

SHELL FOUNDATIONS- FINAL CASE STUDY

Date: 28/08/2023

Employee ID: 654991

Batch: Shell7-SK-23-B4

Name: Afrin Siddiqui

Email: Afrin.Siddiqui@shell.com

Position: 54077724 Associate Data Engineer

Problem Statement: Implementing a Seamless CI/CD Workflow for a Spring Boot Application using Azure Boards, Azure, Git, Maven, Docker, Github, Github Actions.

Project Management Setup: Project Board, Backlogs Board, Sprints/Iterations and Tasks Board.

i. Create Project

The screenshot shows the Azure DevOps Services interface for a project named 'Afrin_Streamline_Solutions_Inc_Case_Study'. The left sidebar contains links for Overview, Summary, Dashboards, Wiki, Boards, Repos, Pipelines, Test Plans, and Artifacts. The main content area displays the 'About this project' section, which describes Streamline Solutions Inc. as a dynamic technology company specializing in Java Spring Boot applications. It mentions the goal of establishing an efficient CI/CD workflow. Below this is the 'Project stats' section, which includes a 'Boards' card showing 31 work items created and 4 completed. The 'Members' section shows one member, Afrin Siddiqui. The bottom of the screen shows the Windows taskbar with various pinned icons and the date/time as 11:27 AM 8/28/2023.

ii. Create EPIC

The screenshot shows the Azure DevOps interface for creating a new EPIC. The left sidebar is titled 'Afrin_Streamline_Solut...' and includes options like Overview, Boards, Work items, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, and Test Plans. The 'Work items' option is selected. The main area displays a 'Profile Management' EPIC card. The card has the following details:

- State:** New
- Reason:** New
- Area:** Afrin_Streamline_Solutions_Inc_Case_Study
- Iteration:** Afrin_Streamline_Solutions_Inc_Case_Study\Iteration 1

The 'Description' section contains the following text:

As a user, I want to create and update my profile information including name, profile picture and contact details.
As a user, I want to be able to reset my password and username whenever I want. (Max three attempts allowed)

The card also includes sections for 'Planning' (Priority: 2, Risk, Effort, Business Value), 'Deployment' (instructions to track releases), and 'Development' (Time Criticality, Start Date). A 'Discussion' section at the bottom allows comments.

iii. Create USER STORIES

The screenshot shows the Azure DevOps interface for creating a new User Story. The left sidebar is identical to the previous screenshot. The main area displays a 'User Permissions' User Story card. The card has the following details:

- State:** New
- Reason:** New
- Area:** Afrin_Streamline_Solutions_Inc_Case_Study
- Iteration:** Afrin_Streamline_Solutions_Inc_Case_Study

The 'Description' section contains the following text:

Manage the priority of user permissions.

The card includes sections for 'Planning' (Story Points, Priority: 2, Risk), 'Deployment' (instructions to track releases), and 'Development' (Value area: Business). A 'Classification' section indicates the story is in the 'Business' value area. A 'Discussion' section at the bottom allows comments.

Azure DevOps | Microsoft 365 | Summary - Overview | Backend Functionalities | User Story 26*: Deployment processes | + | - | X

https://dev.azure.com/african7sid/Afrin_Streamline_Solutions_Inc_Case_Study/_workitems/edit/26/

InPrivate

Azure DevOps afreen7sid / Afrin_Streamline_Solutions_Inc_Case_Study / Boards / Work items

Search

Afrin_Streamline_Solut... +

Try the New Boards Hub for improved performance, accessibility, and new features. [Click here](#) to learn more.

Recently updated | Back to Work Items 4 of 4 ↑ ↓

USER STORY 26*

26 Deployment processes

Unassigned 0 comments Add tag

Save Follow

State: New Area: Afrin_Streamline_Solutions_Inc_Case_Study Updated: 13m ago

Reason: New Iteration: Afrin_Streamline_Solutions_Inc_Case_Study

Description Planning Deployment

As the product owner wants to view the deployment done by the developers at the end of each sprint.

Story Points: 2 Priority: 2 Risk:

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. Learn more about deployment status reporting.

Acceptance Criteria Classification Development

Click to add Acceptance Criteria Value area: Business

Add link

Link an Azure Repos commit, pull request or branch to see

Discussion

Search

10:13 AM 8/28/2023

Project settings

iv. Board Overview

The screenshot shows the Azure DevOps Boards page for the project "Afrin_Streamline_Solutions_Inc_Case_Study". The left sidebar navigation includes "Overview", "Boards" (selected), "Work items", "Backlogs", "Sprints", "Queries", "Delivery Plans", "Analytics views", "Repos", "Pipelines", "Test Plans", and "Project settings". The main content area displays a Kanban board with the following columns:

- New:** Contains two items:
 - 27 View page details (State: New)
 - 29 User Permissions (State: New)
- Active:** Contains three items:
 - 26 Deployment processes (State: Active)
 - 28 New objects (State: Active)
 - 41 Database Schema (State: Active)
- Resolved:** Contains one item:
 - 30 Frontend Dev (State: Resolved)
- Closed:** Contains one item:
 - 25 Deployment processes (State: Closed)

At the bottom of the board, there are buttons for "Add Task" and "Delete task". The status bar at the bottom right shows the time as 10:25 AM and the date as 8/28/2023.

v. Product Backlog

The screenshot shows the Azure DevOps Backlog page for the project "Afrin_Streamline_Solutions_Inc_Case_Study". The left sidebar navigation includes Overview, Boards, Work items, Boards, Backlogs (selected), Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, and Project settings. The main content area displays the backlog with the following data:

Order	Work Item Type	Title
1	User Story	> Deployment processes
2	User Story	View page details
3	User Story	New objects
4	User Story	User Permissions
5	User Story	> Frontend Dev
6	User Story	> Database Schema

To the right, a "Planning" section titled "Afrin_Streamline_Solutions_Inc_Case_Study Team Backlog" shows three iterations: Iteration 1 (Current), Iteration 2, and Iteration 3, each stating "No work scheduled yet". The bottom of the screen shows the Windows taskbar with various pinned icons.

vi. Sprint Backlog

The screenshot displays two views of the Azure DevOps interface, illustrating the transition from a board-level view to a detailed backlog view.

