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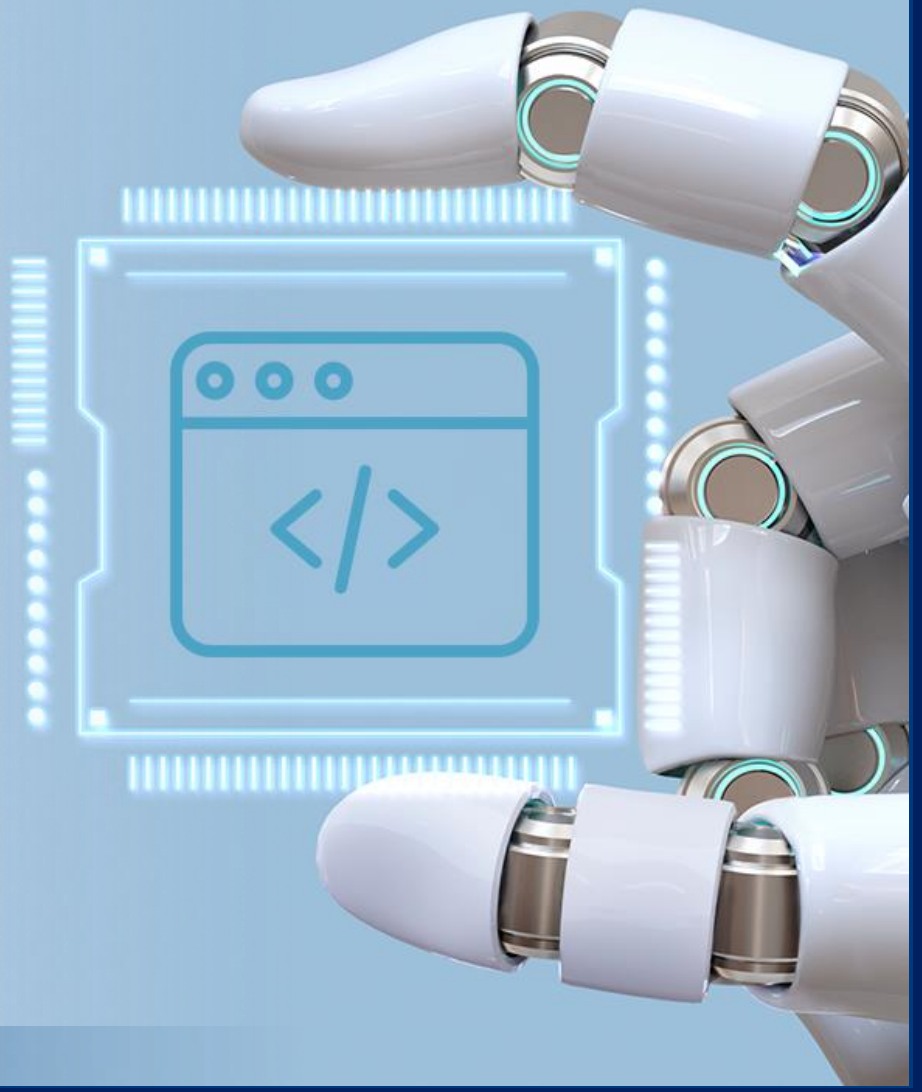
Fundamentals of Software Development



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Chapters for Discussion

Chapter 1

Getting Familiar with Software Development

Chapter 2

Essentials of Java Programming

Chapter 1

Getting Familiar with Software Development

Agenda

You will learn in this lesson:

- What is Software Development
- Types of Software
- SDLC
- SDLC Stages
- Software Development Model
- Software Application Architecture

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Operating System

Windows

MacOS

Microsoft Edge

What is Software?

Types of Software

System Software	• It sits between the hardware and the application software • Operating systems like Windows, macOS, Android, and iOS are examples of system software.
Program Software	• It gives programmers tools such as text editors, compilers, linkers, debuggers, and other tools to create code. • It performs specific tasks to keep the computer running.
Application Software	• Anything that is not an operating system, or a utility is an application or app. • A word processor, spreadsheet, web browser, and graphics software are all examples of application software,

Source: https://www.hitechwhizz.com/2021/02/5-advantages-and-disadvantages-limitations-benefits-of-operating-system.html

