Automation of the process of improvement of a model for CNN using Jenkins, Docker and Git

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Tasks that have been performed here include:

1. Create container image that's has Python3 and Keras or numpy installed using dockerfile

2. When we launch this image, it should automatically starts train the model in the container.

3. Create a job chain of job1, job2, job3, job4 and job5 using build pipeline plugin in Jenkins

4. Job1 : Pull the Github repo automatically when some developers push repo to Github.

5. Job2 : By looking at the code or program file, Jenkins should automatically start the respective machine learning software installed interpreter install image container to deploy code and start training(eg. If code uses CNN, then Jenkins should start the container that has already installed all the softwares required for the cnn processing).

6. Job3 : Train your model and predict accuracy or metrics.

7. Job4 : if metrics accuracy is less than 80% , then tweak the machine learning model architecture.

8. Job5: Retrain the model or notify that the best model is being created

9. Create One extra job job6 for monitor : If container where app is running. fails due to any reason then this job should automatically start the container again from where the last trained model left

All the required files have been attached in the github link provided here:

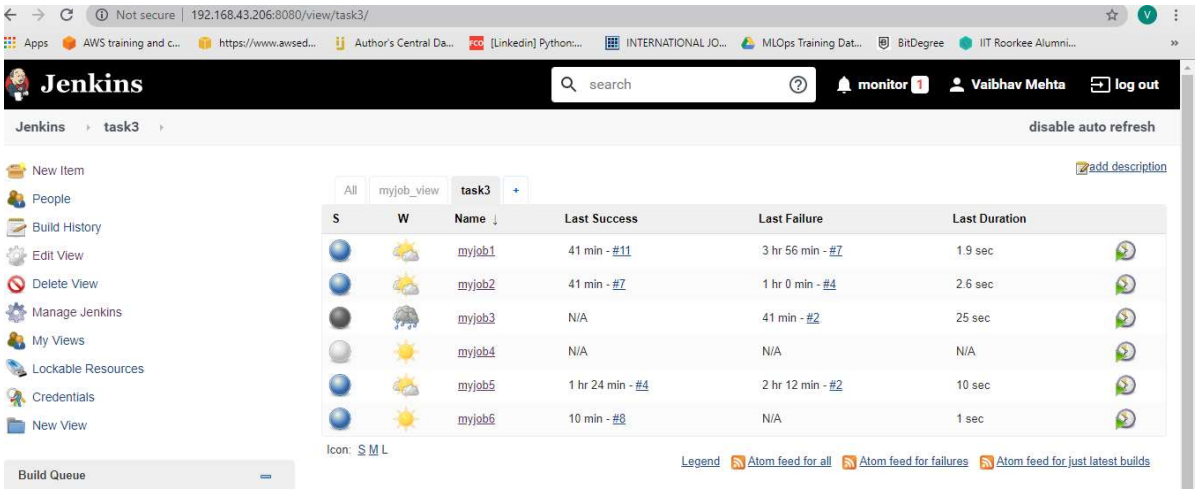
https://github.com/Vaibhav-Mehta-19/mlops_task3.git