Top View: Boards Section

- The left sidebar shows the "Boards" section selected.
- The main area shows a board titled "Afrin_Streamline_Solutions_Inc_Case_St..." with four columns: New, Active, Resolved, and Closed.
- New Column:** Contains items: "26 Deployment processes" (Active), "27 View page details" (New), "29 User Permissions" (New).
- Active Column:** Contains items: "26 Deployment processes" (Active), "28 New objects" (Active).
- Resolved Column:** Contains items: "30 Frontend Dev" (Resolved).
- Closed Column:** Contains items: "2/5".

Bottom View: Backlogs Section

- The left sidebar shows the "Backlogs" section selected.
- The main area shows a backlog titled "Afrin_Streamline_Solutions_Inc_Case_St..." with a table of work items.
- Table Headers:** Order, Work Item Type, Title.
- Table Data:**

Order	Work Item Type	Title
1	Feature	User Authentication
2	Feature	User Authorization
- Planning Panel:** A modal window titled "Planning" with the sub-instruction "Drag and drop work items to include them in a sprint." It lists "Afrin_Streamline_Solutions_Inc_Case_Study Team" and three iterations:
 - Iteration 1:** Current, No work scheduled yet.
 - Iteration 2:** No work scheduled yet.
 - Iteration 3:** No work scheduled yet.

Azure DevOps Services | [Summary - Overview](#) | [Backend Functionalities](#) | [Afrin_Streamline_Solutions](#) | [chatgpt - Search](#) | + | - | [InPrivate](#)

https://dev.azure.com/afreend7sid/Afrin_Streamline_Solutions_Inc_Case_Study/_sprints/backlog/Afrin_Streamline_S...

Azure DevOps afreend7sid / Afrin_Streamline_Solutions_Inc_Case_Study / Boards / Sprints

Search

Afrin Streamline Solut... + Try the New Boards Hub for improved performance, accessibility, and new features. [Click here](#) to learn more.

Overview Boards Work items Boards Backlogs Sprints Queries Delivery Plans Analytics views Repos Pipelines Test Plans Project settings

Afrin_Streamline_Solutions_Inc_Case_St... No iteration dates Set dates

Taskboard Backlog Capacity Analytics + New Work Item Column Options ... Iteration 1

Order	Title
1	Notifications and Communications
2	Payment Integration

Planning
Drag and drop work items to include them in a sprint.

Afrin_Streamline_Solutions_Inc_Case_Study Team Backlog

Iteration 1 Current
Planned Effort: -
2

No work scheduled yet

Iteration 2

No work scheduled yet

Iteration 3

No work scheduled yet

10:45 AM 8/28/2023

The screenshot shows the Azure DevOps Backlog page for the project 'Afrin_Streamline_Solutions_Inc_Case_Study'. The left sidebar is collapsed, showing options like Overview, Boards, Work items, Boards, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, and Project settings. The main area displays the backlog under the 'Backlog' tab. It lists two work items: 'Notifications and Communications' (order 1) and 'Payment Integration' (order 2). To the right, a 'Planning' section is open, showing three iterations. Iteration 1 is current and has a planned effort of 2. Iterations 2 and 3 have no work scheduled yet. A large vertical scroll bar is visible on the right side of the page.

The screenshot shows two views of the Azure DevOps Boards interface.

Top View (User Story Detail):

- User Story:** 51 Notifications and Communications
- Assignee:** Unassigned
- Comments:** 0 comments
- Tags:** Add tag
- State:** New
- Area:** Afrin_Streamline_Solutions_Inc_Case_Study
- Reason:** New
- Iteration:** Afrin_Streamline_Solutions_Inc_Case_Study\Iteration 1
- Description:**
 - As a user, I want to receive notifications about my appointments as soon as I book them.
 - As a user, I want to have messaging functionality to help me assist with queries.
- Acceptance Criteria:**
 - User receives communication about their appointments and timings after booking is confirmed.
 - Chat option is available for assistance required by users.
- Planning:**
 - Story Points: 1
 - Priority: 2
 - Risk: 1
- Deployment:** To track releases associated with this work item, go to Releases and turn on deployment status reporting for Boards in your pipeline's Options menu. Learn more about deployment status reporting.
- Classification:**
 - Value area: Business
- Development:**
 - Add link
 - Link an Azure Repos commit, pull request or branch to see the status of your development. You can also create a branch to get started.
- Related Work:** No work scheduled yet.

Bottom View (Taskboard):

- Project:** Afrin_Streamline_Solutions_Inc_Case_Study
- Iteration:** Iteration 1
- Work Items:**
 - 51 Notifications and Communications (Active)
 - 50 Payment Integration (New)

