Name:- Bhagyesh B. Patil

Roll:- 36

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Q.1) Create RES Api with the serverless framework

Ans Here are the several steps to be followed to create REST API using serverless framework

1. install serveless framework
Run npm install -g
serverless to install the framework globally on your machine

2. create a new project
Generate a new serverless project using the following command

command

serverless create --template aws-nodejs --path my-rest-api

cd my-rest-api

3. Define API Endpoints:-
Open the serverless.yml file and define your REST API with functions

4. write function:-
Implement the logic for each endpoint in the handler.js

```
module.exports.getItems = async (event) => {
  return {
    statusCode: 200,
    body: JSON.stringify({ message: "List of Items" }),
  };
};
```

5. Deploy the API:-
Deploy the API to AWS using the output.

command:-

```
serverless deploy
```

6. Test the API:-
After deployment you will receive an API gateway URL you can test the API using curl or postman

Command

```
curl https://you-api-url/items
```

Q.2) Case study of tech-Innovator ~~Ltd~~ Ltd
Sonarqube

Ans tech-innovator Ltd is a global leader in developing multimedia and entertainment application the company provide software solution for video streaming content creation and editing tools with a diverse stack including java, ABC media solution, tech-innovator Ltd media solution manage several large-scale projects developed by distributed team across different regions

solution:-Sonarqube

1. Automated code analysis
1) sonarqube was integrated into the company Jenkins CI/CD pipeline allowing for automated code analysis including bug vulnerabilities, and code smell

2. quality Gate and rule
1) Tech innovator Ltd define custom quality gate to enforce standard for acceptable code quality these gate ensure that code with critical vulnerabilities or high technical debt rations could not be merge or deployed

3. Technical Debt reduction:-
1) with SonarQube technical debt tracking feature the team able to quantify the effort required to fix issues in their code this allowed the company to prioritize technical debt reduction alongside new feature development

4. Code Duplication and Complexity
1) SonarQube provided insights into code duplication area of high complexity the platform detailed reports helped developers refactor code to reduce complexity and eliminate redundant code this improve the overall performance of the application and reduce bugs realted to complex, unmaintainable code

5. increased developer Productivity
1) By automating code quality checks and reducing technical debt, developer at Tech innovated Ltd solution able to focus more on innovation feature realted the fixing bug and dealing with performance issue

Q.3

Ans Implementing a self-service infrastructure model using terraform can significantly streamline operations with large organisation Here's structures approach to achieve this

1) Centralized operations:

- Address repetitive infrastructure request from product teams by using terraform

2) Create terraform modules:
- Develop reusable modules that define standards for deploying and managing infrastructure

3) Empower product teams:
- Set up a self-service portal where tea can initiate request using predefine modules enabling them to manage the infrastructure independently

4) Integrate terraform cloud
- Connect terraform cloud with ticket system like servicenow to automate request terraform can provision the