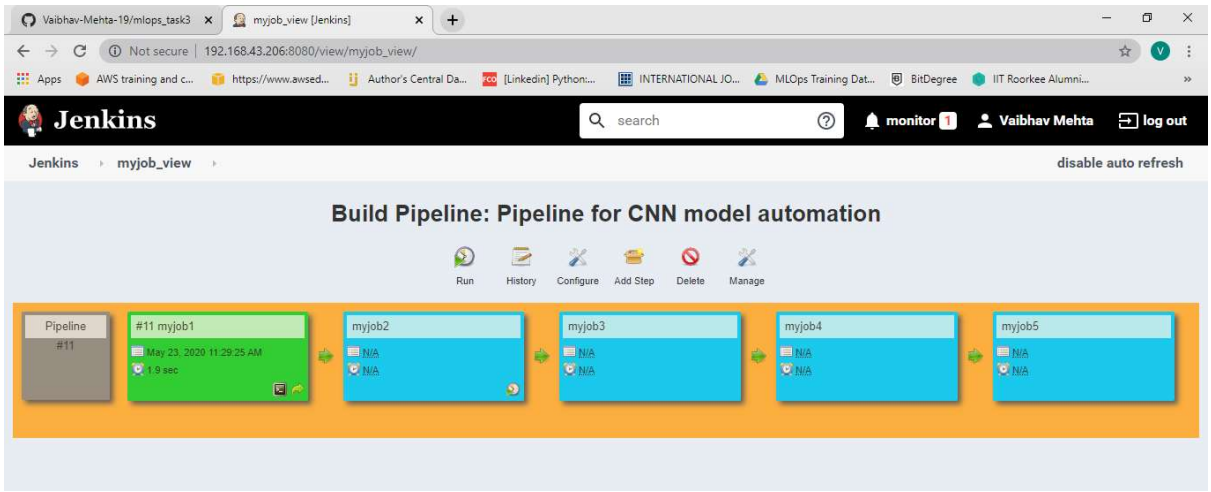
All the user needs to do is to clone the given repo in the local repo and then perform the steps for setting up the Jenkins jobs to perform the complete automation of the process of manually add and removing layers in the process of creating a model for training a CNN.

The user also needs to run the Dockerfile provided in the repo for creating a new docker image using

