Software Development

The Software Development Life Cycle (SDLC)

1 **Planning**

Defining project goals, requirements, and timeline.

2 **Requirements**

Coding the software and integrating different components.

3 **Design**

Outlining the software architecture and user experience.

4 **Implementation**

Putting the coded software into production for actual use.

5 **Testing**

Verifying the software's functionality,

6 **Deployment**

Installing and configuring the software on production servers.

7 **Maintenance**

Ongoing tasks to fix bugs improve performance,and add new features.

Software Development Life Cycle

01 Requirement Analysis
Assess and validate stakeholder needs

02 System Design
Architect and document the software structure.

03 Implementation (Coding)
Code the software using programming languages.

04 Testing
Identify and rectify bugs to meet specifications.

05 Deployment
Launch the fully tested software for use.

06 Maintenance
Provide ongoing support and updates.

07 Monitoring and Evaluation:
Continuously assess performance and user feedback.

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Key Methodologies in Software Development

Agile

An iterative approach that emphasizes flexibility, collaboration, and rapid delivery.

Waterfall

A linear, sequential process with defined phases that must be completed in order.

Lean

Focused on minimizing waste and maximizing value throughout the development process.

Software Design Principles

1 **Modularity**

Dividing software into smaller, reusable components.

2 **Abstraction**

Hiding complex details and exposing only essential features.

3 **Encapsulation**

Bundling data and methods into self-contained units.

4 **Separation of Concerns**

Dividing software into distinct features or functionalities.

5 Key Elements of The UX Design Process

Behavior 01 — Understanding user behavior is the obvious when designing for people to engage by satisfying their current needs

02 **Strategy** — A well-defined plan and set of goals before starting any project reduce the complexity

Usability 03 — A big part of UX design is making products & services simple & intuitive users of all ages and abilities

04 **Inclusivity** — In the UX industry inclusive design ensures a variety of voices are being heard when designing for diverse populations

Validation 05 — Most important task in UX design process where need to emphasizes testing to ensure the design solves the right problem

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Programming Languages and Tools

Popular Languages

Python, Java, JavaScript, C++, C#, Ruby, Swift, Go.

IDEs and Editors

Visual Studio, IntelliJ IDEA, Eclipse, Sublime Text, Atom.

Frameworks and Libraries
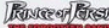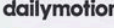
React, Angular, Vue.js, Django, Spring, .NET, jQuery.

Collaboration Tools

Git, GitHub, Jira, Trello, Slack, Zoom, Microsoft Teams.

Language	Can be used for	Companies/projects that use the language
JS JavaScript	Mobile Development Front-End Web Development Back-End Web Development	facebook, yahoo!, WIKIPEDIA, YouTube, ebay, twitter, amazon
Python	Desktop Apps Back-End Web Development	Instagram, Google, Spotify, NETFLIX, Uber, reddit, Pinterest
C/C++/C#	Game Development Mobile Development Systems Programming Desktop Applications	ASSASSIN'S CREED II, Prince of Persia, HALF-LIFE, DOOM
Kotlin	Mobile Development Backend Development Web Application Development	Trello, tinder, slack, airbnb, Square
Go	Desktop Apps System Programming Back-End Web Development	twitch, Uber, dailymotion, SendGrid, SOUNDCLOUD, Dropbox

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Testing and Quality Assurance

Unit Testing

Verifying individual components or modules.

Integration Testing

Ensuring different components work together.

End-to-End Testing

Simulating the entire user journey.

Performance Testing

Measuring the system's responsiveness and scalability.

	Software Quality Assurance	Software Testing
Definition	Techniques to prevent issues & respect standards & requirements	Processes to inspect the software outcome to find bugs and defects
Tasks	Monitor of quality & requirements through high-defined standards	Inspection of software functionality, bugs & defects
Orientation	Process-oriented	Product-oriented
Activity's Aim	Prevention	Correction
Goal	Ensuring quality standards during the development process	Checking quality outcome of the product

Future Trends in Software Development

1

AI-Powered Development

Using machine learning to automate tasks and make better decisions.

2

Serverless Computing

Deploying applications without managing the underlying infrastructure.

3

Low-Code/No-Code

Empowering non-technical users to build applications visually.

Thank You All