**1. Plan**

* **Purpose**: Define project scope, requirements, and objectives.
* **Activities**:
  + Gather requirements from stakeholders.
  + Define project timelines and milestones.
  + Create user stories or tasks for development.
  + Plan resources, including team members and infrastructure needs.
* **Tools**: Project management tools like Jira, Trello, or Asana.

**2. Code**

* **Purpose**: Develop and write code based on defined requirements.
* **Activities**:
  + Implement features and functionalities based on design specifications.
  + Collaborate with team members through version control (e.g., Git).
  + Write clean, maintainable code adhering to coding standards.
* **Tools**: Integrated Development Environments (IDEs) like IntelliJ, Visual Studio, or VS Code.

**3. Build**

* **Purpose**: Compile source code into executable software artifacts.
* **Activities**:
  + Compile, package, and build the application code.
  + Run automated build scripts or use build automation tools (e.g., Maven, Gradle).
  + Generate binaries, libraries, or executable files ready for testing and deployment.
* **Tools**: Build automation tools (e.g., Jenkins, GitLab CI/CD).

**4. Test**

* **Purpose**: Verify and validate the functionality, quality, and performance of the software.
* **Activities**:
  + Write and execute various types of tests: unit, integration, system, performance, security, etc.
  + Automate testing processes to ensure consistent and repeatable results.
  + Identify and report defects for resolution.
* **Tools**: Testing frameworks like JUnit, Selenium, Postman, or specialized testing tools.

**5. Release**

* **Purpose**: Prepare and package software for deployment to the next environment.
* **Activities**:
  + Prepare release notes and documentation.
  + Create deployment packages or artifacts.
  + Coordinate with stakeholders for release approval.
* **Tools**: Release management tools, version control systems, and documentation platforms.

**6. Deploy**

* **Purpose**: Install and configure the application in the target environment.
* **Activities**:
  + Deploy application code and configurations to staging or production environments.
  + Automate deployment processes to ensure consistency and reliability.
  + Perform smoke tests or validation checks post-deployment.
* **Tools**: Deployment automation tools (e.g., Kubernetes, Docker, Ansible, Chef).

**7. Operate**

* **Purpose**: Manage and maintain the application in production or operational environments.
* **Activities**:
  + Monitor application performance, availability, and health.
  + Handle incidents, perform troubleshooting, and resolve issues.
  + Manage infrastructure, databases, and services supporting the application.
* **Tools**: Monitoring tools (e.g., Prometheus, ELK Stack), incident management tools (e.g., PagerDuty, OpsGenie).

**8. Monitor**

* **Purpose**: Collect, analyze, and interpret data to ensure application performance and availability.
* **Activities**:
  + Monitor metrics, logs, and user interactions in real-time.
  + Set up alerts and notifications for critical events or performance thresholds.
  + Analyze trends and patterns to optimize application performance and infrastructure resources.
* **Tools**: Monitoring and analytics platforms (e.g., Grafana, Splunk, New Relic).