vii. Create Test Cases

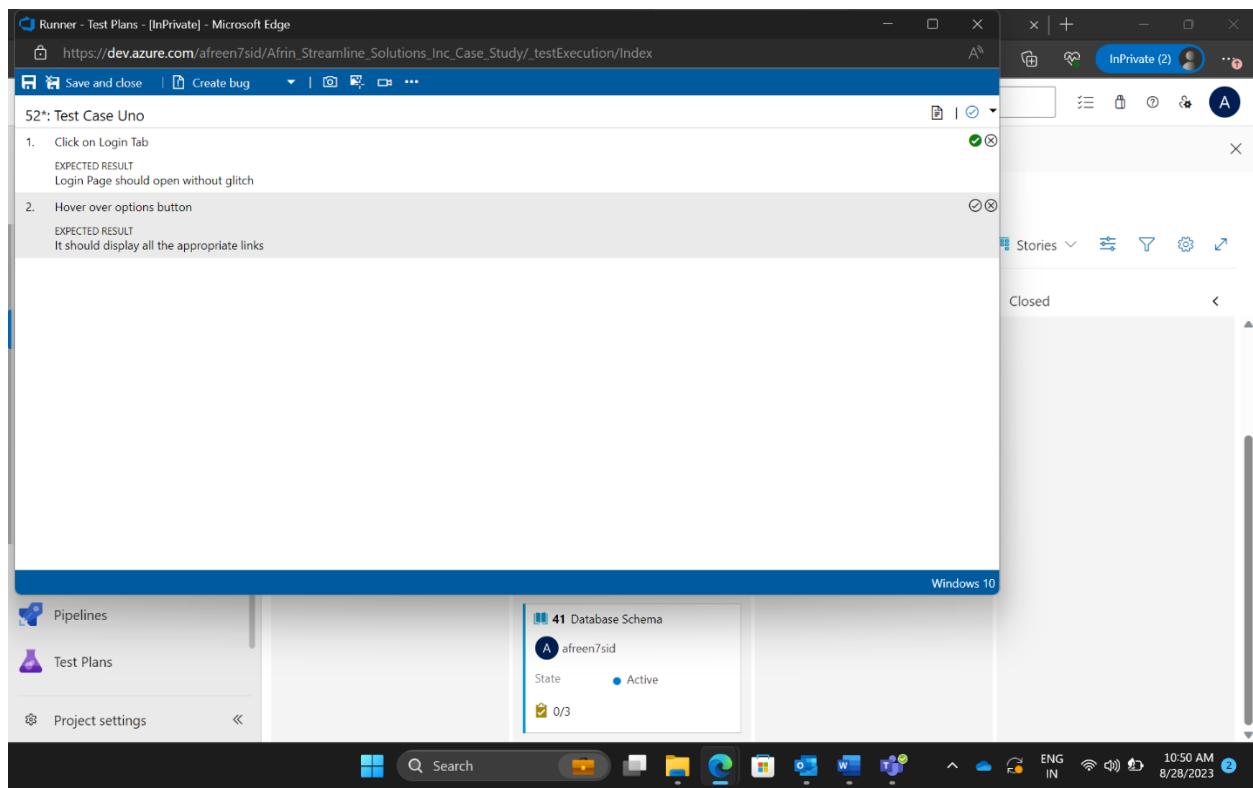
The screenshot displays two Microsoft Edge browser windows side-by-side, illustrating the process of creating and executing a test case in Azure DevOps.

Top Window (Azure DevOps Services):

- URL:** https://dev.azure.com/afreen7sid/Afrin_Streamline_Solutions_Inc_Case_Study/_boards/board/1/Afrin_Streamline_Solutions_Inc_Case_Study
- Title:** TEST CASE 52*
- Test Case Name:** 52 Test Case Uno
- Owner:** afreen7sid
- Status:** Design
- Area:** Afrin_Streamline_Solutions_Inc_Case_Study
- Reason:** New
- Iteration:** Afrin_Streamline_Solutions_Inc_Case_Study
- Steps:**
 - 1. Click on Login Tab
 - 2. Hover over options button
- Expected result:**
 - 1. Login Page should open without glitch
 - 2. It should display all the appropriate links
- Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#).
- Development:** + Add link
- Related Work:** + Add link

Bottom Window (Runner - Test Plans):

- URL:** https://dev.azure.com/afreen7sid/Afrin_Streamline_Solutions_Inc_Case_Study/_testExecution/Index
- Title:** 52: Test Case Uno
- Test Case Steps:**
 - 1. Click on Login Tab
 - EXPECTED RESULT:** Login Page should open without glitch
 - 2. Hover over options button
 - EXPECTED RESULT:** It should display all the appropriate links



viii. Create Defects/Bugs

The screenshot shows the Azure DevOps Work items page for a project named "Afrin_Streamline_Solut...". A red box highlights the "Work items" section on the left sidebar. In the main area, a new bug work item titled "Email notifications not working" is being created. The "Repro Steps" section contains two bullet points: "Email should be registered with the user token" and "If email is incorrect, phone number should be used as alternative". The "Planning" section shows the work item is unassigned, has a priority of 2, and a severity of 3 - Medium. The "Deployment" section includes a note about tracking releases. The "Development" section has a "+ Add link" button. The bottom navigation bar includes icons for search, dashboard, and other work item types.

Github Repository and Feature Branching

i. Fork Github Repository and create Feature Branch

The screenshot shows two browser windows side-by-side. The top window displays the 'Create a new fork' form on GitHub. The owner is set to 'afrin7', and the repository name is 'Afrin_Shell_Case_Study'. A note indicates that 'Afrin_Shell_Case_Study' is available. The description field contains the text: 'This is a repo created for shell_7_foundation_Java_Spring for case study purposes.' The 'Copy the main branch only' checkbox is checked. The bottom window shows the resulting GitHub repository page for 'afrin7/Afrin_Shell_Case_Study'. It displays a message 'Branch created.' and lists the repository details, including the owner 'afrin7', the name 'Afrin_Shell_Case_Study', and the fact that it is a fork of 'hrb1989/shell_7_foundation_Java_Spring'. The repository has 2 branches and 0 tags. The 'About' section notes that the branch is up-to-date with the upstream 'main' branch. The commit history shows initial pushes for files like '.mvn/wrapper', 'src', '.editorconfig', '.gitattributes', '.gitignore', and 'LICENSE.txt'. The right sidebar shows the repository's activity, including 0 stars, 0 watching, and 291 forks.

ii. Install Git

Connected to afrin7shell@172.176.121.198

```
afrin7shell@afrin-Case-Study:~$ sudo apt install maven
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package maven
afrin7shell@afrin-Case-Study:~$ sudo apt-get install software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
software-properties-common is already the newest version (0.99.9.11).
software-properties-common set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
afrin7shell@afrin-Case-Study:~$ sudo apt-add-repository universe
'universe' distribution component is already enabled for all sources.
afrin7shell@afrin-Case-Study:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [100 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
```

