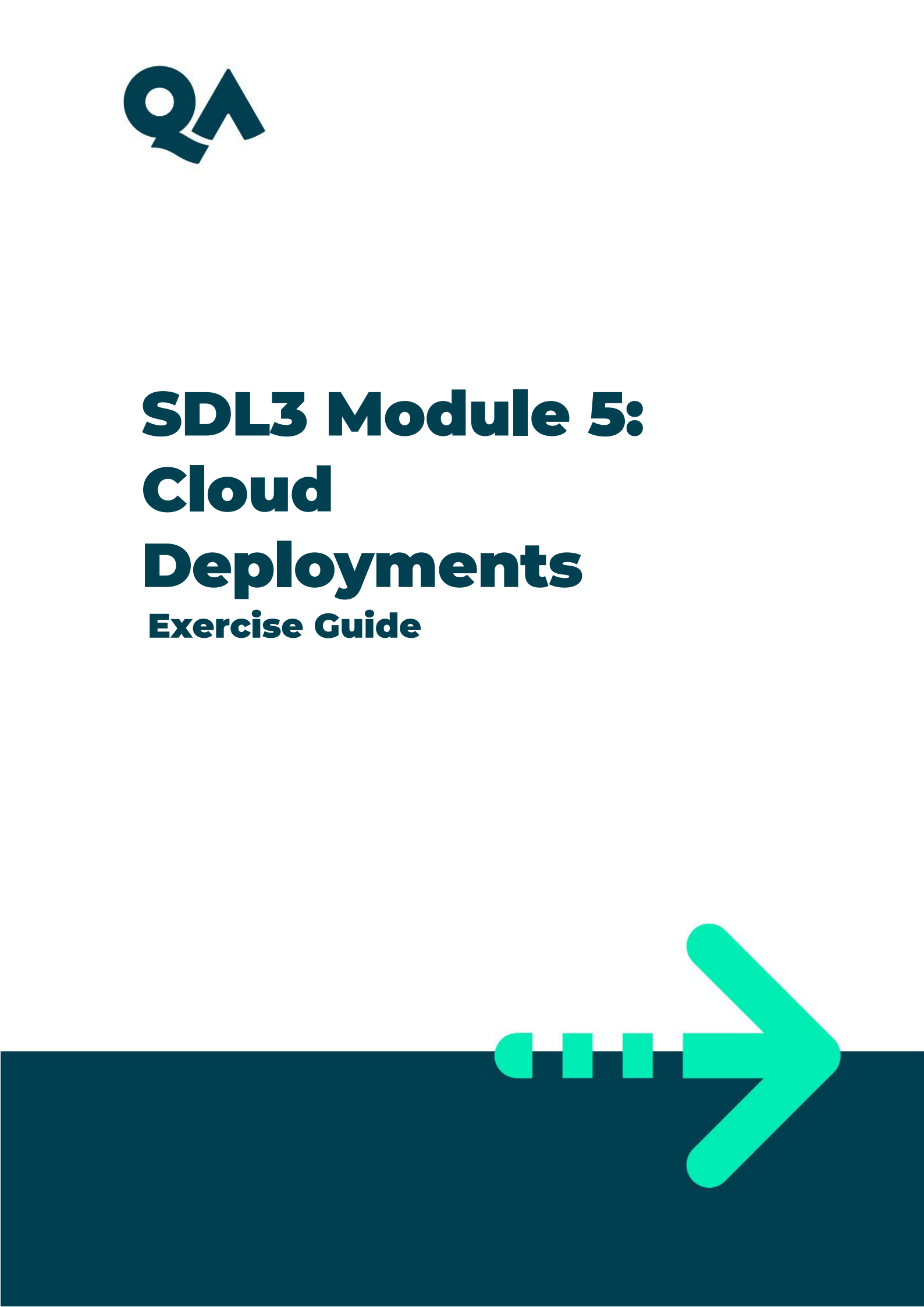


SDL3 Module 5: Cloud Deployments

Exercise Guide

Exercise 1 – CI/CD discussion

1. In groups, spend some time researching the following CI/CD tools:
    - GitHub Actions
    - Jenkins
    - TeamCity
    - CircleCI

2. Based on your research, discuss in your groups the following points:
    - What do you notice about the use of Jenkins/TeamCity vs that of Actions/CircleCI?
    - What advantages does Actions have compared to Jenkins/TeamCity? Do they have any advantages over Actions?
    - What advantages/disadvantages does Actions have in comparison to CircleCI?

