



Introduction to DEVOPS (Merged - CSIZG514/SEZG514)(S1-21)

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Assignment

Hello All,

Please go through all listed instructions and guidance carefully for successful assignment completion.

Your assignment will be of 20 marks.

I have created 5 assignment questions from which you are expected to solve any one as per your choice.

Out of 5, Three assignments are group based and Two assignment are for an individual.

I have created goggle sheet in which you are supposed to provide your preference for assignment implementation. <https://docs.google.com/spreadsheets/d/107ISxO7PARqkActYF0jMX4n2BnHG6n8nOsKFJ07QY0usp=sharing>

Please find the assignment details and instructions:

Assignment details:

- 1) Assignment 1,2, and 3 are expected to be performed in group (Not more than 5 people also it is fine with me if anyone wants to execute/perform this individually).
- 2) Assignment 4 & 5 is strictly expected to be performed individually.

Instructions:

- 1) Submission of assignment 1,2, & 3 is expected as below

Lab performed can be submitted either via screen recording (mp4) or with step by step screenshot (the video or screenshot must contain your BITS_ID or your name to authenticate)

If you are opting for screen recording, the recorded video should be uploaded to below drive <https://drive.google.com/drive/folders/10-nMJeIKiTBZfsgs34vdtjKYOVqNgjX4?usp=sharing> (upload to the drive is restricted to BITS email ids)

For assignment 2 and 3 the group must share selenium test scripts and jenkinsfile respectively.

Note: If you attain to screen recording then kindly just upload video file to drive and other supporting documents should be uploaded here (Elearn portal)

- 2) Submission of assignment 4 and 5:

The submission report must include the name and bits id of an individual

There will be plagiarism check so make sure not to copy paste from internet

The report content should be more than 4 pages (Word document)

Assignment Questions:

Assignment 1

The objective of this assignment is to have hands on experience of Git Workflow. You are required to create or fork a repo on Git and use Git bash on the desktop for completing the tasks. You are required to create one manager role for the repository and others as collaborators. The manager will act as a reviewer and decision maker.

Checklist of the tasks that are required to be performed:

Add team members as collaborators and assign them appropriate rights (if you are performing individual then create one dummy account for the task)

Create a branch(development/production/feature)

Edit files or create new files followed by commit

Clone the repo and Create pull-request

While collaborating your work, showcase how conflicts are resolved

Create tag such as open issue, or feature-added

Do a force push/commit and then later reset the changes

Stage "development branch to production branch"

Showcase how features are released in versions (merging production to master branch)

Also, state importance of Readme and gitignore files and their usage while working in a distributed environment.

Bonus point: If Pull Requests are linked with e-mail to the manager who finally approves the changes.

Assignment 2

Selenium is most commonly used frameworks for browser automation and Testing Team's use this tool extensively in DevOps pipelines. This assignment is designed to focus & perform GUI Automation testing using Selenium. You can select any website of your choice which requires you to login and then search through various lists.

You need to showcase following tasks:

Navigate to the website

Login to the portal (login form can be on the different window, or as a dropdown, or as a pop-up)

Showcase interaction with the Dynamic and Static elements

Extract web elements such as table or list

Usage of locator types, whether to use CSS selector or Xpath

How above variation effects performance of the testing

Usage of Dynamic Xpath or tags vs Static Xpath

Need of thread.sleep() functionality, in case of loading page or waiting for search results

Can same selenium test work in different browsers (chrome or IE)

Exception handling in case webpage doesn't load properly as expected

Bonus point: Measure the performance in terms of time investment for Manual Vs Automated Testing

Assignment 3

Jenkins is a popular open source tool to perform continuous integration and build automation. Create a repo using git & Setup Jenkins. Create one administrator user and manage their roles.

You are required to perform following tasks:

Setup Master-slave Architecture

Create a Jenkins Pipeline (Describe steps, nodes and various stages included in the pipeline)

Showcase Build, Test and Deploy stages

Handle possible failures while executing pipeline

Create one additional branch and handle pull requests

Make some changes in the source code and integrate

Create Staging & Production Environment

Deploy changes to Staging Environment

Deploy changes to Production Environment

List the importance and benefits of CI\CD

Bonus Point: Usage of plugins such as AWS or Azure for above tasks is advised

Assignment 4 – Case Study

The COVID-19 pandemic has given rise to unimaginable circumstances for companies around the world. Almost without warning entire business world has been pushed into remote work. Which converted daily face-to-face meetings to skype calls, physical classroom learning to virtual meetings. Engaging 50-100 attendees at once and meetings/coaching going on for more than 60 minutes required a robust and quick solution to keep the business moving. The situation demanded robust, failure proof and quick delivery of the solutions.

Think of possible situation and timeline that would have required without DevOps.

Now explain how DevOps plays an important role in various stages from development to delivering of the solution, considering the distributed environment, servers and data, load handling and availability of the software.

Assignment 5 – Case Study

Consider you are part of startup, working on a product development in business reporting platform domain. The product is expected to generate business reports using AI for the stakeholders. The product should serve features such as, Data Loading, Data Cleaning, Data Preprocessing and Artificial Intelligence for Report Generation, Report Exporting in PDF/Word and integration with a mailing system.

During recent Fintech event start-up got a big investment for the product to scale and deliver as SaaS to the users. Product must be converted as SaaS solution and made available for about 100 stakeholders each generating 1 lakh reports on monthly basis. To satisfy the request, it requires load balancing, parallel and distributed execution and error free as these reports contain great value to the stakeholder's company and timely generation. How this product development delivery can be accelerated with the help of DevOps?

Submission status




Submission status	No attempt
Grading status	Not graded
Due date	Sunday, 10 October 2021, 11:55 PM
Time remaining	24 days 9 hours
Last modified	-

Add submission

Make changes to your submission

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 **Assignment**

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Course administration

You are logged in as DHIRAJ KUMAR PATHAK . (Log out)

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