



MARCH 4, 2023

# DevOps Classroomnotes 04/Mar/2023

## Triggering Jobs with Jenkins

- Jenkins supports triggering the builds based on
  - Schedule
  - changes in branch
    - poll scm
    - GitHub WebHook
- Script Execution
- Build after some other job



### Build Triggers

- ☐ Trigger builds remotely (e.g., from scripts) ?
- ☐ Build after other projects are built ?
- ☐ Build periodically ?
- ☐ GitHub hook trigger for GITScm polling ?
- ☐ Poll SCM ?

- To work with scheduling we need to understand cron syntax

MINUTE HOUR DOM MONTH DOW  
MINUTE Minutes within the hour (0â€"59)  
HOUR The hour of the day (0â€"23)  
DOM The day of the month (1â€"31)  
MONTH The month (1â€"12)  
DOW The day of the week (0â€"7) where 0 and 7 are Sunday.

- To create cron expression use [Refer Here](#)
- Lets trigger the game of life every 15 minutes through out the day
- Free Style Job

Dashboard > FreeStyle > gameoflife-fs > Configuration

Configure

- General
- Source Code Management
- Build Triggers**
- Build Environment
- Build Steps
- Post-build Actions

Build Triggers

- ☐ Trigger builds remotely (e.g., from scripts) ?
- ☐ Build after other projects are built ?
- ☒ Build periodically ?

Schedule ?

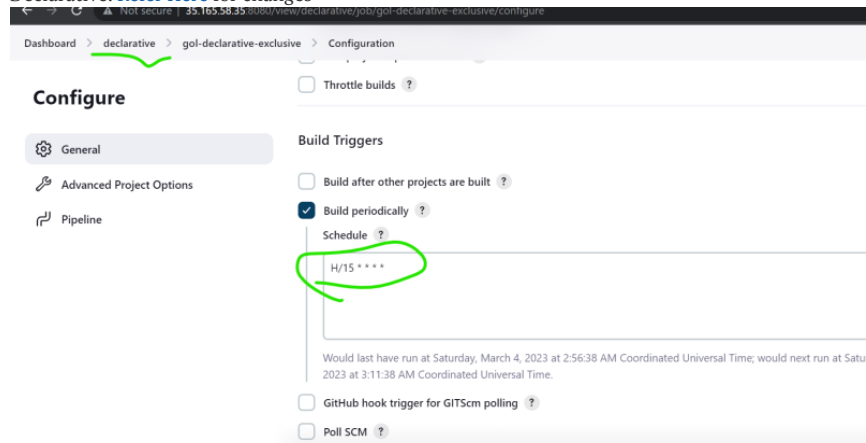
H/15 \* \* \* \*

Would first have run at Saturday, March 4, 2023 at 2:52:00 AM Coordinated Universal Time; would next run at Saturday, March 4, 2023 at 3:07:00 AM Coordinated Universal Time.

