

1. Prerequisite

Core java understanding

Oops- abstraction, inheritance, Method overriding, method overloading, interfaces, class and objects, Collection- Array, ArrayList, Map, Set,

Basic understanding of html, css, js

Java 11/8, maven 3.6.0 installation along with environment path variable setup

2. What is AEM?

Why is AEM different from other CMS ?

3. Installation and Configuration of AEM

- Author instance VS Publish instance
- What is Dispatcher?
- REST/SOAP (Simple Object Access Protocol (SOAP) Services Apis

3. Creation of sample website structure and understanding.

4. AEM Run modes eg DEV QA, UAT Environment.

5. Different commands to build and deploy AEM Modules (AEM COMMANDS)

- To build all the modules run in the project root directory the following command with Maven 3:
mvn clean install
- To build all the modules and deploy the `all` package to a local instance of AEM, run in the project root directory the following command:
mvn clean install -PautoInstallSinglePackage
- To deploy it to a publish instance, run
mvn clean install -PautoInstallSinglePackagePublish
- Or alternatively
mvn clean install -PautoInstallSinglePackage -Daem.port=4503
- OR to deploy only the bundle to the author, run
mvn clean install -PautoInstallBundle
- OR to deploy only a single content package, run in the sub-module directory
mvn clean install -PautoInstallPackage

6. Overview of Dam, Apache Felix, Osgi, Apache sling, jcr and Different consoles in aem.

- AEM Admin Console
<http://localhost:4502/aem/start.html>
- Site Admin Console
<http://localhost:4502/siteadmin>
- DAM Console
<http://localhost:4502/damadmin>
- CRXDE Lite
<http://localhost:4502/crx/de/index.jsp>
- CRX Explorer
<http://localhost:4502/crx/explorer/index.jsp>
- Web Console
<http://localhost:4502/system/console/configMgr>

- Query Debugger Tool
<http://localhost:4502/libs/cq/search/content/querydebug.html>
- Display Client Libraries in use by Component
<http://localhost:4502/libs/granite/ui/content/dumplib.html>

7. What is service packs installation and hot fixes installation on an existing AEM environment?

8. Packaging and Deploying AEM projects

- What is POX.xml file
- What is Maven
- Identify the steps necessary to create AEM content packages using Maven
- Determine the correct method to deploy packages in AEM
- manually or by using Maven

9 What is Replication and Reverse Replication?

- Configuring replication agent for publish instances
- Multiple configuration parameters
- Overview of Replication agents
- Accessing, Managing, and monitoring replication agents
- The process to monitor replication agents
- Activate a tree
- Reverse Replication Agent configuration and testing

10. JAVA CONTENT REPOSITORY

What is jcr?

Why jcr and how to work in jcr?

Content Resolution Using JCR

CRX/de and Package Manager

- Structure of JCR
- How data is stored in JCR?
- How to utilise the JCR?
- Exporting data in json
- What is a content package?
- How to make a custom package?
- filters in package
- Upload and installation

11.DAM and Assets

- What is Dam?
- What are Assets?
- How to upload assets via GUI or through package

Assets:

- Naming conventions

- Default Asset Workflows in AEM
- Search assets in AEM/crxde

12. Templates and Components

Component:

- What is Aem Component?
- AEM OOTB or Core Components
- Parsys in AEM(Responsive grid).
- Apache Sling Resolution OR URL Resolution in aem.
- Simple AEM component Creation.
- What is Sightly(HTL)?
- Sightly(HTL) VS JSP
- Inheritance of AEM Components.
- Extend/ Overriding(java + aem), overlaying
- Use Logger during development in aem.
- What is a Multi field component?
- What are Client libraries?
- Role of Client libraries in AEM.
- Extra client libs
- Dependencies
- Embed
- Filters/ Merge Modes(Merge/update)
- Style system
- Dialog validation
- Page components
- Base Page component
- Template components
- Proxy components

Templates :-

- What are Templates?
- What are Static Templates?
- What are Dynamic Templates?
- Role of Policies
- What is a Layout?
- What is template Structure?
- What is Design Dialog?
- Creating base Template(Will be base for all the templates)

13. Content Fragment

- What are Content fragments?
- What is a content fragment template?
- Create content fragment template
- Content fragment variation and Authoring

14. Experience Fragments

- What is an Experience Fragment?
- What is an Experience fragment?
- What are Experience fragment templates?
- Creating Experience fragment templates
- Experience fragment variations and Authoring

15. Troubleshooting AEM projects

JUnit

AEM Context

Json resource

Mock data

16. OSGi Services

- What is the OSGi Services and Bundle?
- Why do we use OSGi Bundle in AEM?
- Role and Dependency of OSGi Bundle in aem.
- OSGi bundles(Create and Use).
- What is a Component class?
- What are services in aem?
- How to create Custom Service in aem?
- Manage custom OSGi configurations through code and Felix console
- What are Third party APIs ?
- how to use third party APIs using AEM services?

17. Apache Sling:

- What is Sling?
- Why do we use Apache Sling in AEM?
- What is a Sling Model?.

18. Tagging

- What is Tag ?
- What is the role of Tag and how to create and use tags in AEM?
- Use Case for Tag.

19. What is Workflow in Aem?

- Different options for workflow
- Why we Use WF use case and Implementation.
- OOTB WF
- Create Custom workflow.

20. Event Listener and Event Handler & Scheduler

Event Listener:

- What is an Event Listener in aem?
- Why do we use Event Listener in aem?
- Implementation of Event Listener.