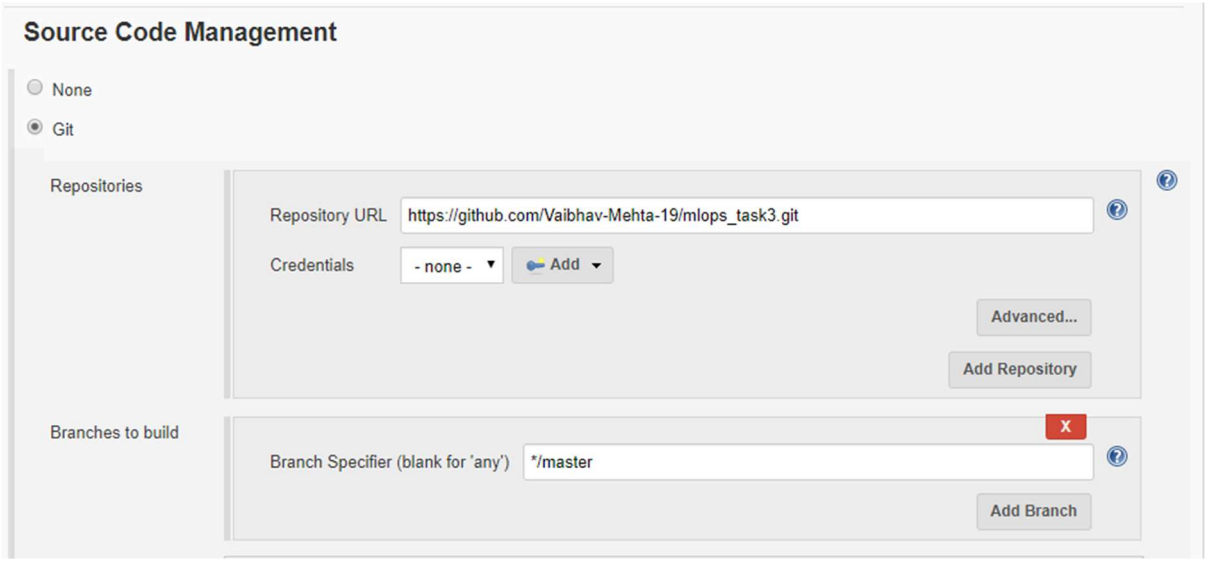
```
docker build --tag name:v1 .
```

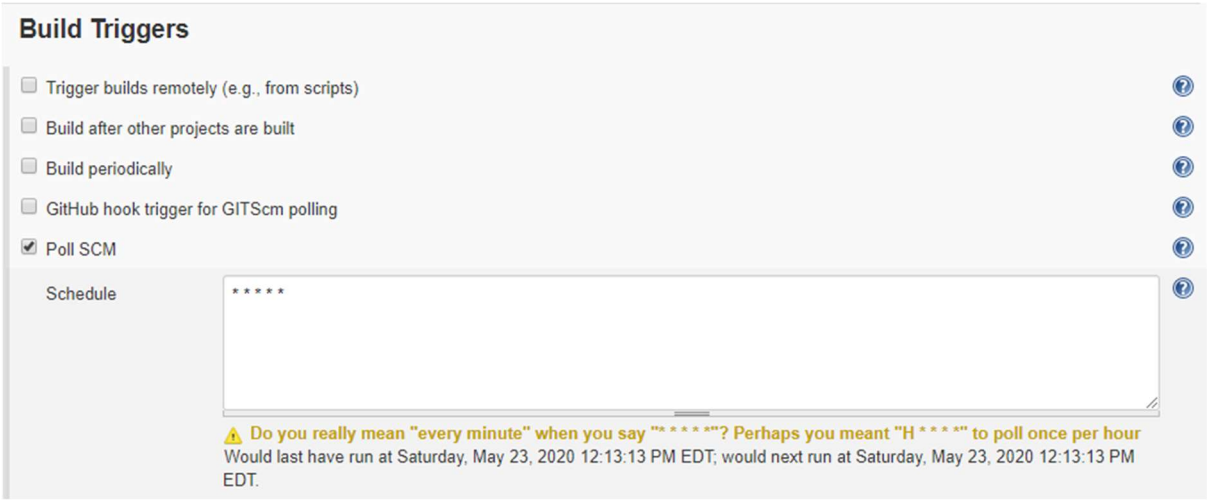
in the same folder. Then all the processes will be automated using the Jenkins by following the jobs as created below.

