how is code deployed in DevOps?

**ChatGPT said:**

Great question, Max 🙌 — this one is **always asked in interviews**. Let’s break it down so you can answer with clarity.

**🚀 How Code is Deployed in DevOps**

**1. Developer Stage**

* Developer writes code → pushes it to **Git (GitHub, GitLab, Bitbucket, etc.)**.
* This push usually **triggers a webhook** → which notifies a CI/CD tool (like Jenkins, GitHub Actions, GitLab CI, etc.).

**2. Continuous Integration (CI)**

* CI tool pulls the latest code.
* Runs **build steps** (e.g., compile Java, package Python, create Docker image).
* Runs **tests** (unit, integration, security scans).
* If successful → artifact (like .jar, .war, .whl, or Docker image) is stored in **artifact repository** (e.g., Nexus, Artifactory, ECR, Docker Hub).

**3. Continuous Delivery/Deployment (CD)**

* Once code is built & tested, CD tools deploy it to environments.
  + **Dev/QA** → for testing.
  + **Staging** → for final validation.
  + **Production** → for end-users.
* Deployment can happen in multiple ways:
  + **VM-based** → Copy binaries using **Ansible**/SSH, configure services.
  + **Container-based** → Build Docker image → push to registry → update Kubernetes deployment.
  + **Serverless** → Deploy directly to AWS Lambda, Azure Functions, etc.

**4. Automation + Monitoring**

* **Infrastructure** is created using **Terraform/CloudFormation**.
* **Config** is managed with **Ansible/Chef/Puppet**.
* **Deployments** are automated with Jenkins/GitLab CI/ArgoCD.
* **Monitoring** with Prometheus, Grafana, ELK, CloudWatch.
* **Alerts** ensure fast rollback if something breaks.

**🌟 Example Flow (Docker + K8s)**

1. Developer pushes code → GitHub.
2. Jenkins pipeline runs:
   * Build Docker image → tag with version.
   * Push to Docker Hub/ECR.
   * Update Kubernetes manifest.
   * Apply changes with kubectl or GitOps tool (ArgoCD).
3. New version of app runs in K8s → users see it instantly.

✅ **Simple interview answer:**  
*"In DevOps, code deployment is automated through CI/CD pipelines. When developers push code, a pipeline builds, tests, and packages the code (often into Docker images). These artifacts are stored in a registry and then deployed automatically to environments like Kubernetes or VMs using tools like Jenkins, Ansible, or ArgoCD. Monitoring ensures any issues are detected, and rollback is automated if needed."*