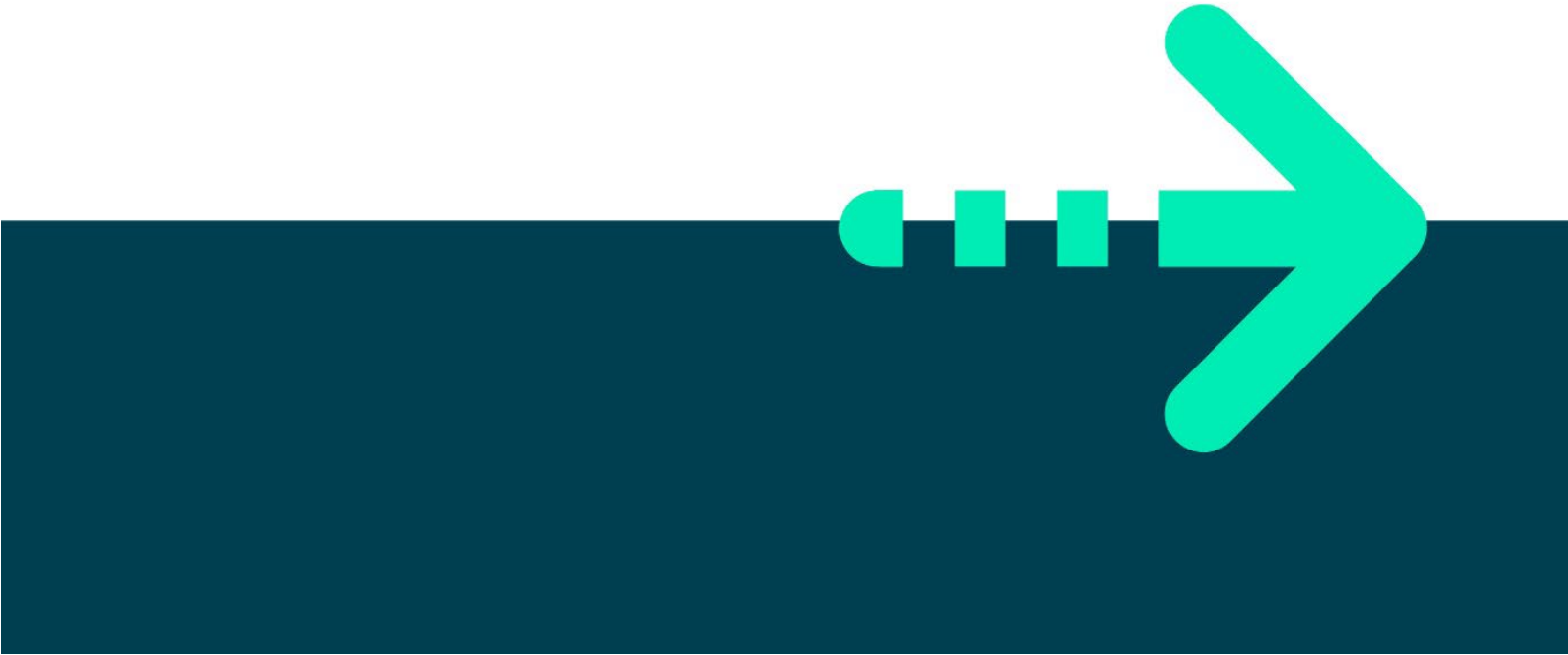
Exercise 2 – Setting up GitHub actions

This exercise builds upon the unit testing exercises from day 2 – so continue to work with the existing repository

Solution: [agray998/QAA-Module3-UnitTest-Actions-Solution: Solution for automating the unit tests provided using Github Actions]

Part 1 – Initial Workflow

1. Ensure you have your own version of the exercise repository which you can push to – if you haven't already you can fork the original to your own GitHub and push your work to your fork
2. From the repository, navigate to the actions tab. Take note of the variety of templates available – these templates can be very useful starting points
3. Add a simple 'hello world' example template to your repository – take some time to read the comments, these provide useful commentary on what each part of the workflow is for.



4. Once you have committed the changes, wait for the initial build to succeed – then navigate back to the actions UI and familiarise yourself with the output of the example job.