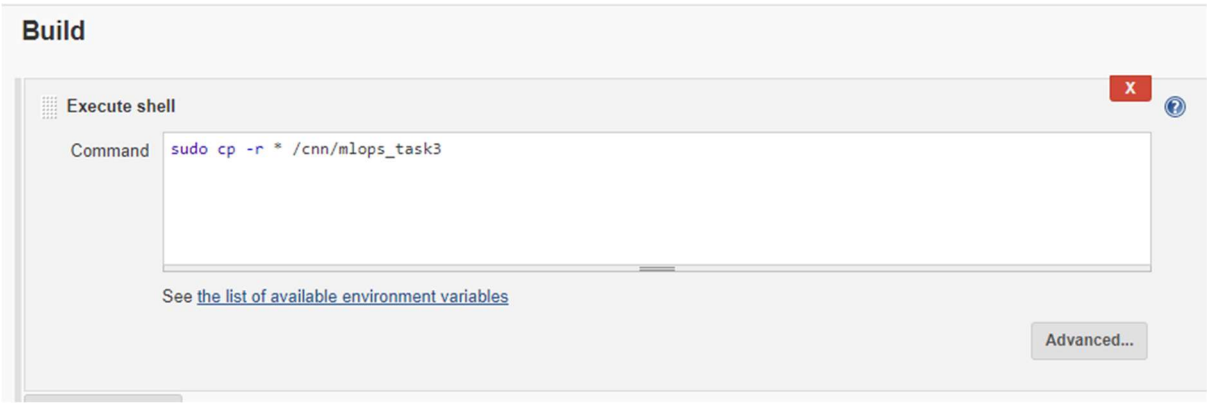




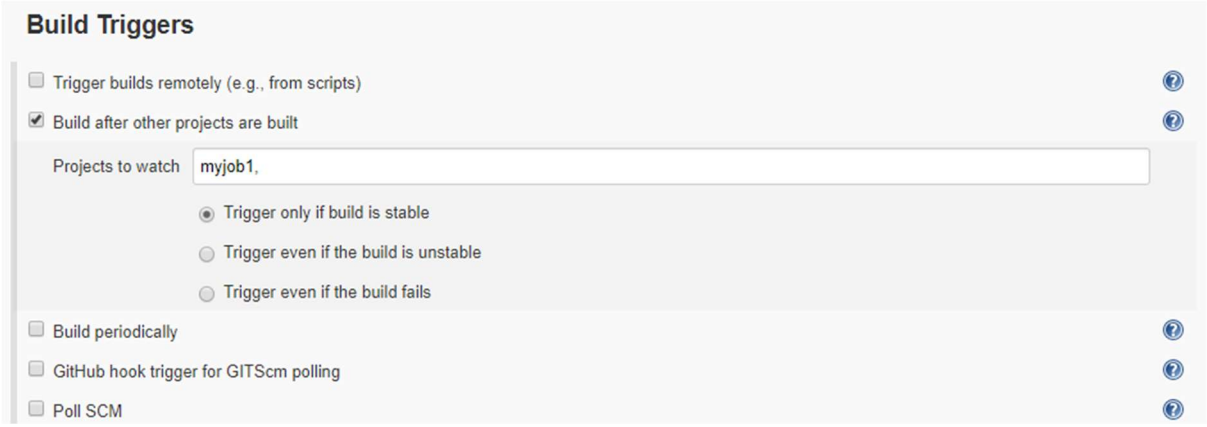
JOB1:


Source Code Management
None
Git
Repositories
Repository URL
https://github.com/Vaibhav-Mehta-19/mlops_task3.git
Credentials
- none -
Add
Advanced...
Add Repository
Branches to build
Branch Specifier (blank for 'any')
*/master
Add Branch


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
Schedule
* * * * *
Do you really mean "every minute" when you say "* * * * *"? Perhaps you meant "H * * * *" to poll once per hour
Would last have run at Saturday, May 23, 2020 12:13:13 PM EDT; would next run at Saturday, May 23, 2020 12:13:13 PM EDT.

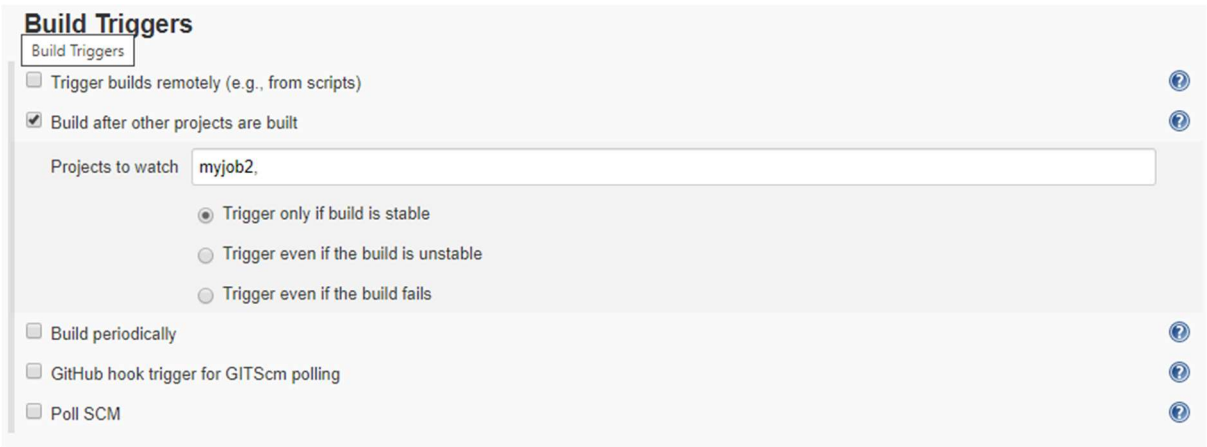

Build
Execute shell
Command
sudo cp -r * /cnn/mlops_task3
See the list of available environment variables
Advanced...

