# UP-MSIT: DevOps 2 Final Project Guideline (Group 7)

Project Guideline & Requirements:

1. Cloud Service (AWS):
   * + 1. – EC2 Instance:

**Total**: 6 instances:

Jenkins (1) – (In Public subnet)

Master Node (2) – (In Private subnet)

Worker Node (2) – (In Private subnet) (Autoscaling)

DB Backup (1) – (In Private subnet)

**Spec**:

* **AMI** : Ubuntu Server 20.04
* **Instance type** : t2.meduim
* **vCPU**\*             : 2
* **CPU credi**t      : 24 hour
* **Memory** : 4 (GiB)
* **Storage** : SSD 8 (GiB) EBS-Only
* **Network Performance**:  SSD 8 (GiB) EBS-Only
  + - 1. - Route 53
      2. - Elastic Load Balancer (ELB)
      3. - Virtual Private Cloud (VPC)
         * Public subnet (1)
         * Private subnet (1)
      4. - Auto Scaling Group
      5. - Elastic IP
      6. - Cloud Watch
      7. - Cloud Formation Stack
      8. - Relational Database Service (RDS)
      9. - S3 Backup

1. Github:
   1. Repository: <https://github.com/phokhaing/deploy_devops_hr_system.git>
2. Docker Hub:
   1. Installation:
      * Reference: <https://serverspace.io/support/help/how-to-install-docker-on-ubuntu-20-04/>
   2. Required file:
      * AWS EC2 Instance (1) (Jenkins)
      * Dockerfile
      * docker-compose.yaml
   3. Build Image:
      * + Run: # docker-compose build
   4. Push Image to registry:
      * Login: # docker login -u username -p password
      * Run: # docker push phokhaing/hr\_system\_app:version
3. Kubernetes Cluster:
   1. Requirement:
      * AWS EC2 Instance (4 instances)
        + - Master Node (2)
          - Worker Node (2) – (AWS Autoscaling Group)
4. Kubernetes deploy file:
   * + - app-deploy.yaml
   1. Installation & Configure cluster node:
      * + - Reference: <https://medium.com/platformer-blog/building-a-kubernetes-1-20-cluster-with-kubeadm-4b745eb5c697>
          - Or Check file:

setup-kubernetes-cluster.txt

* 1. Deployment:

On Master Node Run: # kubectl apply -f app-deploy.yaml

1. Jenkins
   1. Requirement:
      * AWS EC2 Instance (1 Jenkins)
      * Pipeline Code:
        + Jenkinsfile
      * Jenkins Plugin:
        + SSH Agent
        + Slack Notification
      * Create credentials for Integrate access with account:
        + Github
        + Dockerhub
        + Slack Notification
        + Master Node (SSH)
   2. Installation & Configuration:
      * + - Reference: <https://www.digitalocean.com/community/tutorials/how-to-install-jenkins-on-ubuntu-18-04>
   3. Automate Deploy:
      * Create new job, select Pipeline
      * Copy & Past Pipeline code from file: Jenkinsfile
      * Click Build Now
2. Slack Notification
   1. Requirement:
      * Have a slack account:
        + Create account: <https://slack.com/>
   2. Configuration:
      * Create a Workspace (G7DevOps)
      * Create a Channel (hr-system)
      * Integrate with Jenkins app