**Process Document: Application Versioning and Deployment**

**Overview**

This document outlines the process for versioning, building, testing, and deploying an application based on branch names and pull request (PR) numbers. It includes CI/CD pipelines, code checks, user reviews, and various deployment environments.

**Versioning**

* **Major Version:** Derived from the branch name.
* **Minor Version:** Derived from the PR number.

**PR Merge Requirements**

To merge a PR into branches V1.2 or V2.0, the following checks and reviews must be completed:

1. **Code Coverage**
2. **Fortify Scan**
3. **Mend Scan**
4. **CodeQL (GHAS)**
5. **Two Levels of User Review:**
   * Review by a peer
   * Review by the code owner

**Branches**

* **N:** Current base branch (e.g., V1.x)
* **N+1:** Next base branch (e.g., V2.x)

**CI/CD Pipeline Workflow**

**CI Pipeline**

1. **Feature/Bug Merge to Branch N**
   * Trigger: PR merge to branch N.
   * Action: CI-Base pipeline runs.
   * Output: Builds the image and tags the artifact as N.<PR\_Number>.
   * Publish: Artifact is published to GitHub Container Registry (GHCR).
   * Deployment: CD pipeline deploys to Dev environment with version N.<PR\_Number>.
2. **Feature/Bug Merge to Branch N+1**
   * Trigger: PR merge to branch N+1.
   * Action: CI-Base pipeline runs.
   * Output: Builds the image and tags the artifact as N+1.<PR\_Number>.
   * Publish: Artifact is published to GitHub Container Registry (GHCR).
   * Deployment: CD pipeline deploys to Dev02 environment with version N+1.<PR\_Number>.

**CD Pipeline**

1. **Deployment to QA/QA02**
   * Trigger: Functional testing completion and Jira ticket creation by Dev Lead.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from the Dev Lead.
   * Deployment:
     + Branch N: Deploy to QA environment.
     + Branch N+1: Deploy to QA02 environment.
2. **Deployment to UAT**
   * Trigger: QA testing completion and Jira request by QA.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from the QA Lead.
   * Deployment:
     + Branch N: Deploy to UAT environment.
     + Branch N+1: Deploy to UAT environment.
3. **Deployment to Production**
   * Trigger: Acceptance testing completion and Jira request with CAB approval by Release Manager.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from a member of the Prod Approver group.
   * Deployment:
     + Branch N: Deploy to Production environment.
     + Branch N+1: Deploy to Production environment.

**Approval Workflow**

1. **Dev Environment Deployment**
   * Automatic upon successful CI pipeline run.
2. **QA/QA02 Environment Deployment**
   * Jira ticket creation by Dev Lead.
   * Manual trigger by DevOps.
   * Approval by Dev Lead.
3. **UAT Environment Deployment**
   * Jira request by QA.
   * Manual trigger by DevOps.
   * Approval by QA Lead.
4. **Production Deployment**
   * Jira request with CAB approval by Release Manager.
   * Manual trigger by DevOps.
   * Approval by Prod Approver group member.

**Conclusion**

This process ensures a structured and secure approach to versioning, building, testing, and deploying the application across various environments. It enforces code quality checks, user reviews, and approval workflows at different stages to maintain high standards and minimize risks.

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QA,qa02,uat,production deployment based on the image generated for dev or dev02

ChatGPT

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**CI Pipeline**

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   * Trigger: PR merge to branch N.
   * Action: CI-Base pipeline runs.
   * Output: Builds the image and tags the artifact as N.<PR\_Number>.
   * Publish: Artifact is published to GitHub Container Registry (GHCR).
   * Deployment: CD pipeline deploys to Dev environment with version N.<PR\_Number>.
2. **Feature/Bug Merge to Branch N+1**
   * Trigger: PR merge to branch N+1.
   * Action: CI-Base pipeline runs.
   * Output: Builds the image and tags the artifact as N+1.<PR\_Number>.
   * Publish: Artifact is published to GitHub Container Registry (GHCR).
   * Deployment: CD pipeline deploys to Dev02 environment with version N+1.<PR\_Number>.

**CD Pipeline**

1. **Deployment to QA/QA02**
   * Trigger: Functional testing completion and Jira ticket creation by Dev Lead.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from the Dev Lead.
   * Deployment:
     + QA: Deploy using the image generated for Dev (N.<PR\_Number>).
     + QA02: Deploy using the image generated for Dev02 (N+1.<PR\_Number>).
2. **Deployment to UAT**
   * Trigger: QA testing completion and Jira request by QA.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from the QA Lead.
   * Deployment:
     + UAT: Deploy using the image generated for Dev (N.<PR\_Number>) or Dev02 (N+1.<PR\_Number>).
3. **Deployment to Production**
   * Trigger: Acceptance testing completion and Jira request with CAB approval by Release Manager.
   * Action: DevOps manually triggers the CD pipeline.
   * Approval: Deployment approval required from a member of the Prod Approver group.
   * Deployment:
     + Production: Deploy using the image generated for Dev (N.<PR\_Number>) or Dev02 (N+1.<PR\_Number>).

**Approval Workflow**

1. **Dev Environment Deployment**
   * Automatic upon successful CI pipeline run.
2. **QA/QA02 Environment Deployment**
   * Jira ticket creation by Dev Lead.
   * Manual trigger by DevOps.
   * Approval by Dev Lead.
3. **UAT Environment Deployment**
   * Jira request by QA.
   * Manual trigger by DevOps.
   * Approval by QA Lead.
4. **Production Deployment**
   * Jira request with CAB approval by Release Manager.
   * Manual trigger by DevOps.
   * Approval by Prod Approver group member.

**Conclusion**

This process ensures a structured and secure approach to versioning, building, testing, and deploying the application across various environments. It enforces code quality checks, user reviews, and approval workflows at different stages to maintain high standards and minimize risks

A diagram of a process

Description automatically generated