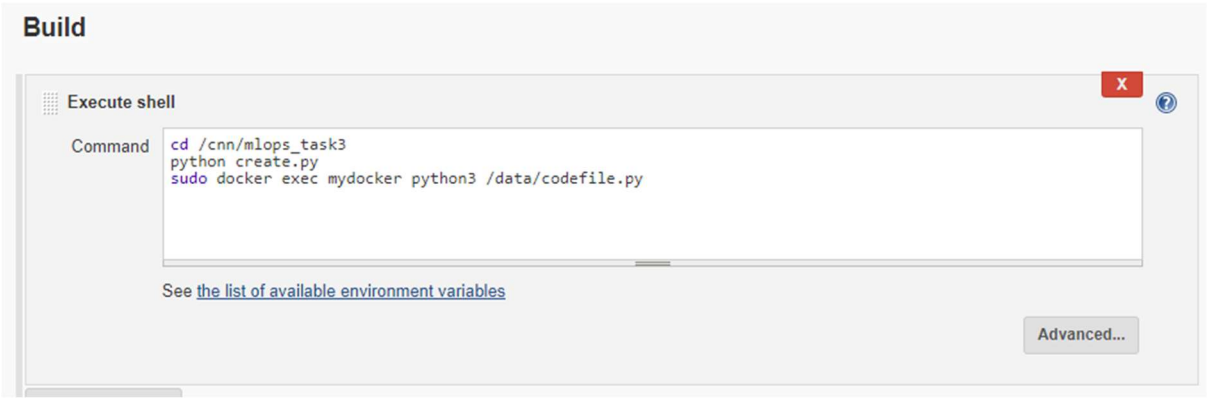
JOB2


Build Triggers
Trigger builds remotely (e.g., from scripts)
Build after other projects are built
Projects to watch
myjob1,
Trigger only if build is stable
Trigger even if the build is unstable
Trigger even if the build fails
Build periodically
GitHub hook trigger for GITScm polling
Poll SCM

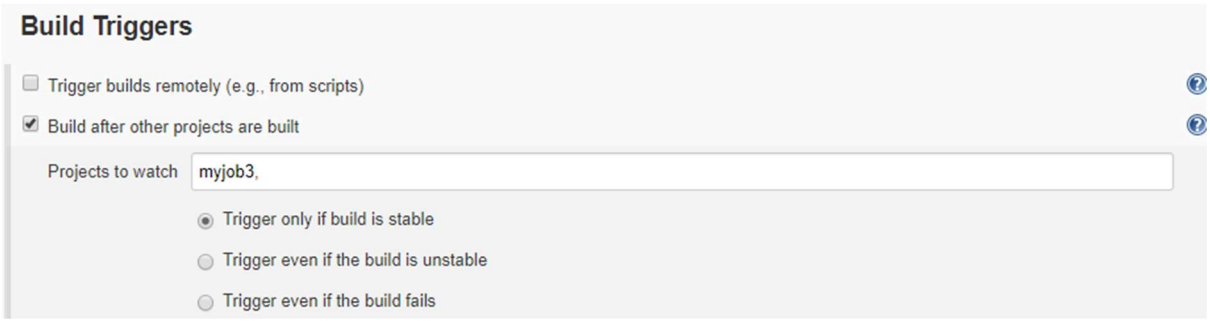

Build
Execute shell
Command
cd /cnn/mlops_task3
python build.py
if sudo docker ps -a | grep mydocker
then
sudo docker start mydocker
else
sudo docker run -td --name mydocker -v /cnn/mlops_task3:/data vm_cnn
fi
See the list of available environment variables
Advanced...
Add build step