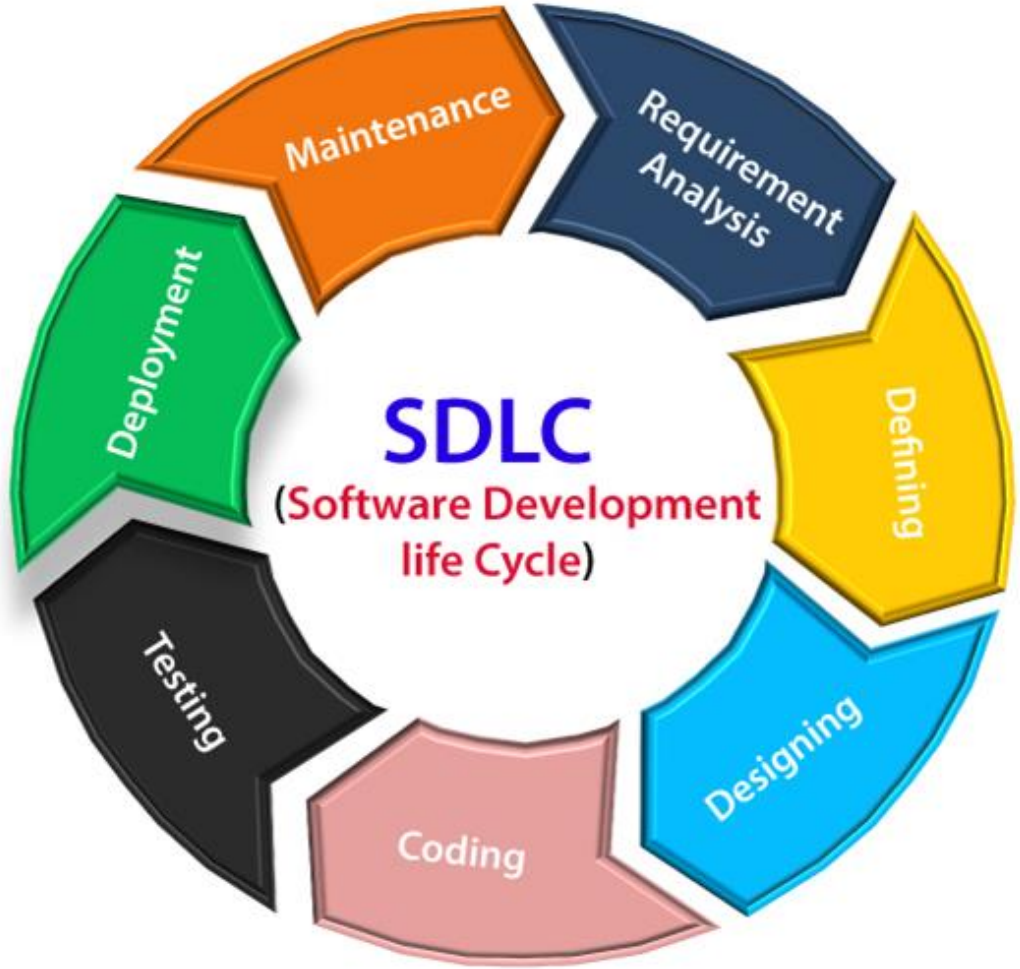
Introduction

What is Software Development?

- Software development refers to a set of computer science activities dedicated to the process of creating, designing, deploying, and supporting software.
- Software itself is the set of instructions or programs that tell a computer what to do.
- It is independent of hardware and makes computers programmable

Software Development Life Cycle

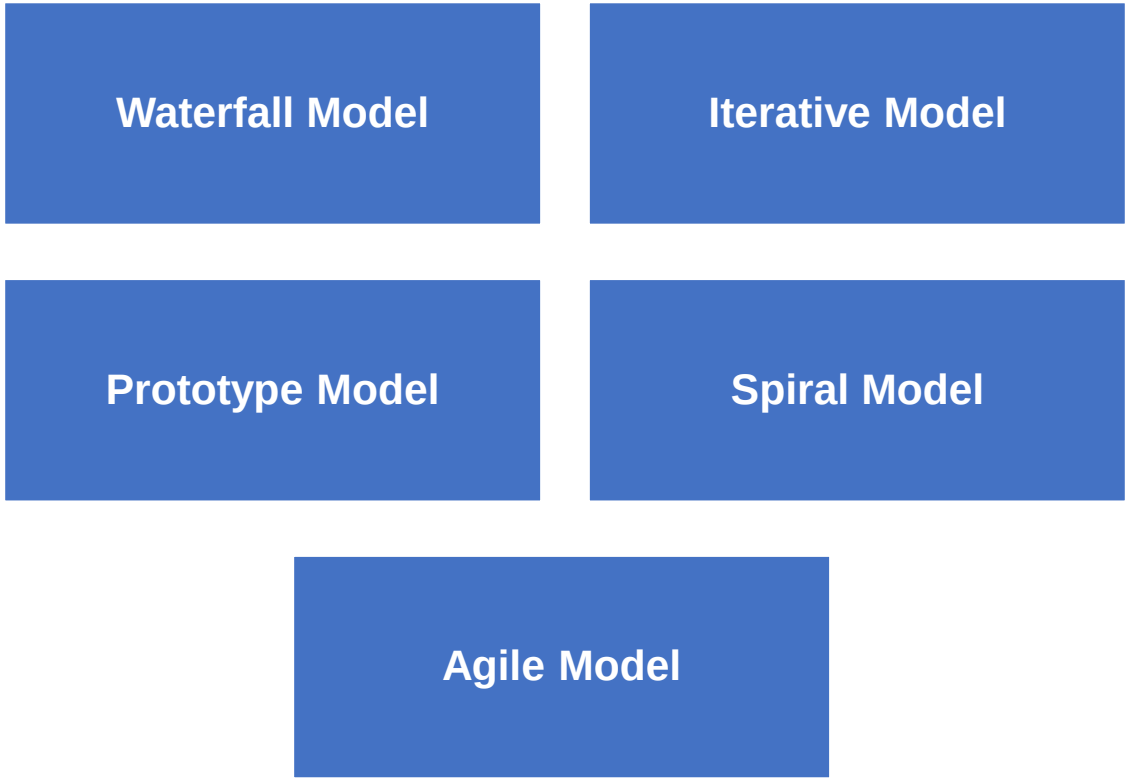
- The SDLC aims to produce high-quality software that meets or exceeds customer expectations and reaches completion within time and cost estimates
- SDLC is a process followed for a software project, within a software organization.