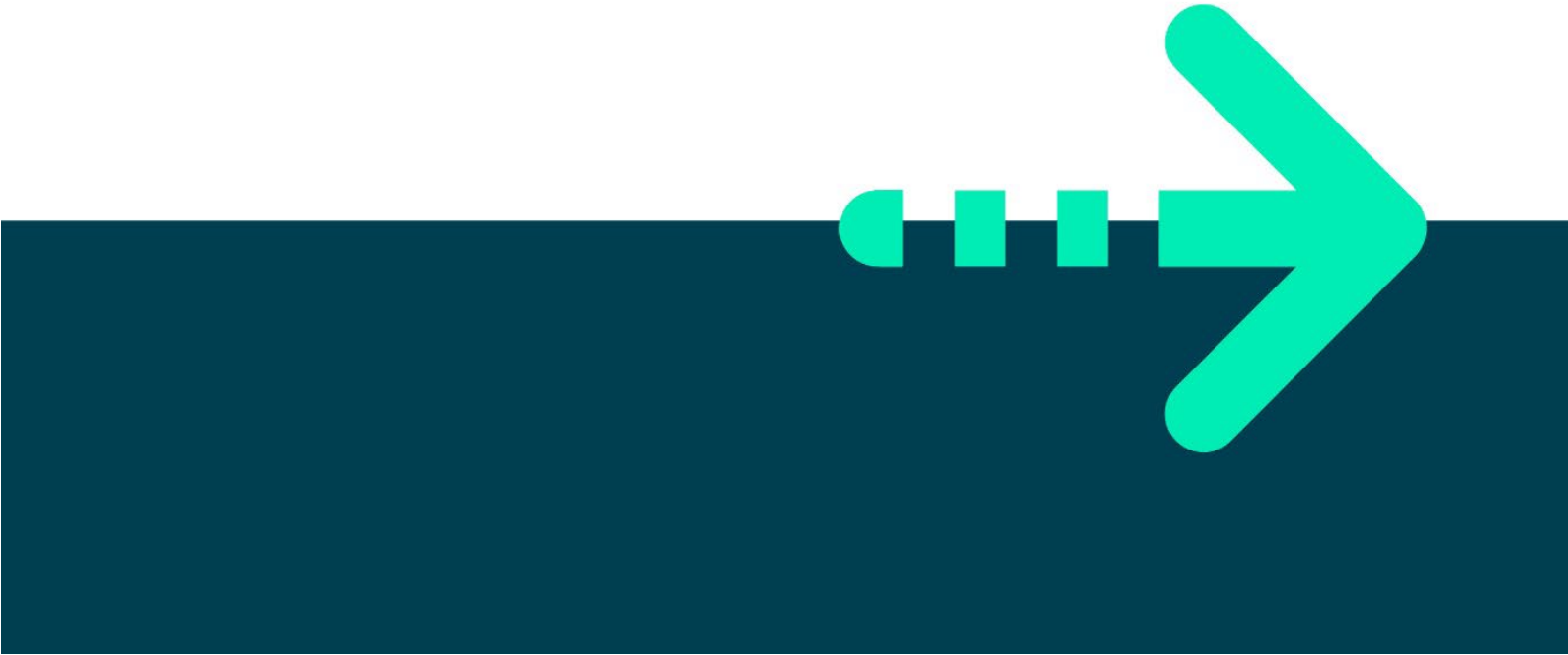
Part 2 – Running AUTs and Building Packages

1. Pull the changes made when you added the workflow to your local machine, and open the workflow file in your editor of choice
2. Amend the simple hello world example to run the unit tests – you will need to:
    - Install and configure a Java Development Kit (JDK). You can use the actions/setup-java module to configure this, or alternately set up a shell script to install OpenJDK.
    - Use maven to run the unit tests.
    - Use maven to build the jar files which will package your source code.
    - Archive the resulting jar files – this can be achieved using the actions/upload-artifacts module.

Exercise 3 – PaaS options

1. In your groups, fill out the following table by researching what PaaS services the three major cloud providers offer:

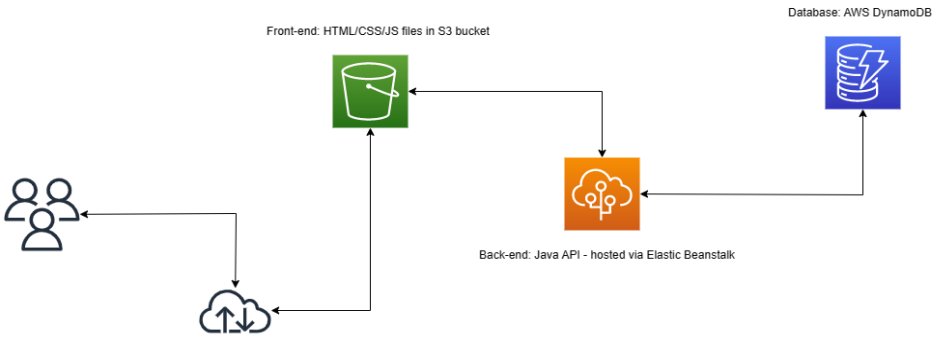
	Google Cloud Platform	Microsoft Azure	Amazon Web Services
App Service			
Function			
Container Service			
Kubernetes Service			



Exercise 4 – Workflow design

Solution: [agray998/QAA-Module5-Workflow-Design-Solution: Reference solution for QAA Module5 Exercise 4 (github.com)]

1. Take some time to study and understand the following solution architecture for a web application:



2. Try to design a workflow to build and deploy the above from source code. **Note**: you **do not** need to implement this, your task is to **design** the workflow. Your design should consider:
    - What tasks need to be performed in order to build and deploy each component?
    - Are there any available modules which facilitate these tasks?
    - What sensitive information might your workflow need access to? How would you store this information?