Assignment No. 2 : Advance Devops.

Date 04/03

0-1) Create REST API with Serverless Framework.

→ (1) Install serverless Framework via node.js & npm to install serverless framework globally.

(2) Set up new Serverless project. Create new service by running the command. serverless create --template aws-nodejs --path my-service.

(3) Define Service name, provider & function in serverless.yml file.

(4) In Serverless.yml, under function section define HTTP endpoints.

(5) Write a Lambda function by creating handler.js file that contain logic for each Lambda function.

(6) By using serverless deploy, deploy the ~~Dep~~ service, this command packages & deploys service to AWS, creating required resources like Lambda function, API Gateway.

(7) Include plugins like for local testing, serverless-webpack for optimized builds or S3 integration.

(8) Specify the iam RoleStatement in serverless.yml to define permission for each function.

(9) Define environment variables in serverless.yml file to store configuration values.

(10) Use serverless plugin or AWS secret Manager to store sensitive data like database ~~credentials~~. Credentials.

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D.4) Case study of sonarcube

- Create your own profile in sonarcube for testing project quality
- Use sonarcube to analyze your GitHub code
- Install sonarlint in Java intellej ide & analyze your Java code.
- Analyze python project with Sonarcube
- Analyze nodejs project with Sonarcube.

→ 1) creating your own profile in Sonarqube for Testing project quality:

① create account, register & create a new project in Sonarqube.
② set quality sets, coding rules, coverage standards.
③ Add project properties by configuring Sonar-project file.
④ Link with CI/CD tools like Jenkins & Gitlab.

2) Using Sonarcloud to Analyze your GitHub Code.

① Use Github account to access Sonarcloud.
② Connect your desired GitHub repository to sonarcloud
③ Use Git actions to scan code.
④ view bugs, vulnerability & quality badges in Sonarcloud.

3) Install sonarcube in Java IDE

① Search & install sonarLint from plugin marketplace.
② Detect bugs, code smells, security vulnerabilities.
③ Link to sonarcube or sonarcloud for consistent checks.
④ Maintain quality standards during development.

4) ① Analyze python project with sonarqube.

① install sonarqube & enable sonar python.
② Execute Sonar-scanner from project root.
③ Check dashboard for bugs & security hotspots.
④ Maintain quality in regular scans ensure code ~~maintainable~~ maintainability.

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(5) (0) Analyze Node.js project with SonarQube.

(1) Install plugin that enables Sonar - Javascript plugin for Node.js

(2) Define project key & source exclusion in sonar-project.properties.

(3) Use sonar-scanner to analyze code.

(4) Track issues & ensure project standards are met.

0.3) At large organization can use Terraform to implement a self serve infrastructure model, enabling product teams to manage their own infrastructure without relying on centralized operations team. By creating & using Terraform modules. Terraform cloud can integrate ticketing systems like Service Now. to automate new infrastructure request. This approach reduces repetative task, speeds up provising & maintains consistency, speeds up provisioning & maintains consistency across the organizations.

→ The concept of Terraform is used to enable a self-serve infrastructure model with large organization. The product teams can manage & provide own infrastructure without depending on centralized operations team, which helps to bottlenecks & streamline the process.

(1) Self-serve Infrastructure Model:

- Instead of sending repeative infrastructure requests to a central team, product teams can independtly provision infrastructure as needed.
- This model accelerates development by allowing teams to quickly deploy & manage their own resources.

(2) Terraform Modules:

- Modules can be created to encrypt the standard & bestpractices for infrastructure management with organization.
- These modules are reusable, providing compliant way to deploy services.

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(3) compliance & standardization:

- By using predifined Terraform modules, you ensure that all teams deploy services in alignment with organization standards.
- This prevent configuration drift & enforces best practices across organization.

(4) Automate with Terraform Cloud:

- Terraform Cloud can integrate with tools like ServiceNow to automate Infrastructure based on ticket requests.
- Integrations can handle infrastructure manner, further reducing manual intervention & speeding up the process.

Using terraform for self-service infrastructure model empowers teams to manage their own resources, enhancing & reducing operational workload which requires successful implementation, careful planning, documentation & training.

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