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

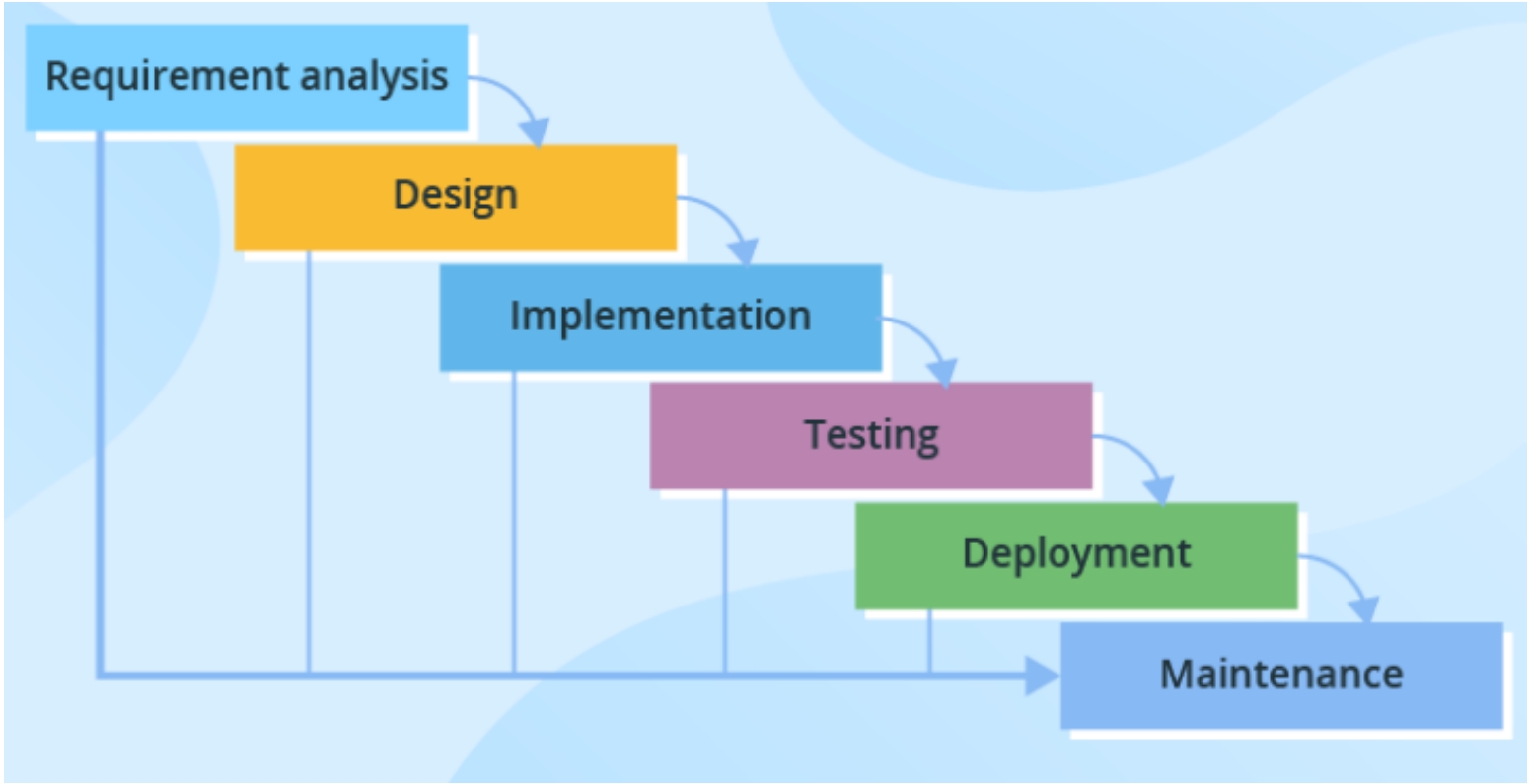
Software Development Model

- These models are also referred to as Software Development Process Models".
- Each process model follows a Series of steps unique to its type to ensure success in the process of software development.