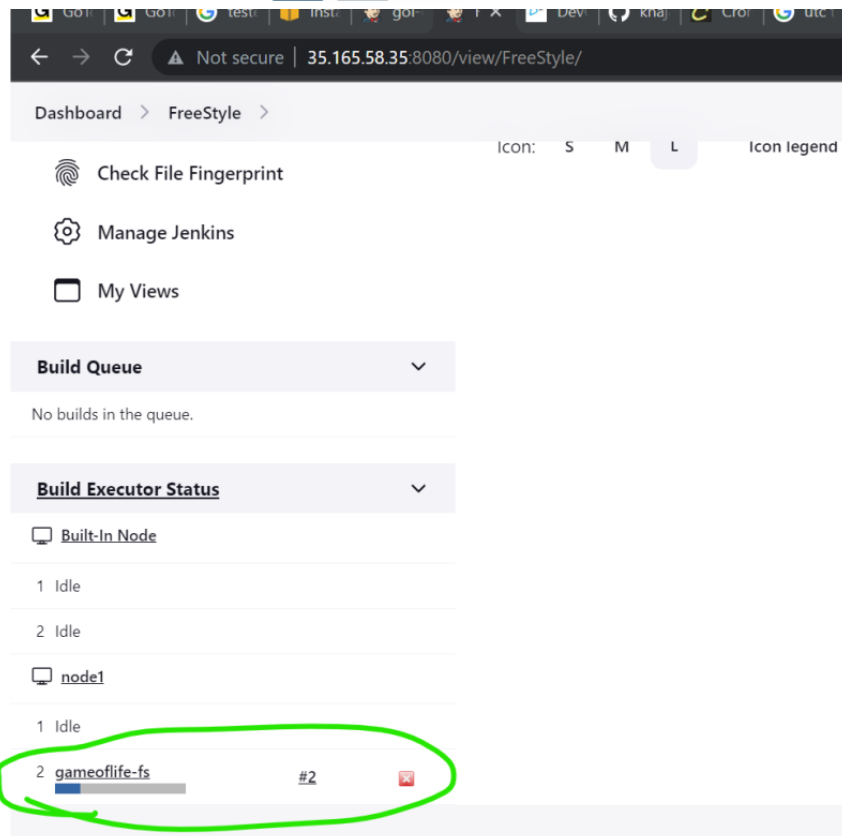
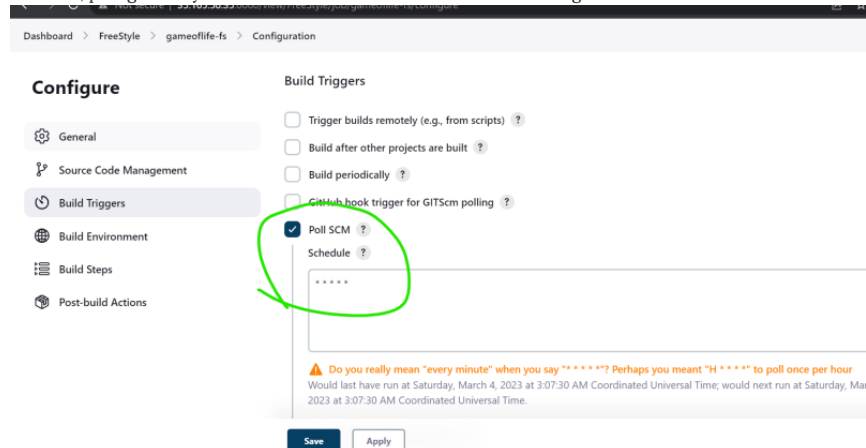
- ☐ GitHub hook trigger for GITScm polling ?

Save Apply

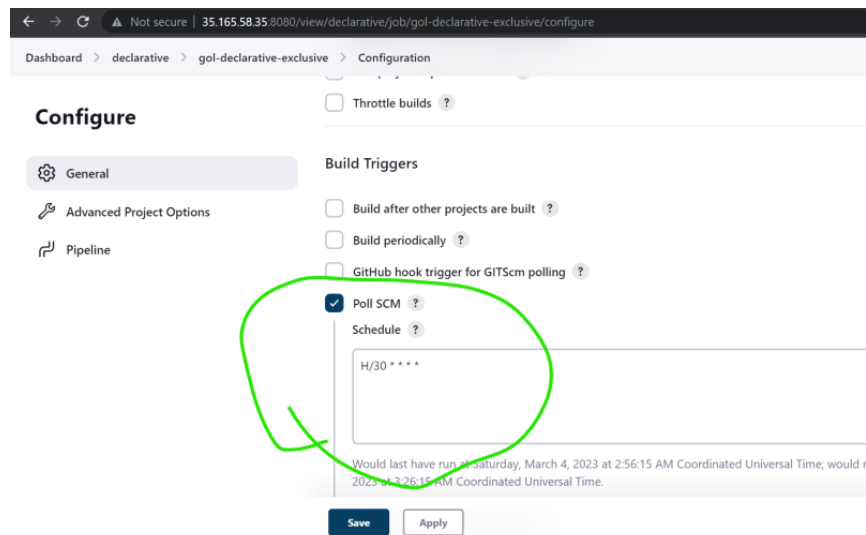
- Declarative. [Refer Here](#) for changes



- Exercise: Try to do the same to build the job for every 15 minutes on weekdays between 10 to 19 IST
- Lets trigger the build only when there are changes
  - poll scm: Jenkins will look into remote git repository for changes, we need to configure how frequently jenkins will poll git/scm
- Poll SCM will initiate build only when there are changes. In the below configuration we have asked to check/poll git every minute and build whenever there is a change.



