Assignment No. 3

- **Aim:-**
To create a version control account on GitHub & use commands to create a repository & push code.

Objectives:-

1. Learn how to handle GitHub account
2. Create a repository & push code.

Theory:-

GitHub:-
A cloud-based platform for version control using Git. It hosts code, manages projects, and enables collaboration.

Git:-
A distributed version control system used to track changes in source code.

Hardware and Software Requirements:

Requirements	Specification
System	I3 processor
Git	Latest version
GitHub	latest version
Gitbash	latest Version

Steps to create GitHub Account:-

1. Visit https://github.com
2. Sign up with email
3. Verify & log in
4. GitHub account is ready.

Create a Repository:

1. Click on New Repository
2. Name the repo, add description (optional)
3. Choose public / private
4. Initialize with README (optional)
5. Click create Repository.

Assignment No. 4

Aim:-
Create Docker container Environment.

Objective:-
To create Docker container environment.

Software Used:-
Docker, Docker - compose.

Theory:-

Docker:-
- Docker is a great resource for creating a private environment where you can develop
- if you have ever worked with python in the past, you may be familiar with virtualenv which allows you to store all the dependencies for new application an independent virtual environment.
- In the same way Docker was created to allow you to have a completely independent "container" which acts as a sort of mini computer that you can use to store or install the dependencies your application needs.
- The advantages is that you are priventing dependancy management problems by separating the needs & concerns of one application from the other.
- Docker can save your time spend on configurations &

installation when you getting started using a new tool or language.

- Dockers container system is very efficient because it ~~words~~ works with commits. This saves space & allow you to see change to container.

- Docker container :-
- Docker container is that they relay on something called docker images (a snapshot taken of a specific container at agiven time point in a time)
- Check out Docker Hub, which is a collection of Docker images ranging from ubutun to a fully functional Nginx server.

Assignment No:- 6

Aim:-
Create a Node.js application that serves a static website.

Objective:-
1. Develop a responsive Node.js application.
2. Learn to use Node.js to serve static websites.

Software Used:
Node.js, NPM, Express, VS code.

Theory:-
- Open source, cross-platform JavaScript runtime
- Use Google Chrome's V8 engine.
- Non-blocking, single-threaded architecture.
- Comes with NPM (package manager)

Express.js:-
Minimal & flexible framework for web/mobile applications

Feature of Node.js:-
- Fast, asynchronous I/O
- Single-threaded & scalable
- No buffering, open-source

Application:-

- Real-time chat
- SPA (single-page apps)
- Collaboration tools
- Streaming apps
- JSON API apps

Node.js Components:
Modules
DNS
Debugger
Domain
Buffer
Streaming
Error Handling
Global
Cluster
Console

Assignment No. 7

Aim:-

Create four API using Node.js, Express JS & MongoDB for CRUD operations.

Objectives:-

1. Understand backend API development.
2. Learn integration of Express with MongoDB via Mongoose.
3. Use postman to test RESTful APIs.

Software Used:
Node.js, Express.js, MongoDB, Mongoose, Postman.

Theory:-

Node.js:-
Node.js is an open-source, cross-platform Javascript runtime environment that allows you to run Javascript code outside the browser mainly used to build backend services

Features:-
- Use Google Chrome's V8 Javascript engine for fast execution.

- Event-driven & non-blocking I/O model.
- Ideal for building scalable & real time application.

Express.js :-
Express.js is a minimal & Flexible Node.js web application framework that provides a robust set of features for web & mobile applications.

Features :-
- Simplifies routing, middleware integration & request handling.
- Handles different HTTP methods like GET, POST, PUT, DELETE.
- Works seamlessly with template engines & databases

MongoDB :-
It is a NOSQL Database that stores data in the form of document (JSON-like format) instead of rows & tables.

Features :

- Scalable & high-performance
- Ideal for agile & fast development cycles.

Mongoose :-
Mongoose is an ODM (Object Data Modeling) library for MongoDB & Node-js.

Features :-
- Schema validation
- Middleware support
- Easy data querying & relationship management.

CRUD operation :-
- Create :- Add new data to the database
- Read :- Retrive existing data
- Update :- Modify existing data
- Delete :- Remove data from database.

Assignment No. 8

Aim:-
Create a simple mobile website using JQuery mobile

Objective:-
1. To create a simple mobile website using jQuery Mobile.
2. Learn how to use jQuery Framework for develop application.

Software Used:-
JQuery Mobile, JQuery Framework, HTML 5, CSS3, VS Code.

Theory:-
- JQuery is Mobile is a user interface Framework, built on JQuery Core & used for developing responsive websites or applications that are accessible on mobile, tablet & desktop devices.
- It uses features of both JQuery & JQuery UI to provide API Features for mobile web application.
- It was developed by the JQuery project team in the year 2010 and written in Javascript.

Features of jQuery Mobile:-
- It is built on jQuery Core & "Write less, do

more " UI framework.

- It is an open source framework & cross-platform as well as cross-brawser compatile.
- It is written in JavaScript & uses features of both jQuery & jQuery UI for building mobile-friendly sites.
- It integrates HTML5, CSS3, jQuery & jQuery UI into one framework for creating pages with minimal scripting.
- It includes Ajax navigation system that uses animated page transitions.

Assignment No. 9

Aim:-
Deploy / Host your web application on AWS VPC or AWS Elastic Benstalk.

Objective:-

1. Deploy / Host web application using AWS VPC or AWS Elastic Benstalk.
2. Learn how to use these services For deployment.

Software Used:-
AWS Account, AWS SDK Installed.

Theory:-

Cloud Computing:-
Cloud computing means storing / accessing data online rather than on a local drive, using remote servers.

AWS (Amazon Web Services):
- A flexible, scalable, cost-effective cloud platform
- Offers Iaas, Paas, Saas
- Services include compute power, storage, content

delivery, etc.

Application of AWS:
- Web & app hosting
- Media sharing
- Mobile & social apps
- Content delivery & backup
- Development / test environments
- Search Engine
- Social Networking

Elastic Benstalk:-
- Service for deploying / scaling apps (Java, .NET, PHP, python, Node.js, etc.)
- Automatically manages deployment, scaling
- monitoring
- full control over resources is retained.

Amazon VPC:-
- Isolated virtual network in AWS
- Full control over IP range, subnets, route tables, gateways
- Supports public / private subnets
- Multiple security layers via security groups & ACLs

Steps to create AWS account:-
1. Signup:- Go to aws.amazon.com, click. "Sign UP"

2. User Details :- Fill in name, email, etc.
3. Credit Card :- Provide card info for account creation.
4. Identity Confirmation :- Verify your identify.
5. Support Plan :- Choose the Free Basic plan
6. Login : Access AWS management Console.