Source: https://www.hitechwhizz.com/2021/02/5-advantages-and-disadvantages-limitations-benefits-of-operating-system.html

Waterfall Model



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

Waterfall Model

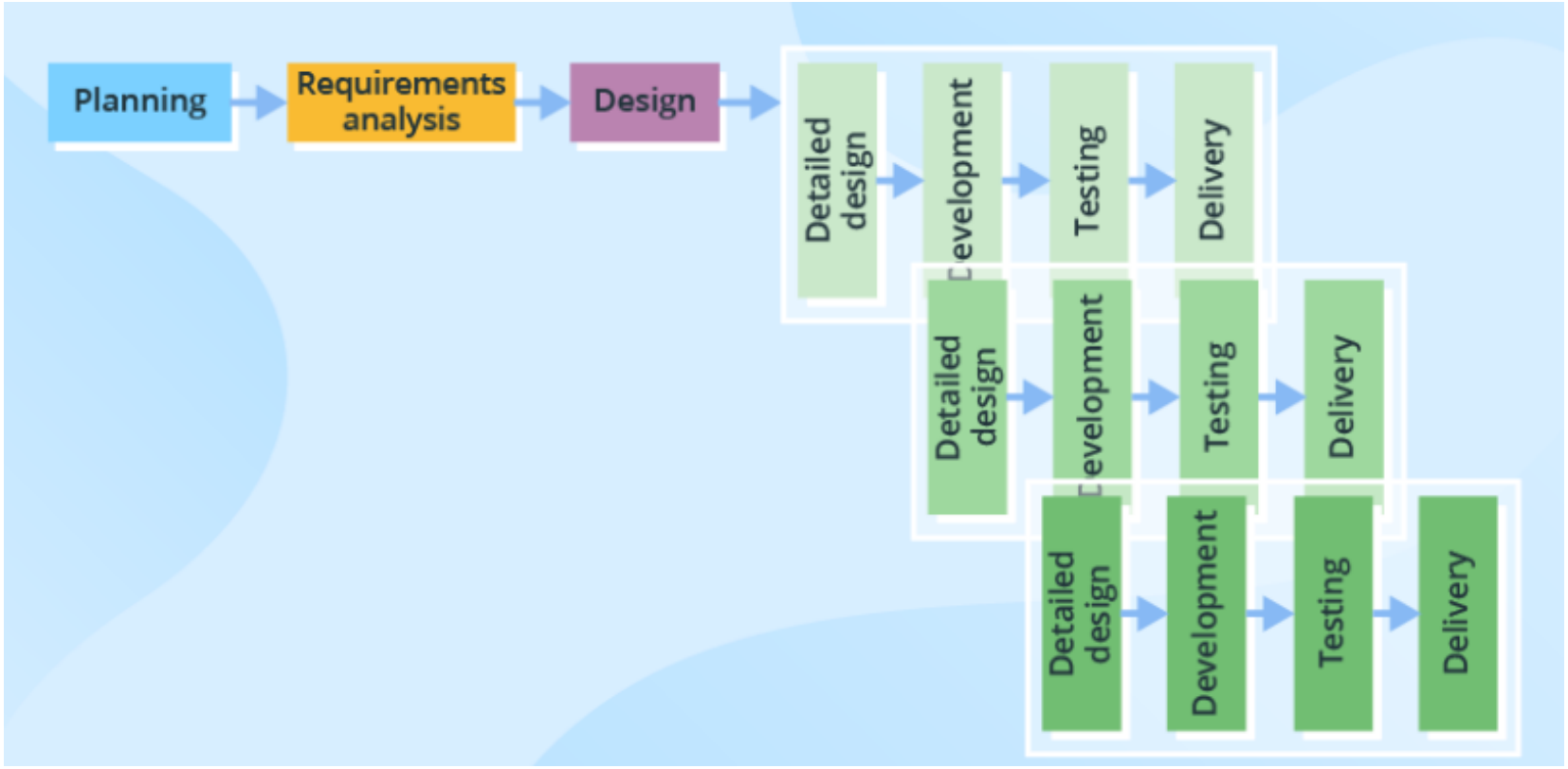
Advantages

- Before the next phase of development, each phase must be completed
- Suited for smaller projects where requirements are well defined

Disadvantages

- An error can be fixed only during the phase
- The testing period comes quite late in the developmental process