- Lets write a declarative pipeline to build code every 30 minutes only when git has new changes [Refer Here](#) for changes

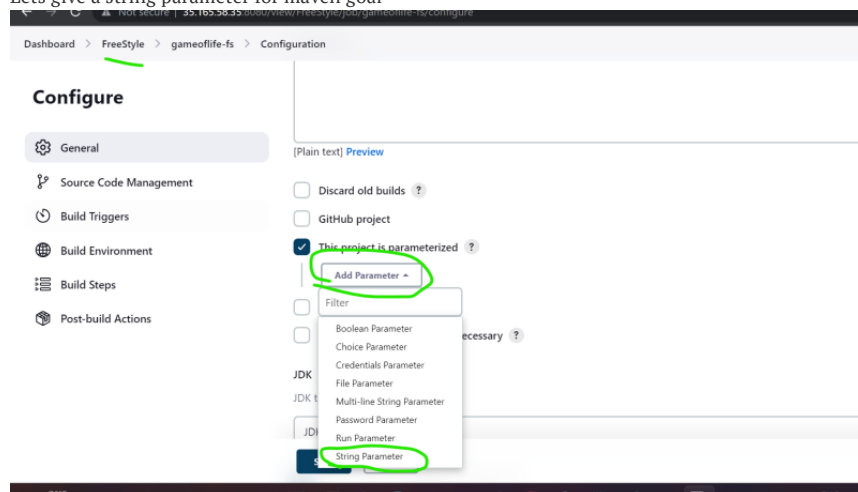


## Day Builds and Night Builds

- Day Builds represent builds during active development time. During this we will have pipelines which will give feedback to developers on their committed code quality. This build will have
  - build
  - package
  - unit test
  - Static Code Analysis
- Night Build represents the work of the team for the entire day. This build will have
  - build
  - package
  - unit test
  - Static Code Analysis
  - store the package into binary repository
  - creating/update test environments with latest packages and executing automated tests
  - Generate the reports which QA and management team will be interested.
- Day Builds are configured to run
  - on every change done by dev team if the time taken to perform this is less (< 20 mins)
  - on schedule (for every hour or 2 hours)

## Handling User Inputs

- User Inputs are provided as parameters
- Lets give a string parameter for maven goal



Dashboard > FreeStyle > gameoflife-fs > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

String Parameter

NameMAVEN\_GOAL

Default Valuepackage

DescriptionThis is maven goal

Save

Apply

- Now lets using parameter in maven build steps

Dashboard > FreeStyle > gameoflife-fs > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

Build Steps

Invoke top-level Maven targets

Goals\$MAVEN\_GOAL

Advanced...

Add build step

Save

Apply

- Now lets build the job

Dashboard > FreeStyle > gameoflife-fs >

Status

Changes

Workspace

Build with Parameters

Configure

Delete Project

Git Polling Log

Rename

Project gameoflife-fs

Permalinks

- Last build (#2), 36 min ago
- Last stable build (#2), 36 min ago
- Last successful build (#2), 36 min ago
- Last completed build (#2), 36 min ago

Build History

trend

Filter builds

https://directdevops.blog/2023/03/04/devops-classroomnotes-04-mar-2023/

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**Project gameoflife-fs**

This build requires parameters:

MAVEN\_GOAL

This is maven goal

clean package

**Build**

**Build History** trend

Filter builds...

Dashboard > FreeStyle > gameoflife-fs > #3

```
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 09e0c01774bd17d3fe049c290b620b3d2124578 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 09e0c01774bd17d3fe049c290b620b3d2124578 # timeout=10
Commit message: "added dummy change"
> git rev-list --no-walk 09e0c01774bd17d3fe049c290b620b3d2124578 # timeout=10
[gameoflife-fs] $ mvn clean package
[01:34mINFO][m] Scanning for projects...
[01:33mWARNING][m]
[01:33mWARNING][m] Some problems were encountered while building the effective model f
com.wakaleo.gameoflife:gameoflife-build:jar:1.0-SNAPSHOT
[01:33mWARNING][m] Reporting configuration should be done in <reporting> section, not
<configuration> as reportPlugins parameter.
[01:33mWARNING][m]
[01:33mWARNING][m] Some problems were encountered while building the effective model f
com.wakaleo.gameoflife:gameoflife-core:jar:1.0-SNAPSHOT
[01:33mWARNING][m] Reporting configuration should be done in <reporting> section, not
<configuration> as reportPlugins parameter.
[01:33mWARNING][m]
[01:33mWARNING][m] Some problems were encountered while building the effective model f
com.wakaleo.gameoflife:gameoflife-web:war:1.0-SNAPSHOT
```