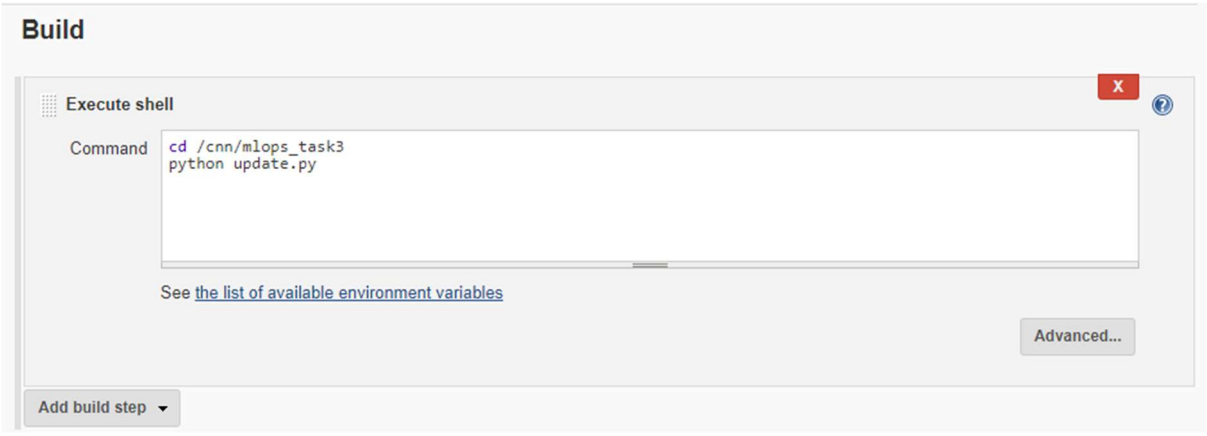
JOB3


Build Triggers
Build Triggers
Trigger builds remotely (e.g., from scripts)
Build after other projects are built
Projects to watch
myjob2,
Trigger only if build is stable
Trigger even if the build is unstable
Trigger even if the build fails
Build periodically
GitHub hook trigger for GITScm polling
Poll SCM

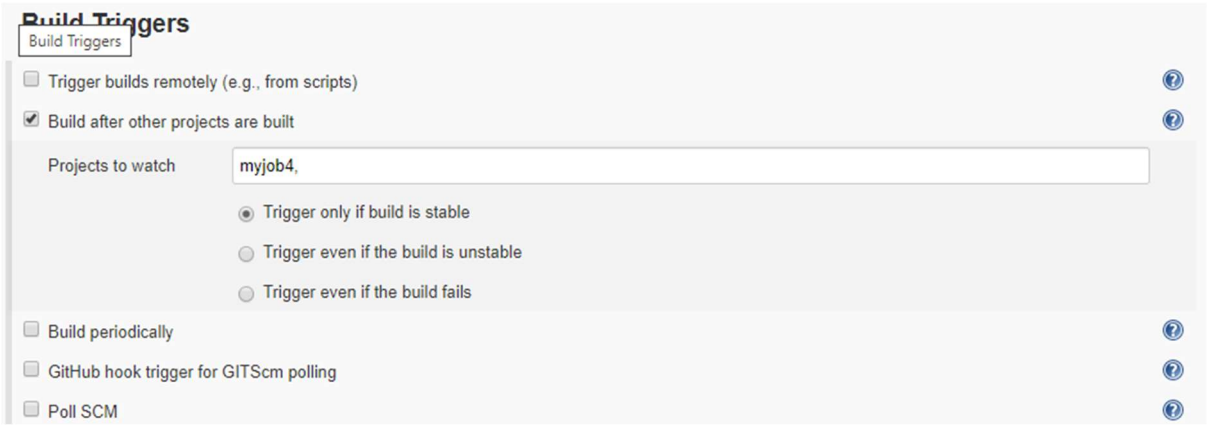

Build
Execute shell
Command
cd /cnn/mlops_task3
python create.py
sudo docker exec mydocker python3 /data/codefile.py
See the list of available environment variables
Advanced...