Iterative Model



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

Iterative Model

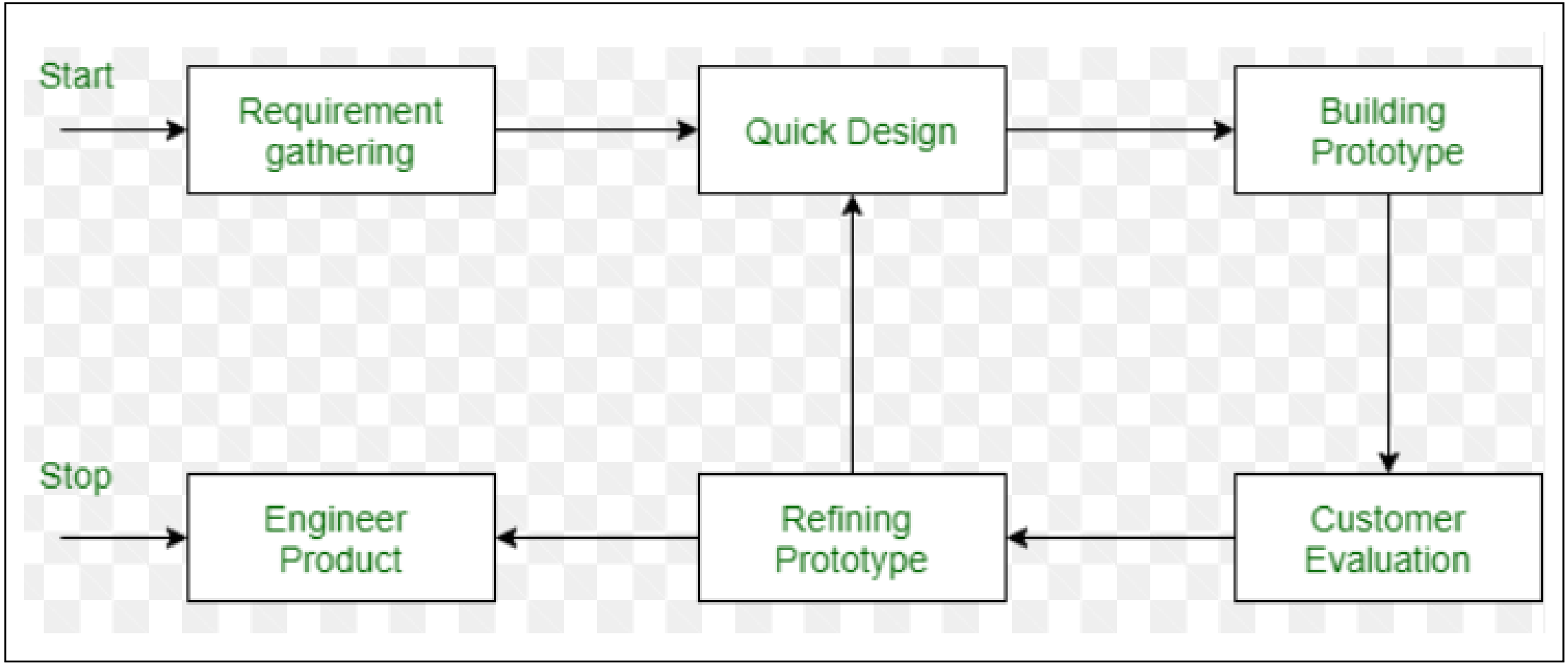
Advantages

- Some working functionality can be developed and early in the software development life cycle (SDLC).
- It is easily adaptable to the ever-changing needs of the project as well as the client.

Disadvantages

- More resources may be required.
- Although cost of change is lesser, but it is not very suitable for changing requirements.