- Try giving Branch name
- Now lets try the same thing with choice parameter

Dashboard > FreeStyle > gameoflife-fs > Configuration

**Configure**

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

☐ GitHub project

☒ This project is parameterized ?

Add Parameter

Filter

☐ Boolean Parameter

☒ Choice Parameter

☐ Credentials Parameter

☐ File Parameter

☐ Multi-line String Parameter

☐ Password Parameter

☐ Run Parameter

☐ String Parameter

☒ Restrict where this project can be run ?

Label Expression ?

MAVEN\_JDK8

Label MAVEN\_JDK8 matches 1 node. Permissions or other restrictions provided by plugins may further restrict.

[Plain text] Preview

☐ Discard old builds ?

☐ GitHub project

☒ This project is parameterized ?

**Choice Parameter** ?

Name ?

MAVEN\_GOAL

Choices ?

package

install

clean

test

compile

**Save** **Apply**

Dashboard > FreeStyle > gameoflife-fs >

Status

Changes

Workspace

Build with Parameters

Configure

Delete Project

Git Polling Log

Rename

### Project gameoflife-fs

This build requires parameters:

MAVEN\_GOAL

install

**Build**

Dashboard > FreeStyle > gameoflife-fs > #4

Previous Build

```

> git --version # timeout=10
> git --version # 'git version 2.34.1'
> git fetch --tags --force --progress -- https://github.com/khajadevopsnarch23/game-of-life.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 89e8c01774bd717d3fe049c290b620b3d2124578 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 89e8c01774bd717d3fe049c290b620b3d2124578 # timeout=10
Commit message: "added dummy change"
> git rev-list --max-count=1 89e8c01774bd717d3fe049c290b620b3d2124578 # timeout=10
[gameoflife-fs] $ mvn install
[01:34mINFO][n] Scanning for projects...
[01:33mWARNING][n]
[01:33mWARNING][n] Some problems were encountered while building the effective model for
com.wakaleo.gameoflife:gameoflife-build:jar:1.0-SNAPSHOT
[01:33mWARNING][n] Reporting configuration should be done in <reporting> section, not in maven-site-plugin
<configuration> as reportPlugins parameter.
[01:33mWARNING][n]
[01:33mWARNING][n] Some problems were encountered while building the effective model for
com.wakaleo.gameoflife:gameoflife-core:jar:1.0-SNAPSHOT
[01:33mWARNING][n] Reporting configuration should be done in <reporting> section, not in maven-site-plugin
<configuration> as reportPlugins parameter.
[01:33mWARNING][n]
[01:33mWARNING][n] Some problems were encountered while building the effective model for
com.wakaleo.gameoflife:gameoflife-web:war:1.0-SNAPSHOT

```

- Lets try to add the same to declarative pipelines

- [Refer Here](#) for string parameter

Dashboard > declarative > gol-declarative-exclusive > Configuration

**Configure**

General

Advanced Project Options

Pipeline

☐ Pipeline speed/durability override ?

☐ Preserve stashes from completed builds ?

☒ This project is parameterized ?

**String Parameter**

Name ?

MAVEN\_GOAL

Default Value ?

package

Description ?

Maven Goal

Save Apply

- [Refer Here](#) for the choice parameter

- In Declarative pipelines we can also take additional inputs [Refer Here](#)

## Notifications

- For testing, lets setup fake smtp server and inbox in mailtrap.io
- Lets configure credentials for notifications into jenkins. Navigate to Manage Jenkins => Configure System => E-mail Notification

E-mail Notification

SMTP server

sandbox.smtp.mailtrap.io

Default user e-mail suffix ?

@directdevops.blog

☒ Use SMTP Authentication ?

User Name

6cb63c8ebba86e

Password

\*\*\*\*\*

☒ Use SSL ?