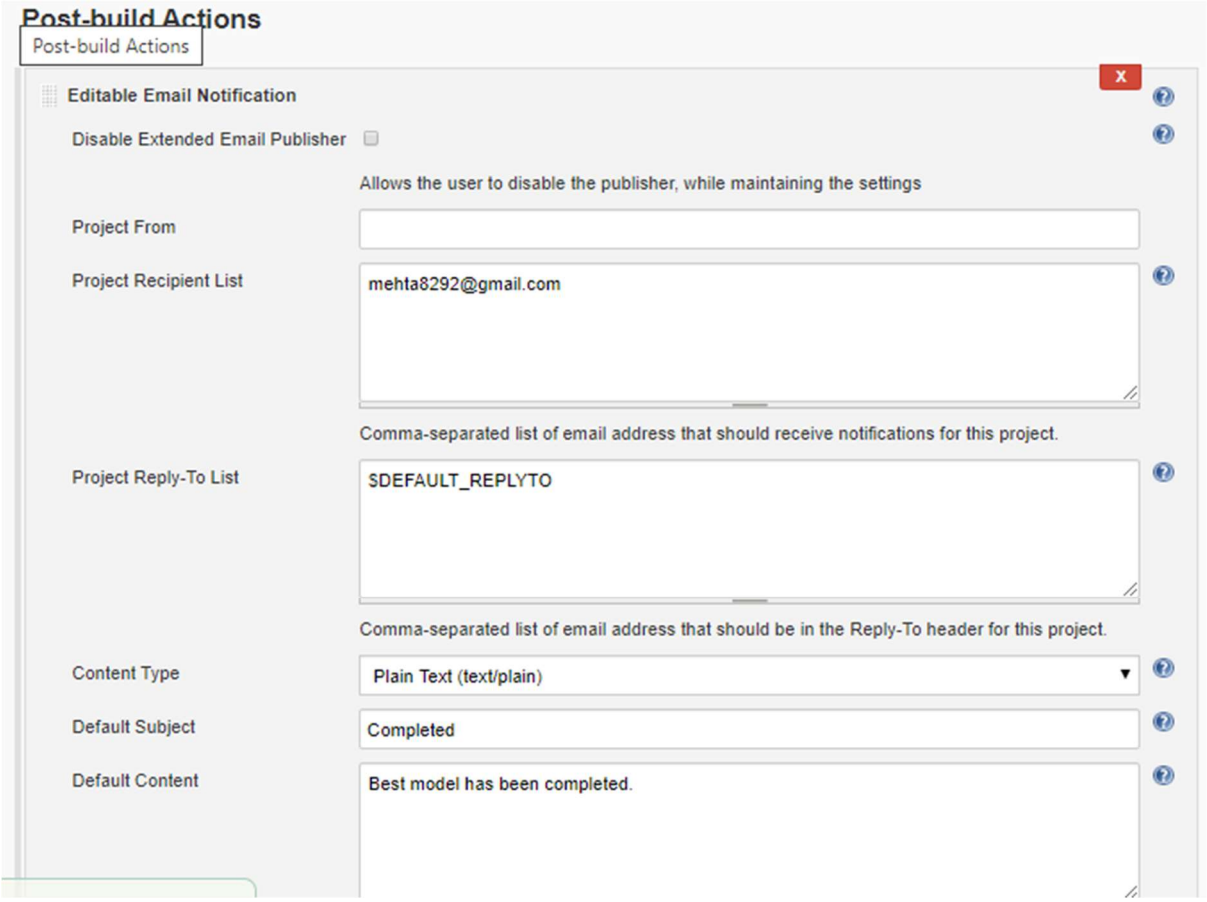
JOB4


Build Triggers
Trigger builds remotely (e.g., from scripts)
Build after other projects are built
Projects to watch
myjob3,
Trigger only if build is stable
Trigger even if the build is unstable
Trigger even if the build fails

