Lab#3 – Jenkinsfile with Docker Images & Azure DevOps Boards

**Due Date:** Midnight of Week#9 Friday (July 14)

**Purpose:** The purpose of this lab is to help you:

* Become familiar with Docker, Docker Hub, Docker image, Docker container
* Understand Azure DevOps Boards

**Instructions**: Be sure to read the following general instructions carefully:

This lab should be completed individually by all students. Submit your solution **through the dropbox**, name your submission as **studentID(yourlastname)\_Labnumber.zip**.

e.g., **300123456**(**smith)\_Lab#3**.zip

**Rubric**

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| Question | Marks |
| 1. Jenkins CI/CD pipeline | 12 |
| 1. Azure DevOps Boards | 12 |

Question 1 – Create Jenkin CI/CD pipeline to build docker image for a Maven project [12 marks]

Create Jenkins CI/CD pipeline to build docker image for the Maven Java Webapp you implemented in Quesiton#3 of the Lab#2, and push the docker image to your Docker Hub artifact. Lastly, pull the artifact (i.e., the docker image) from your Docker Hub account and run it.

Please make sure that your submission includes your project **GitHub URL** so that you professor can view Dockerfile and Jenkinsfile

1. Dockerfile [1 mark]
2. Provide screenshot to show that manually building docker image is successful [0.5 mark]
3. Run the docker image built in step 2, and provide the screenshots of the container, and the screenshot of the web page [1 mark]
4. Provide screenshots to show that the container has been stopped, and the docker image is built in step 2 has been deleted [0.5 mark]
5. Jenkinsfile
   1. Check out stage [0.5 mark]
   2. Build maven project stage [0.5 mark]
   3. Add your Docker Hub’s password to Jenkins Credentials [1 mark]
   4. Docker build stage [1 mark]
   5. Docker login stage [1 mark]
   6. Docker push stage [1 mark]
6. Screenshot to demonstrate that your CI pipeline has successfully built a docker image, and the docker image has been pushed to your Docker Hub account [2 marks]
7. Run the docker image generated in step 6, and provide the screenshot of the container, and the screenshot of the web page [2 marks]

Question 2 - Use Agile Process in Azure DevOps [12 marks]

1. Visit <https://learn.microsoft.com/en-us/aspnet/core/tutorials/first-mvc-app/start-mvc?view=aspnetcore-6.0&tabs=visual-studio> , and read all of the instructions until the last page [Part 10, examine the Details and Delete methods of an ASP.NET Core app | Microsoft Learn](https://learn.microsoft.com/en-us/aspnet/core/tutorials/first-mvc-app/details?view=aspnetcore-6.0)

2. Create a project named **MVC Agile Process** with **Agile** Work Item Process

3. Provide your project GitHub URL so that you professor can view your project

4. Create an Epic for the tutorial and then organize Features, User Stories and Tasks underneath the Epic that are needed to complete the tutorial

5. Inside the Sprints setup two iterations

* 1. Iteration 1 should have all tasks to create MVC
  2. Iteration 2 should have all tasks to add search and validation

After you finish all steps above, include screenshot for following into your submission doc file

1. Epic details with two child features [2 mark]
2. Each Feature with details that has child User Story [2 marks]
3. Each User Story with details that has child Tasks [2 marks]
4. Iteration 1 with tasks, start and end date [2 marks]
5. Iteration 2 with tasks, start and end date [2 marks]
6. Task board showing current sprint details [1 mark]
7. Backlog showing User Stories and Features [1 mark]