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

.profile .bashrc .bash_logou... .ssh .cache

Windows taskbar: Search, File Explorer, Task View, Start, Taskbar icons, ENG IN, 11:55 AM, 8/28/2023

iii. Install Maven

Connected to afrin7shell@172.176.121.198

```
Get:38 http://azure.archive.ubuntu.com/ubuntu focal-security/universe Translation-en [182 kB]
Get:39 http://azure.archive.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [18.9 kB]
Get:40 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [23.6 kB]
Get:41 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5504 B]
Get:42 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [548 B]
Fetched 28.1 MB in 4s (6558 kB/s)
Reading package lists... Done
afrin7shell@afrin-Case-Study:~$ sudo apt-get install maven
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ca-certificates-java default-irc-headless fontconfig-config fonts-dejavu-core java-common libaopalliance-java
  libapache-pom-java libatbinject-jsr330-api-java libavahi-client3 libavahi-common-data libavahi-common3 libcdi-api-java
  libcommons-cli-java libcommons-io-java libcommons-lang3-java libcommons-parent-java libcurls2 libfontconfig
  libgeronimo-annotation-1.3-spec-java libgeronimo-interceptor-3.0-spec-java libgraphite2-3 libguava-java libguice-java
  libharfbuzz0b libhawtjni-runtime-java libjansi-java libjansi-native-java libjpeg-turbo8 libjsr305-java
  liblcms2-2 libmaven-parent-java libmaven-resolver-java libmaven-shared-utils-java libmaven3-core-java libpcsc-lite
  libplexus-cipher-java libplexus-classworlds-java libplexus-component-annotations-java libplexus-interpolation-java
  libplexus-sec-dispatcher-java libplexus-utils2-java libsisu-inject-java libsisu-plexus-java libsisu4-j-java
  libwagon-file-java libwagon-http-shaded-java libwagon-provider-api-java openjdk-11-jre-headless
Suggested packages:
  default-jre libaopalliance-java-doc libatbinject-jsr330-api-java-doc libservlet3.1-java libcommons-io-java-doc
  libcommons-lang3-java-doc cups-common libasm-java libcglib-java libjsr305-java-doc liblcms2-utils
```

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

.profile .bashrc .bash_logou... .ssh .cache

Windows taskbar: Search, File Explorer, Task View, Start, Taskbar icons, ENG IN, 11:55 AM, 8/28/2023

iv. Install Dockers

Connected to afrin7shell@172.17.6.121.198

```
Setting up docker-ce (5:24.0.5-1~ubuntu.20.04-focal) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3.22) ...
afrin@shell:Afrin-Case-Study:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded "/lib/systemd/system/docker.service; enabled; vendor preset: enabled"
   Active: active (running) since Mon 2023-08-28 06:38:16 UTC; 3min 40s ago
     TriggeredBy: ● docker.socket
      Docs: https://docs.docker.com
 Main PID: 5580 (dockerd)
    Tasks: 10
   Memory: 38.8M
    CGroup: /system.slice/docker.service
             └─5580 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Aug 28 06:38:15 Afrin-Case-Study systemd[1]: Starting Docker Application Container Engine...
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.321026569Z" level=info msg="Starting up"
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.321706842Z" level=info msg="detected 127.0.0.53 >
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.730075918Z" level=info msg="Loading containers: >
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.332341495Z" level=info msg="Loading containers: >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.440583463Z" level=warning msg="Not using native >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.440934070Z" level=info msg="Docker daemon" comm=vp>
```

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

profile bashrc .bash_logout .ssh .cache

v. Cloning Git

Connected to afrin7shell@172.176.121.198

```
Memory: 38.8M
CGroup: /system.slice/docker.service
└─5580 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Aug 28 06:38:15 Afrin-Case-Study systemd[1]: Starting Docker Application Container Engine...
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.321026569Z" level=info msg="Starting up"
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.321710684Z" level=info msg="detected 127.0.0.53"
Aug 28 06:38:15 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:15.730075918Z" level=info msg="Loading containers: >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.332341495Z" level=info msg="Loading containers: >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.440934070Z" level=info msg="Docker daemon" commi >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.441045973Z" level=info msg="Daemon has completed >
Aug 28 06:38:16 Afrin-Case-Study dockerd[5580]: time="2023-08-28T06:38:16.629807203Z" level=info msg="API listen on /run/d >
Aug 28 06:38:16 Afrin-Case-Study systemd[1]: Started Docker Application Container Engine.

afrin7shell@Afrin-Case-Study:~$ git clone https://github.com/afrin7/Afrin_Shell_Case_Study.git
Cloning into 'Afrin_Shell_Case_Study'...
remote: Enumerating objects: 150, done.
remote: Counting objects: 100% (10/10), done.
remote: Compressing objects: 100% (10/10), done.
remote: Total 150 (delta 1), reused 0 (delta 0), pack-reused 140
Receiving objects: 100% (150/150), 448.83 KiB | 32.06 MiB/s, done.
Resolving deltas: 100% (31/31), done.
afrin7shell@Afrin-Case-Study:~$
```

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

PRO. .profile .bashrc .bash_logout... .ssh .cache

Search ENG IN 12:18 PM 8/28/2023

vi. Build the Application using Maven

The screenshot shows a terminal window with a black background and white text. At the top, there are several tabs: Azure Dev, Summary, Backend, Summary, Afrin Case, WebSSH, How To, maven d, Maven, and InPrivate. The main area of the terminal displays the following Maven build log:

```
Connected to afrin7shell@172.176.121.198
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/4.4.0/plexus-archiver-4.4.0.jar (211 kB at 19 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/iq80/snappy/snappy/0.4/snappy-0.4.jar (58 kB at 5.3 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/tukaani/xz/1.9/xz-1.9.jar (116 kB at 8.9 kB/s)
[INFO] Building jar: /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot:3.1.1:repackage (repackage) @ spring-petclinic ---
[INFO] Replacing main artifact /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar with repackaged archive, adding nested dependencies in BOOT-INF/.
[INFO] The original artifact has been renamed to /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar.original
[INFO]
[INFO] --- install:3.1.1:install (default-install) @ spring-petclinic ---
[INFO] Installing /home/afrin7shell/Afrin_Shell_Case_Study/pom.xml to /home/afrin7shell/.m2/repository/org/springframework/samples/spring-petclinic/3.1.0-SNAPSHOT/spring-petclinic-3.1.0-SNAPSHOT.pom
[INFO] Installing /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar to /home/afrin7shell/.m2/repository/org/springframework/samples/spring-petclinic/3.1.0-SNAPSHOT/spring-petclinic-3.1.0-SNAPSHOT.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 29.095 s
[INFO] Finished at: 2023-08-28T08:35:41Z
[INFO] -----
```

Below the terminal, there is a file manager interface. The path is File Manager > home > afrin7shell. It shows a directory structure with files: .profile, .bashrc, .bash_logout, .m2, and .bash_history. The file manager has a blue header bar with search and navigation icons.