Prototype Model



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

Prototype Model

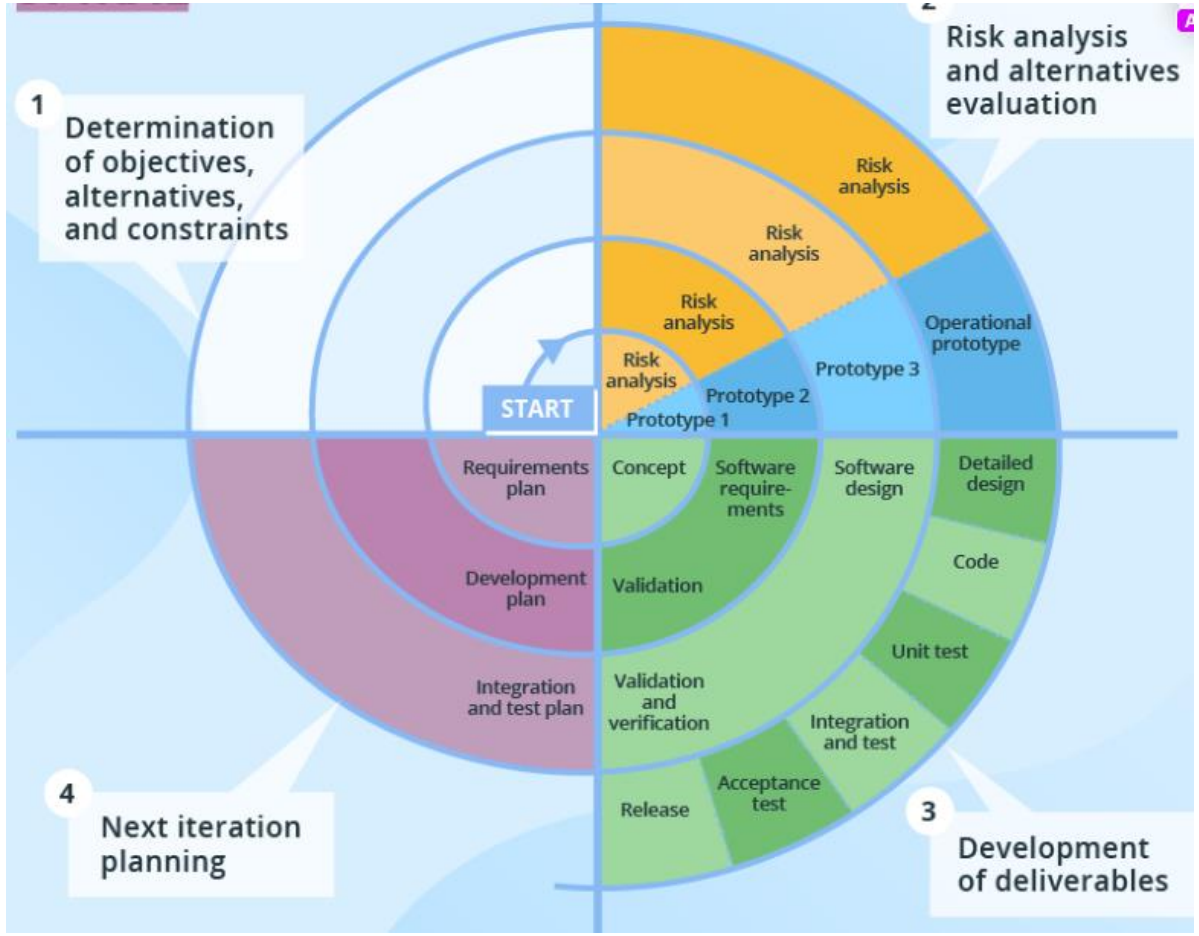
Advantages

- This model is flexible in design
- There is scope for refinement, which means new requirements can be easily accommodated.

Disadvantages

- This model is costly
- It has poor documentation because of continuously changing customer requirements.

Spiral Model



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

Spiral Model

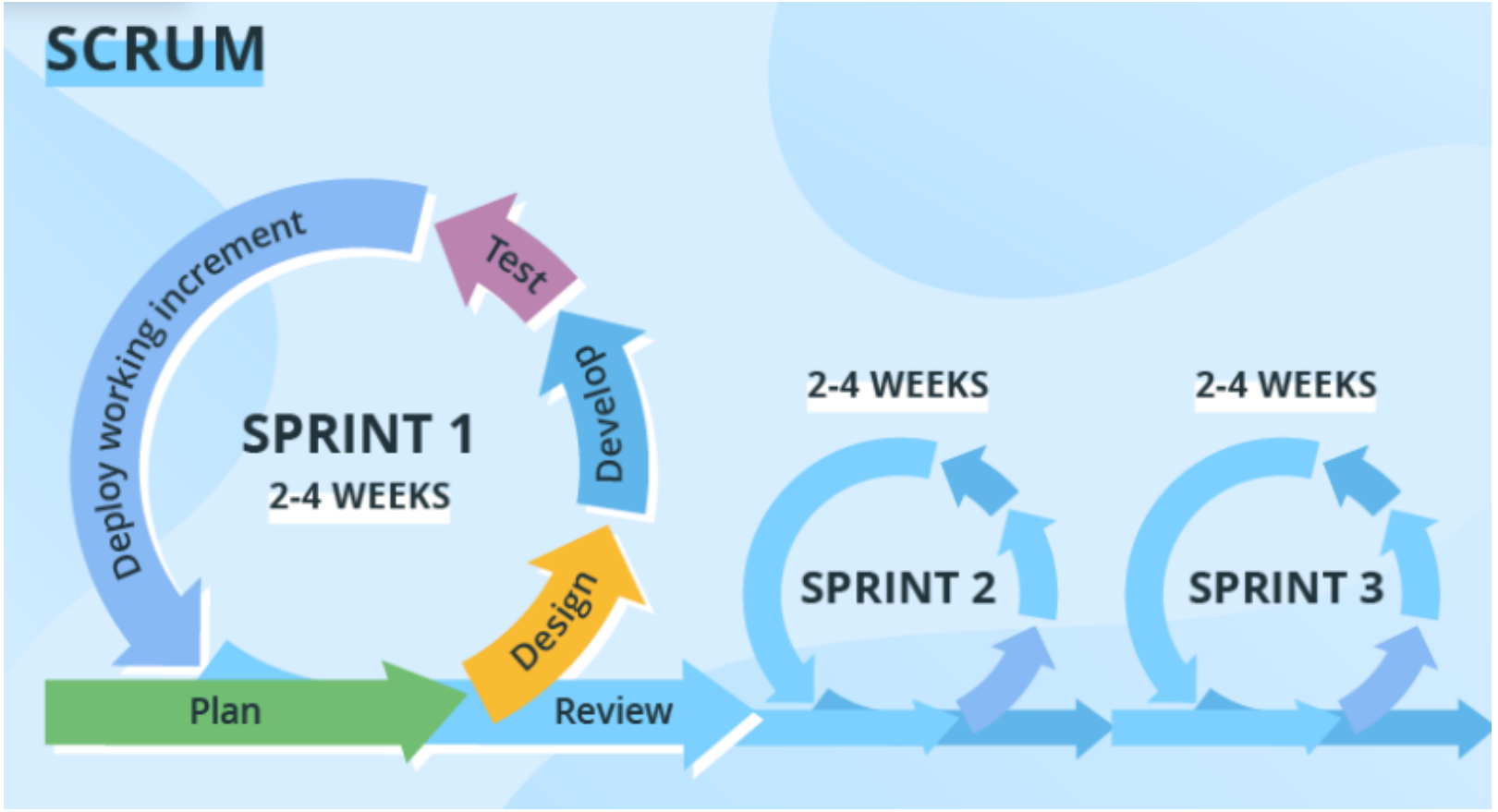
Advantages

- Risk handling is one of the important advantages of the Spiral model, it is the best development model to follow due to the risk analysis and risk handling at every phase.
- In this model, we can easily change requirements at later phases and can be incorporated accurately.

