

BMI Application

Name: Jishnu Ganesh

Course: CSC 7435E – Secure DevOps Practices

Professor: Dr. Aakash Bansal

Assignment: Final Presentation

GitHub Repository URL: <https://github.com/jishnukrg/BMI-App>

Jenkins Job Name: BMIAppPipeline



The Application – BMI Calculator



- Java BMI Calculator built with Swing
- Takes height & weight → computes BMI
- Shows BMI category (Underweight / Normal / Overweight)
- Used as a simple example app for CI/CD practice



How the App Evolved

- Cleaned up Java code & comments
- Improved error handling for invalid inputs
- Organized project in a GitHub repo
- Prepared the app specifically for automation in Jenkins

Jenkins CI/CD Pipeline – Big Picture

- Jenkins job: BMIAppPipeline
- Connected to: <https://github.com/jishnukrg/BMI-App>
- Pipeline defined as a Jenkinsfile in the repo
- Main stages:
 - Checkout
 - Build
 - Test
 - Advanced Tests
 - Package
 - Release (main branch only)
 - Post actions (email notifications)

Pipeline Features (Build, Test, Release)

- Build: compiles BMIApp.java into build/BMIApp.class
- Test: basic check → compilation succeeded
- Advanced Tests:
 - Ensure build/ folder exists
 - Ensure BMIApp.class exists
 - (Optional) Check for bad patterns (like debug prints)
- Release stage:
 - Runs only on main branch
 - Uses branch condition logic

Monitoring & Security Enhancements

- Timestamper plugin → timestamps in console logs
- Dedicated Monitor & Security Checks stage:
 - Echo key messages for visibility
 - Simple pattern scan in BMIApp.java
 - Better failure diagnostics in console logs

Email Notifications & Incident Response

- Configured **Extended E-mail Notification** with Gmail (App Password)
- On **success** → email subject: “BMI Pipeline Success”
- On **failure** → email subject: “BMI Pipeline FAILED”
- Email used as part of **incident response**:
Get notified
Open Jenkins
Check stage that failed
Inspect logs & fix

Reflection – Concepts & Lessons Learned

- Hands-on understanding of CI/CD principles
- Learned how to write and debug a Jenkinsfile
- Understood importance of:
 - Automated testing
 - Monitoring & logs
 - Security checks & notifications
- CI/CD makes even a small app feel
“production-like”

Final Summary

- Pipeline includes: build, tests, packaging, release, monitoring, notifications
- I can now confidently:
- Set up Jenkins jobs
- Write Jenkinsfiles
- Add tests, monitoring, and basic security checks
- Ready to apply this to bigger projects