☐ Use TLS

SMTP Port ?

2525

Reply-To Address

Charset

UTF-8

☒ Test configuration by sending test e-mail

Test e-mail recipient

Save

Apply

Charset

UTF-8

☒ Test configuration by sending test e-mail

Test e-mail recipient

qtdevops@gmail.com

Email was successfully sent

Test configuration

Save

Apply

- Now lets configure jenkins to send emails on job status

Dashboard > FreeStyle > gameoflife-fs > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

Invoke top-level Maven targets

Filter

Aggregate downstream test results

Archive the artifacts

Build other projects

Publish JUnit test result report

Record fingerprints of files to track usage

Git Publisher

E-mail Notification

Editable Email Notification

Set GitHub commit status (universal)

Set build status on GitHub commit (deprecated)

Delete workspace when build is done

Add post-build action

Save

Apply

Dashboard > FreeStyle > gameoflife-fs > Configuration

## Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

## Post-build Actions

### E-mail Notification ?

Recipients

Whitespace-separated list of recipient addresses. May reference build parameters like fails, becomes unstable or returns to stable.

qtdevops@gmail.com

☐ Send e-mail for every unstable build

☐ Send separate e-mails to individuals who broke the build

Add post-build action ▾

**Save** Apply

---

Dashboard > FreeStyle > gameoflife-fs > #6

```
[@1;34mINFO[m] @1mReactor Summary for gameoflife 1.0-SNAPSHOT:[m
[@1;34mINFO[m]
[@1;34mINFO[m] gameoflife ..... @1;32mSUCCESS
[@1;34mINFO[m] gameoflife-build ..... @1;32mSUCCESS
[@1;34mINFO[m] gameoflife-core ..... @1;32mSUCCESS
[@1;34mINFO[m] gameoflife-web ..... @1;32mSUCCESS
[@1;34mINFO[m] @1m-----
[@1;34mINFO[m] @1;32mBUILD SUCCESS[m
[@1;34mINFO[m] @1m-----
[@1;34mINFO[m] Total time: 17.371 s
[@1;34mINFO[m] Finished at: 2023-03-04T04:18:28Z
[@1;34mINFO[m] @1m-----
[gameoflife-fs] $ /bin/sh -xe /tmp/jenkins716889256869377149.sh
+ echo I'm failing
I'm failing
+ exit 1
Build step 'Execute shell' marked build as failure
Sending e-mails to: qtdevops@gmail.com
Finished: FAILURE
```

mailtrap.io/inboxes/2122925/messages/3322430223

Inboxes > jenkins > Build failed in Jenkins: gameoflife-fs #6

Search...

Build failed in Jenkins: gameoflife-fs #6  
to: <qtdevops@gmail.com> a few seconds ago

Test email #2  
to: <qtdevops@gmail.com> 5 minutes ago

From: address not configured yet <nobody@nowhere>  
To: <qtdevops@gmail.com> 2023-03-04 04:18, 21 K

Show Headers

HTML HTML Source **Text** Raw Spam Analysis Tech Info

See <http://35.85.155.160:8080/job/gameoflife-fs/6/display/redirect>

Changes:

```
[...truncated 1.25 KB...]
Checking out Revision 8b0c81774bd717d3fe49c290b620b3d2124578
(refs/remotes/origin/master)
> git config core.sshCommand timeout=10
> git checkout -f 8b0c81774bd717d3fe49c290b620b3d2124578 # timeout=10
Commit message: "added dummy change"
> git rev-list --no-walk 8b0c81774bd717d3fe49c290b620b3d2124578 # timeout=10
[gameoflife-fs] $ mvn package
[@1;34mINFO[m] Scanning for projects...
[@1;32mWARNING[m] Some problems were encountered while building the effective model for
com.wakaleo.gameoflife:gameoflife-build-jar:1.0-SNAPSHOT
[@1;32mWARNING[m] Reporting configuration should be done in <reporting> section, not in
haven-site-plugin <configuration> as reportPlugins parameter.
```

- Try to do the same in declarative pipeline.
- Slack Notification configuration: [Refer Here](#)
- Microsoft Teams Notification [Refer Here](#)

## Exercise

- Build spring petclinic project using gradle [Refer Here](#)

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