The bottom of the screen shows a Windows taskbar with various pinned icons and system status indicators like battery level, signal strength, and date/time (2:06 PM, 8/28/2023).

vii. Dockerfile Creation

Connected to afrin7shell@172.176.121.198

```
FROM openjdk:17.0.2-slim
EXPOSE 80
ARG JAR=target/spring-petclinic-3.1.0-SNAPSHOT.jar
COPY $JAR/app.jar
ENTRYPOINT ["java","-jar","/app.jar"]
```

-- INSERT --

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

profile .bashrc .bash_logout... .m2 .bash_history...

Windows taskbar: Search, File Explorer, Task View, Start button, Icons, 2:21 PM, 8/28/2023

Connected to afrin7shell@172.176.121.198

```
0.jar (211 kB at 19 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/iq80/snappy/snappy/0.4/snappy-0.4.jar (58 kB at 5.3 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/tukaani/xz/1.9/xz-1.9.jar (116 kB at 8.9 MB/s)
[INFO] Building jar: /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot:3.1.1:repackage (repackage) @ spring-petclinic ---
[INFO] Replacing main artifact /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar with repackaged archive, adding nested dependencies in BOOT-INF.
[INFO] The original artifact has been renamed to /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar.original
[INFO]
[INFO] --- install:3.1.1:install (default-install) @ spring-petclinic ---
[INFO] Installing /home/afrin7shell/Afrin_Shell_Case_Study/pom.xml to /home/afrin7shell/.m2/repository/org/springframework/samples/spring-petclinic/3.1.0-SNAPSHOT/spring-petclinic-3.1.0-SNAPSHOT.pom
[INFO] Installing /home/afrin7shell/Afrin_Shell_Case_Study/target/spring-petclinic-3.1.0-SNAPSHOT.jar to /home/afrin7shell/.m2/repository/org/springframework/samples/spring-petclinic/3.1.0-SNAPSHOT/spring-petclinic-3.1.0-SNAPSHOT.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 29.095 s
[INFO] Finished at: 2023-08-28T08:35:41Z
[INFO] -----
```

afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study\$ vi Dockerfile
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study\$ build a docker image -t <

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

profile .bashrc .bash_logout... .m2 .bash_history...

Windows taskbar: Search, File Explorer, Task View, Start button, Icons, 2:33 PM, 8/28/2023

Connected to afrin7shell@172.176.121.198

```
afrin7shell@afrin-Case-Study:~$ cs Afrin_Shell_Case_Study/
Command 'cs' not found, but can be installed with:
sudo apt install csound

afrin7shell@afrin-Case-Study:~$ cd ~/Afrin_Shell_Case_Study/
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ ls
Dockerfile LICENSE.txt README.md mvnw mvnw.cmd pom.xml src target
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ nano Dockerfile
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ sudo docker build -t shellfile -f /home/afrin7shell/Afrin_Shell_Case_Study/Dockerfile .
[+] Building 24.0s (7/7) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 182B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/openjdk:17.0.2-slim
=> [internal] load build context
=> => transferring context: 57.94MB
=> [1/2] FROM docker.io/library/openjdk:17.0.2-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3 19.6s
=> => resolve docker.io/library/openjdk:17.0.2-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f 0.1s
=> => sha256:37cb44321d0423bc57266a3bfff658daf00478e4cdf2d3b8091f785310534256d 4.80kB / 4.80kB
```

docker:default

Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

.profile .viminfo .bashrc .bash_logout... .config

Search ENG IN 303 PM 8/28/2023

Connected to afrin7shell@172.176.121.198

```
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 182B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 57.94MB
=> [1/2] FROM docker.io/library/openjdk:17.0.2-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3 19.6s
=> => resolve docker.io/library/openjdk:17.0.2-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f 0.1s
=> => sha256:37cb44321d0423bc57266a3bfff658daf00478e4cdf2d3b8091f785310534256d 4.80kB / 4.80kB
=> => sha256:1fe172e4850f03bb45d41a20174112bc119fbfec42af50edb8d491aee32e3c3 31.38MB / 31.38MB
=> => sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f62f9774 547B / 547B
=> => sha256:779635c0c3d23cc8db2d8clee4cf2a3202e198dfc8f4c0b279824d9b8e0f22 953B / 953B
=> => sha256:44d3aa8d076675d49d85180bbced9daef210fe4fdff4bdbb422b9cf384e591d0 1.58MB / 1.58MB
=> => sha256:6ce99fdf16e06bd02f6ad6a0e1334878520b5a4b5407850a76e0c08a7a27d56 187.90MB / 187.90MB
=> => extracting sha256:1fe172e4850f03bb45d41a20174112bc119fbfec42a650edb8d491aee32e3c3
=> => extracting sha256:44d3aa8d076675d49d85180bbced9daef210fe4fdff4bdbb422b9cf384e591d0
=> => extracting sha256:6ce99fdf16e06bd02f6ad6a0e1334878528b5ad4b5487850a76e0c08a7a27d56
=> [2/2] COPY target/spring-petclinic-3.1.0-SNAPSHOT.jar /app.jar
=> exporting to image
=> => writing image sha256:7fe2970ca4c0be926bc1d0e4be984f6d61e303ed25b1d312fbe4b1363493f90
=> => naming to docker.io/library/shellfile
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$
```

