requirements. Without software design, projects are likely to suffer from poor organization, misunderstandings, duplicated effort, and increased bugs.  
If a project skips the design step, the consequences can include:

* Unclear or conflicting system architecture
* Difficulty in adding new features or fixing bugs
* Increased development time and costs
* Poor communication among team members  
  For example, a large e-commerce platform built without design might end up with inconsistent user interfaces, security flaws, and an unmanageable codebase.

8. Are the design activities of architectural design, database design, user interface design and component design independent or interdependent? Using an example, explain why.

These design activities are **interdependent**. Decisions made in one area often influence or constrain the others. For instance, the architectural design (such as choosing a microservices architecture) will affect how the database is structured (distributed vs. centralized), how components communicate, and how the user interface retrieves and displays data.

**Example:**  
If you design a mobile banking app with a layered architecture, the way you structure your database (e.g., separating user data and transaction data), the components (services for authentication, transaction processing), and the user interface (real-time updates, security prompts) all need to align. A change in the database schema might require updates to the components and the user interface, demonstrating their interdependence.