Disadvantages

- It is not suitable for small projects as it is expensive
- It is much more complex than other SDLC models. The process is complex.

Agile Model



Source: https://www.javatpoint.com/software-engineering-software-development-life-cycle

Agile Model

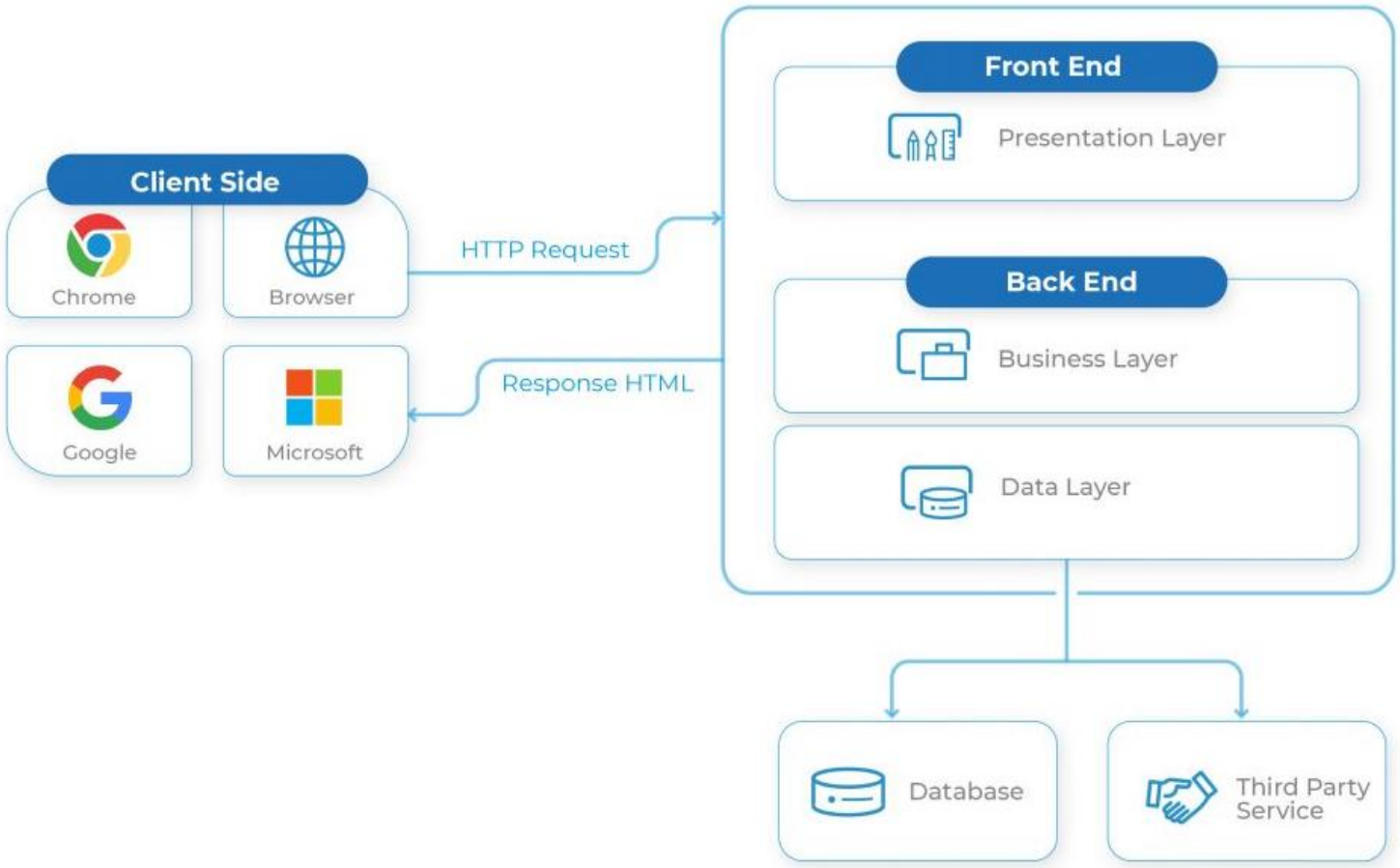
Advantages

- Customer satisfaction by rapid, continuous delivery of useful software
- People and interactions are emphasized rather than processes and tools. Customers, developers, and testers constantly interact with each other.