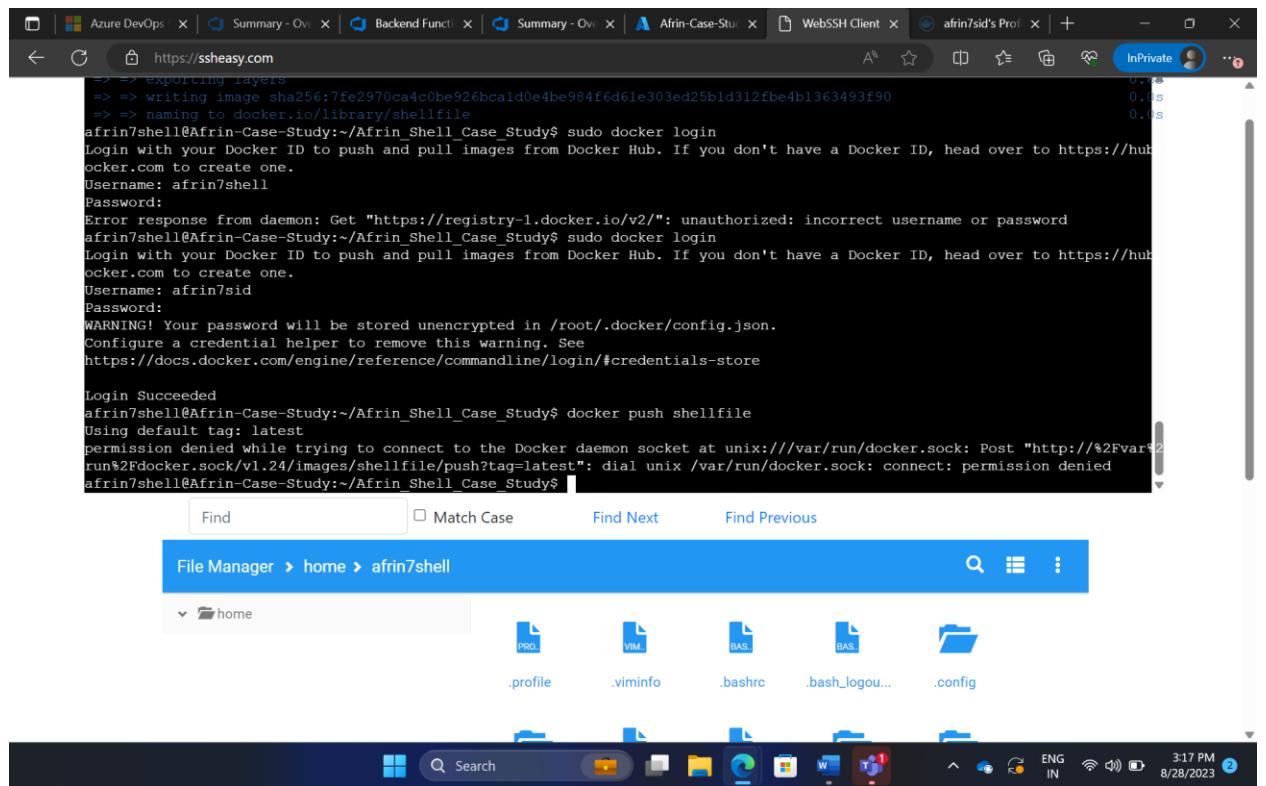
Find Match Case Find Next Find Previous

File Manager > home > afrin7shell

.profile .viminfo .bashrc .bash_logout... .config

Search ENG IN 304 PM 8/28/2023

viii. Building docker image with Dockerfile



A screenshot of a Windows desktop environment. At the top, there is a taskbar with several open windows: "Azure DevOps", "Summary - Ovi", "Backend Funct", "Summary - Ovi", "Afrin-Case-Stu", "WebSSH Client", and "afrin7sid's Pro". Below the taskbar is a browser window titled "https://ssheasy.com" showing a terminal session. The terminal output shows the user attempting to build a Docker image named "shellfile". It includes commands like "sudo docker login", "docker push shellfile", and "docker push latest". There are also error messages about permission denied and unauthorized access. Below the browser is a "File Manager" window showing a directory structure under "home/afrin7shell". The directory contains files: ".profile", ".viminfo", ".bashrc", ".bash_logout", and ".config". The bottom of the screen shows the Windows Start button, a search bar, and a system tray with icons for battery, signal, and date/time (3:17 PM, 8/28/2023).

```
--> => exporting layers
=> => writing image sha256:7fe2970ca4c0be926bc1d0e4be984f6d61e303ed25b1d312fbe4b1363493f90
=> => naming to docker.io/library/shellfile
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: afrin7shell
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: afrin7sid
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ docker push shellfile
Using default tag: latest
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://$2Fvar%2Frun%2Fdocker.sock/v1.24/images/shellfile/push?tag=latest": dial unix /var/run/docker.sock: connect: permission denied
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$
```

ix. Docker File Pushed

The screenshot shows a Microsoft Edge browser window with multiple tabs open. The active tab displays the GitHub profile of the user 'afrin7sid'. The profile page includes the user's icon (a blue fingerprint), name ('afrin7sid'), a link to 'Edit profile', and status ('Community User' joined 'August 28, 2023'). Below the profile, there are three navigation links: 'Repositories' (underlined), 'Starred', and 'Contributed'. A message indicates 'Displaying 1 to 1 repositories'. A single repository card is shown for 'afrin7sid/shellfile', which has 0 stars and was updated a minute ago. The card includes a small image placeholder. At the bottom of the browser window, the Windows taskbar is visible, showing various pinned icons and system status indicators like battery level and network connection.

Connected to afrin7shell@172.176.121.198

```
=> [Internal] load build context
=> => transferring context: 92B
=> [1/2] FROM docker.io/library/openjdk:17.0.2-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f
=> CACHED [2/2] COPY target/spring-petclinic-3.1.0-SNAPSHOT.jar /app.jar
=> exporting to image
=> => exporting layers
=> => writing image sha256:7fe2970ca4c0be926bcald0e4be984f6d61e303ed25b1d312fbe4b1363493f90
=> => naming to docker.io/afrin7sid/shellfile
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ sudo docker login
Authenticating with existing credentials...
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$ sudo docker push afrin7sid/shellfile
Using default tag: latest
The push refers to repository [docker.io/afrin7sid/shellfile]
0c6a2e070bd5: Pushed
6be690267e47: Mounted from library/openjdk
13a34b6fff778: Mounted from library/openjdk
9c1b6dd6c1e6: Mounted from library/openjdk
latest: digest: sha256:a280165d3892b2a0af473c2376054dfb23dc42081e15f43abf3cbd795543c6d9 size: 1165
afrin7shell@afrin-Case-Study:~/Afrin_Shell_Case_Study$
```

File Manager > home > afrin7shell

Find Match Case Find Next Find Previous

home .profile .viminfo .bashrc .bash_logout .config

Search ENG IN 3:41 PM 8/28/2023

x. Create Web App on AZURE

Microsoft Azure Search resources, services, and docs (G+/)

Home > Create Web App ...

Basics Docker Networking Monitoring Tags Review + create

Pull container images from Azure Container Registry, Docker Hub or a private Docker repository. App Service will deploy the containerized app with your preferred dependencies in seconds.