Event handler :

- What is an Event handler in aem?
- Why do we use Event Handlers in aem?
- Implementation of Event Handler.

Scheduler:

- What is a scheduler in aem?
- Why do we use a scheduler in aem?
- Implementation of scheduler

Sling job

21.User Administration and Security

- Permissions and ACLs
- Manage Replication Privileges
- Concurrent Permission on ACLs
- What are users, groups, and Access Control List (ACL) permissions and how to manage these?

22.servlets

- What is Servlet?
- Why do we use Servlet?
- How to create and Register AEM Sling Servlet.
- What do you mean by Path based Servlet and Resource Based Servlet Registration.

23.Oak Indexing and Query Builder

Indexing:

What is indexing?

- Indexer Types
- The Property Index
- Configuring the Indexes
- The Ordered Index
- The Lucene Full-Text Index

24. What is a Query Builder?

- What is Path, SQL SQL2 base QB?
- JCR base Query Builder
- Query Debugger Tool
<http://localhost:4502/libs/cq/search/content/querydebug.html>

25.GraphQL (implemented using cf)

- What is Graphql?
- An alternative to SQL.
- Why do we use Graphql?
- Implementation of Graphql.
- What is Postman and use of postman in GraphQL Query

26.Dispatcher

- What is Dispatcher?

- Role of Dispatcher in aem?
- Dispatcher Structure

27. Debugging live bug in aem

We will learn how to debug and fix any issue or bug?

ANS:

1. download the logs and read them for any issue. (error logs or site specific logs)
2. replicate the issue on your local or lower environment for eg QA, DEV. (make sure content is up to date from prod)

Run aem server in debug mode:

```
java -Xmx2048M -agentlib:jdwp=transport=dt_socket,address=8888,server=y,suspend=n -jar aem-author-p4505.jar
```

```
java -Xmx2048M -jar aem-author-p4505.jar debug
```

```
http://localhost:4505/system/console/slinglog/tailer.txt?tail=10000&grep=*&name=%2Flogs%2Ferror.log
```

28. MSM (Multi site Manager)

Live copy

Blueprint

Content Roll-off

29. Content authoring

30. Git

Install git or Git bash/git tortoise

Basic git command:

Git add

Git commit -m " -"

Git push

Download aem 6.5 jar

<https://drive.google.com/drive/folders/1UwKyzfioeOAoD8UcaL6BMbmKSWCgmNy7?usp=sharing>

Dispatcher:

<https://drive.google.com/drive/folders/1Q6Dw0mPiUK2KKvGrcJXKelheOBFajPZV?usp=sharing>

AEM related commands:

```
mvn -B org.apache.maven.plugins:maven-archetype-plugin:3.2.1:generate -D archetypeGroupId=com.adobe.aem -D archetypeArtifactId=aem-project-archetype -D archetypeVersion=39 -D appTitle="myTraining" -D appId="myTraining" -D
```

```
groupId="com.myTraining" -D aemVersion=6.5.5 -D includeExamples=n -D  
includeErrorHandler=y
```

Extract and run aem server-

```
java -Xmx2048M -jar aem-author-p4502.jar
```

————AEM commands————

```
java -jar aem-author-p4502.jar
```

```
java -jar aem-author-p4502.jar -debug 30303
```

```
CQ_JVM_OPTS='-server -Xmx2048m -XX:MaxPermSize=512M -Djava.awt.headless=true -  
agentlib:jdwp=transport=dt_socket,address=30303,server=y,suspend=n' ./start
```

<https://www.aemcq5tutorials.com/tutorials/configure-multi-site-manager-msm-in-aem/>

Assignment :

Create component which receive page name, title, description as input fields and create at least 5 pages:

1. Create component which can have 5 input fields
2. Write servlet
3. Make ajax call to servlet
4. Get all fields data in servlet
5. Write service which will use page manager apis to create the pages by using those parameters(coming in ajax call)
6. Call above service in servlet
7. Once the service get called and pages created print the page path in logs
8. Create another component which will display the page title along with path for that
9. Write sling model to print the page paths

Create one Card Component which can show the cards of different blogs in cards.

How to implement?

Created component from crx/de

Create Servlet it can either be By path or resource type (Recommended)

Use Query builder and Styling(Client lib) for component styling

Referenes:<https://experienceleague.adobe.com/en/docs/experience-manager-learn/getting-started-wknd-tutorial-develop/overview>

Maven installations and environment path setup:

<https://mkyong.com/maven/how-to-install-maven-in-windows/>

<https://www.youtube.com/watch?v=3EfVwThc>

Java installations and environment path setup

<https://mkyong.com/java/where-to-download-jdk-source-code/>

https://mkyong.com/java/how-to-set-java_home-on-windows-10/

<https://www.oracle.com/in/java/technologies/javase/jdk11-archive-downloads.html>

<https://www.youtube.com/watch?v=yGxCQisOL1A>

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<https://www.aemcq5tutorials.com/tutorials/configure-multi-site-manager-msm-in-aem/>

<https://medium.com/tech-learnings/website-structure-in-aem-multi-site-manager-msm-3513c2d91088>

<https://stackoverflow.com/questions/2131965/main-differences-between-soap-and-restful-web-services-in-java>

<https://dev.to/himanshudevghupta/different-restfull-api-and-soap-api-4jn1>

<https://medium.com/@toimrank/aem-run-modes-4c36b9b0068e>

<https://aemgeeks.wordpress.com/2018/06/09/613/>

<https://techinnovia.com/run-modes/>