Disadvantages

- There is a lack of emphasis on necessary designing and documentation.
- The project can easily get taken off track if the customer representative is unclear about what final outcome they want

Web based Software Application Architecture



Source: https://www.clickittech.com/devops/web-application-architecture/

Front End Technologies

Source: https://www.clickittech.com/devops/web-application-architecture/

Back End Technologies

Source: https://www.clickittech.com/devops/web-application-architecture/

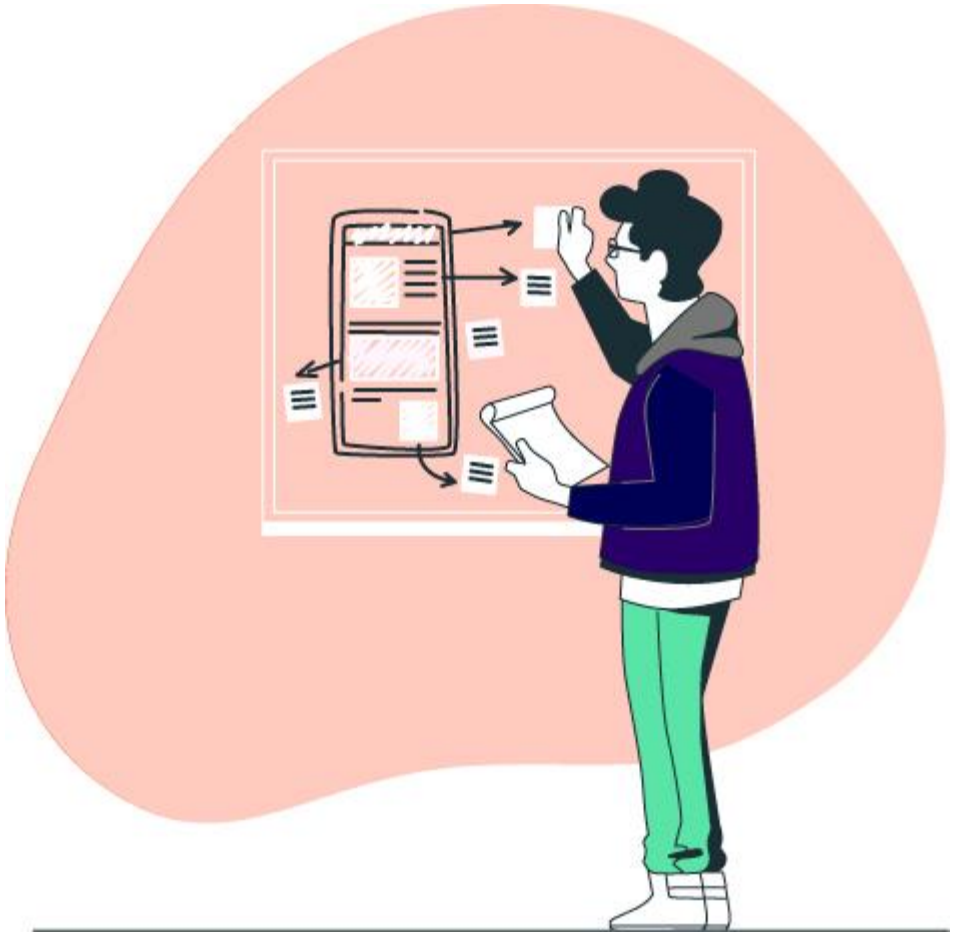
Wireframing

- Wireframing refers to creating a simplified, static, and structural representation of a website or application.
- It provides a basic two-dimensional visual layout of design elements, highlighting essential information about the product.
- Wireframes facilitate communication with users by presenting a clear understanding of the application's functionality, structure, and spatial arrangement.

Source: https://www.freepik.com/free-vector/mobile-testing-concept-illustration_7230644.htm#fromView=search&page=1&position=9&uuid=8edcb905-9186-4ca9-ae5b-64b841e21bb3

Prototyping

- Prototyping is the creation of a replicated or sample version of a final product, which designers utilize for testing before launching a project.
- Prototypes play a crucial role in the design process across all design practices.
- They represent a simplified model or mockup of a concept, idea, product, or service.



Conclusion

- Well done! You have completed this course and now you understand the importance of software development
- You have also learned what is software, various types of software, what is software development, life cycle of software development, various models and architecture of Software Application

Quiz

1. _____ refers to a set of computer science activities dedicated to the process of creating, designing, deploying, and supporting software.

a) Software Development

b) Software

c) Software Model

d) None of the above

Answer: a
Software Development

Quiz

2. MacOS is an example of _____ Software

a) Programming

b) System

c) Application

d) None of the above

Answer: b
System

Quiz

3. Select the proper sequence of Phases in the Software Development Life Cycle

a) Planning → Developing → Maintenance → Analysis → Testing

b) Analysis → Planning → Testing → Developing → Maintenance

c) Planning → Designing → Developing → Testing → Maintenance

d) None of the above

Answer: b

Planning → Designing → Developing → Testing → Maintenance

Quiz

4. Following is the software development model which is used majorly in the industry to develop the applications

a) Agile

b) Prototype

c) Spiral

d) Iterative

Answer: a
Agile

Quiz

5. Customer satisfaction by rapid, continuous delivery of useful software" is the advantage of the following model

a) Iterative

b) Agile

c) Waterfall

d) Prototype

Answer: b
Agile

References

- https://www.javatpoint.com/software-engineering-software-development-life-cycle
- https://www.geeksforgeeks.org/advantages-and-disadvantages-of-prototype-model/
- https://www.clickittech.com/devops/web-application-architecture/

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Thank You!