Options Single Container

Image Source Docker Hub

Docker hub options

Access Type * Public

Image and tag *

Startup Command

Review + create < Previous Next : Networking >

Review + create < Previous Next : Networking >

4:02 PM 8/28/2023

Project Details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Resource Group * Create new

Instance Details

Need a database? Try the new Web + Database experience. [?](#)

Name * .azurewebsites.net

Publish * Docker Container Code Static Web App

Operating System * Linux Windows

[Review + create](#) [< Previous](#) [Next : Docker >](#)

Pricing plans

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more](#)

Operating System * Linux Windows

Region * Not finding your App Service Plan? Try a different region or select your App Service Environment.

Linux Plan (East US 2) * Create new

Pricing plan Free F1 (Shared infrastructure)

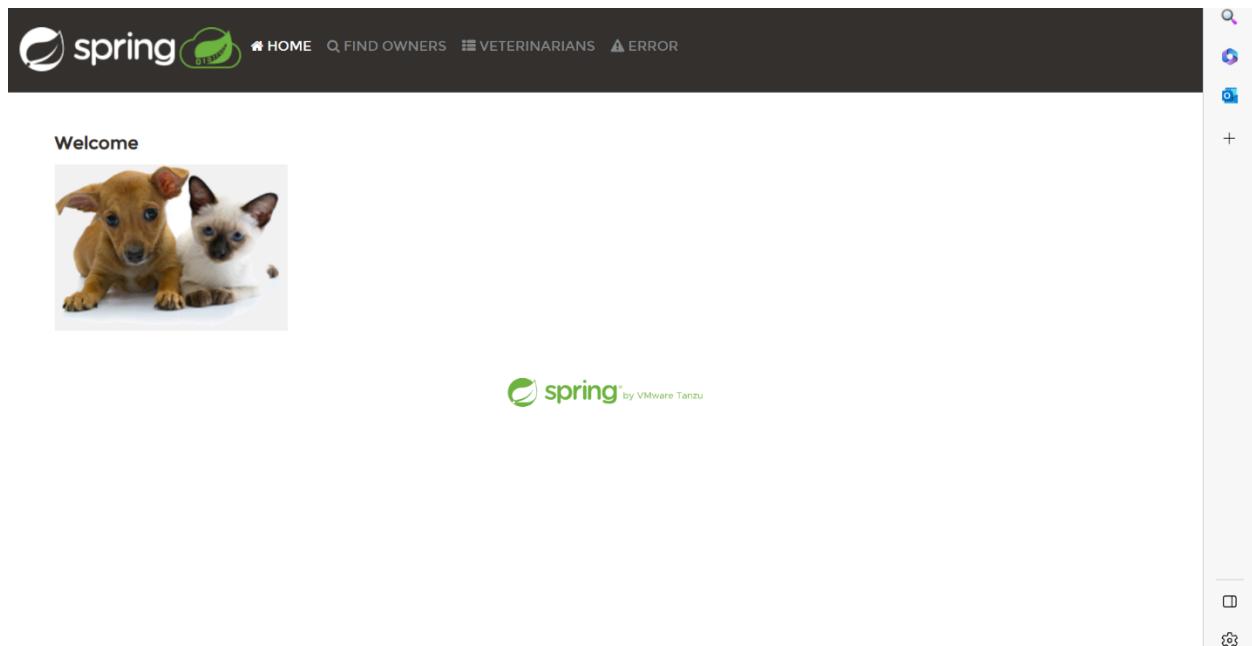
Zone redundancy

An App Service plan can be deployed as a zone redundant service in the regions that support it. This is a deployment time only decision. You can't make an App Service plan zone redundant after it has been deployed. [Learn more](#)

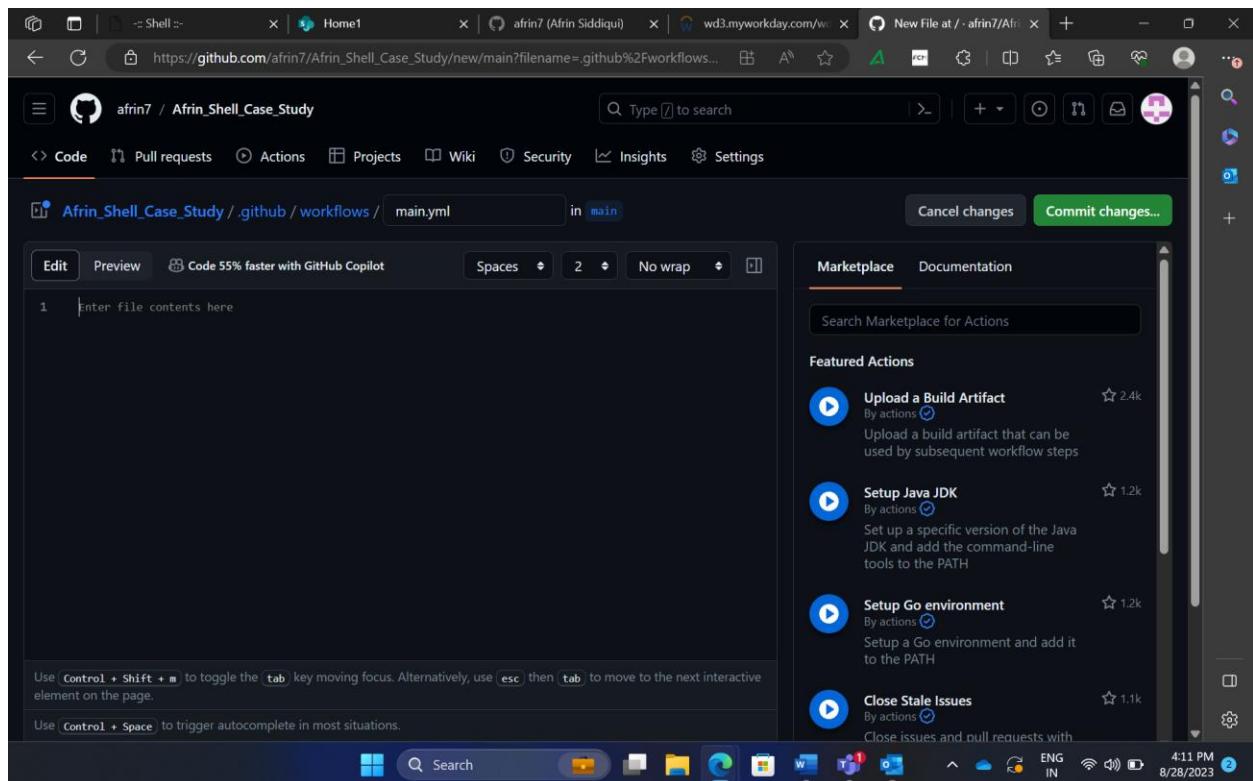
Zone redundancy Enabled: Your App Service plan and the apps in it will be zone redundant. The minimum App Service plan instance count will be three. Disabled: Your App Service Plan and the apps in it will not be zone redundant.