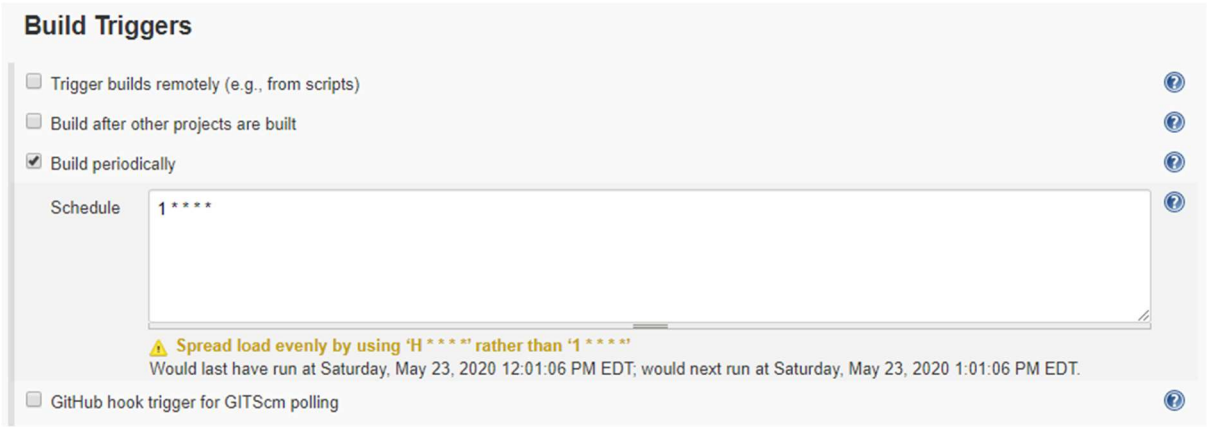

Build
Execute shell
Command
cd /cnn/mlops_task3
python update.py
See the list of available environment variables
Advanced...
Add build step

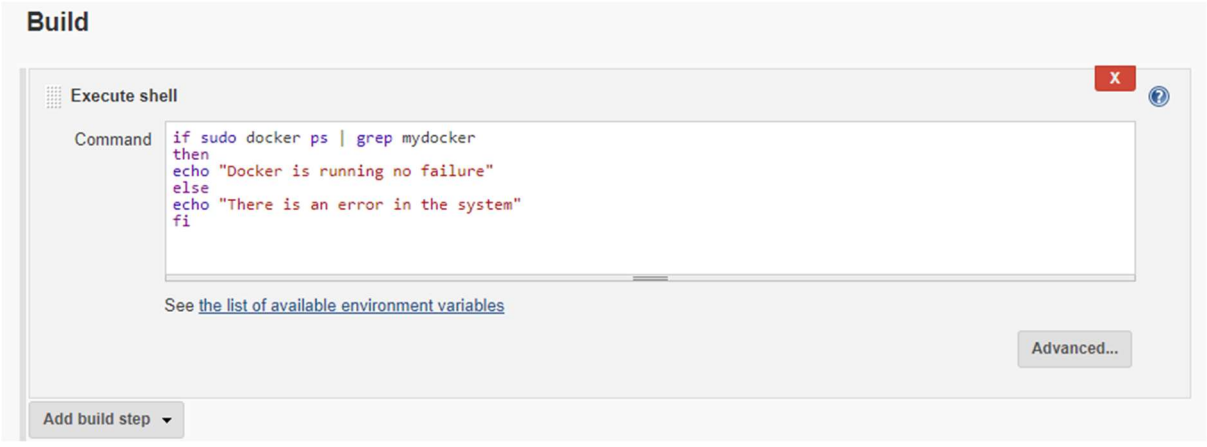
JOB5


Build Triggers
Build Triggers
Trigger builds remotely (e.g., from scripts)
Build after other projects are built
Projects to watch
myjob4,
Trigger only if build is stable
Trigger even if the build is unstable
Trigger even if the build fails
Build periodically
GitHub hook trigger for GITScm polling
Poll SCM


Post-build Actions
Post-build Actions
Editable Email Notification
Disable Extended Email Publisher
Allows the user to disable the publisher, while maintaining the settings
Project From
Project Recipient List
mehta8292@gmail.com
Comma-separated list of email address that should receive notifications for this project.
Project Reply-To List
$DEFAULT_REPLYTO
Comma-separated list of email address that should be in the Reply-To header for this project.
Content Type
Plain Text (text/plain)
Default Subject
Completed
Default Content
Best model has been completed.

JOB6





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