[Review + create](#) [< Previous](#) [Next : Docker >](#)

xi. Web App Deployed



xii. Github Actions



The screenshot shows the GitHub Actions workflow editor for a repository named "Shell_Projects". The workflow file is named "main.yml". The code defines a workflow with a single job named "build-and-deploy" that runs on "ubuntu-latest" and has a step to checkout code.

```
name: Azure Web App Container Deployment
on:
  push:
    branches:
      - CISetupFeature # Change this to your default branch
jobs:
  build-and-deploy:
    runs-on: ubuntu-latest
    steps:
      - name: Checkout code
        uses: actions/checkout@v2
```

A sidebar on the right displays the GitHub Marketplace with several featured actions:

- Cache** (By actions) - Cache artifacts like dependencies and build outputs to improve workflow execution time. Rating: 3.9k stars.
- Setup Go environment** (By actions) - Setup a Go environment and add it to the PATH. Rating: 1.2k stars.
- Download a Build Artifact** (By actions) - Download a build artifact that was previously uploaded in the workflow by the upload-artifact action. Rating: 1.1k stars.
- Setup .NET Core SDK** (By actions) - Rating: 797 stars.

At the bottom of the screen, a Windows taskbar is visible with various icons and system status.

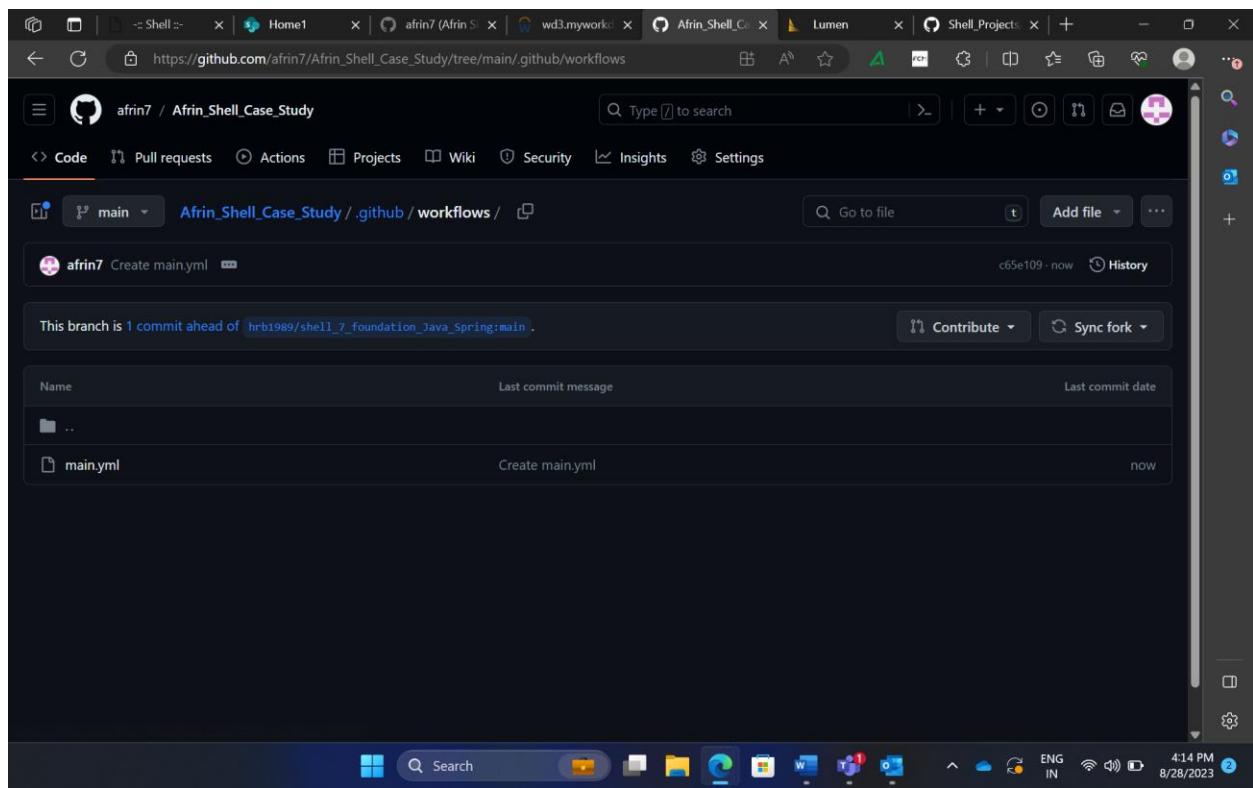
The screenshot shows the GitHub Actions workflow editor for a repository named "Afrin_Shell_Case_Study". The workflow file is named "main.yml". The code defines a workflow with a single job named "my-job" that runs on "ubuntu-latest" and has a step to run the command "echo 'Web App Here'".

```
name: hello-world!
on: push
jobs:
  my-job:
    runs-on: ubuntu-latest
    steps:
      - name: deadlock
        run: echo "Web App Here"
```

A sidebar on the right displays the GitHub Marketplace with several featured actions:

- Upload a Build Artifact** (By actions) - Upload a build artifact that can be used by subsequent workflow steps. Rating: 2.4k stars.
- Setup Java JDK** (By actions) - Set up a specific version of the Java JDK and add the command-line tools to the PATH. Rating: 1.2k stars.
- Setup Go environment** (By actions) - Setup a Go environment and add it to the PATH. Rating: 1.2k stars.
- Close Stale Issues** (By actions) - Close issues and pull requests with. Rating: 1.1k stars.

At the bottom of the screen, a Windows taskbar is visible with various icons and system status.



xiii. Testing of the Web App

