AWS Certified Developer Associate

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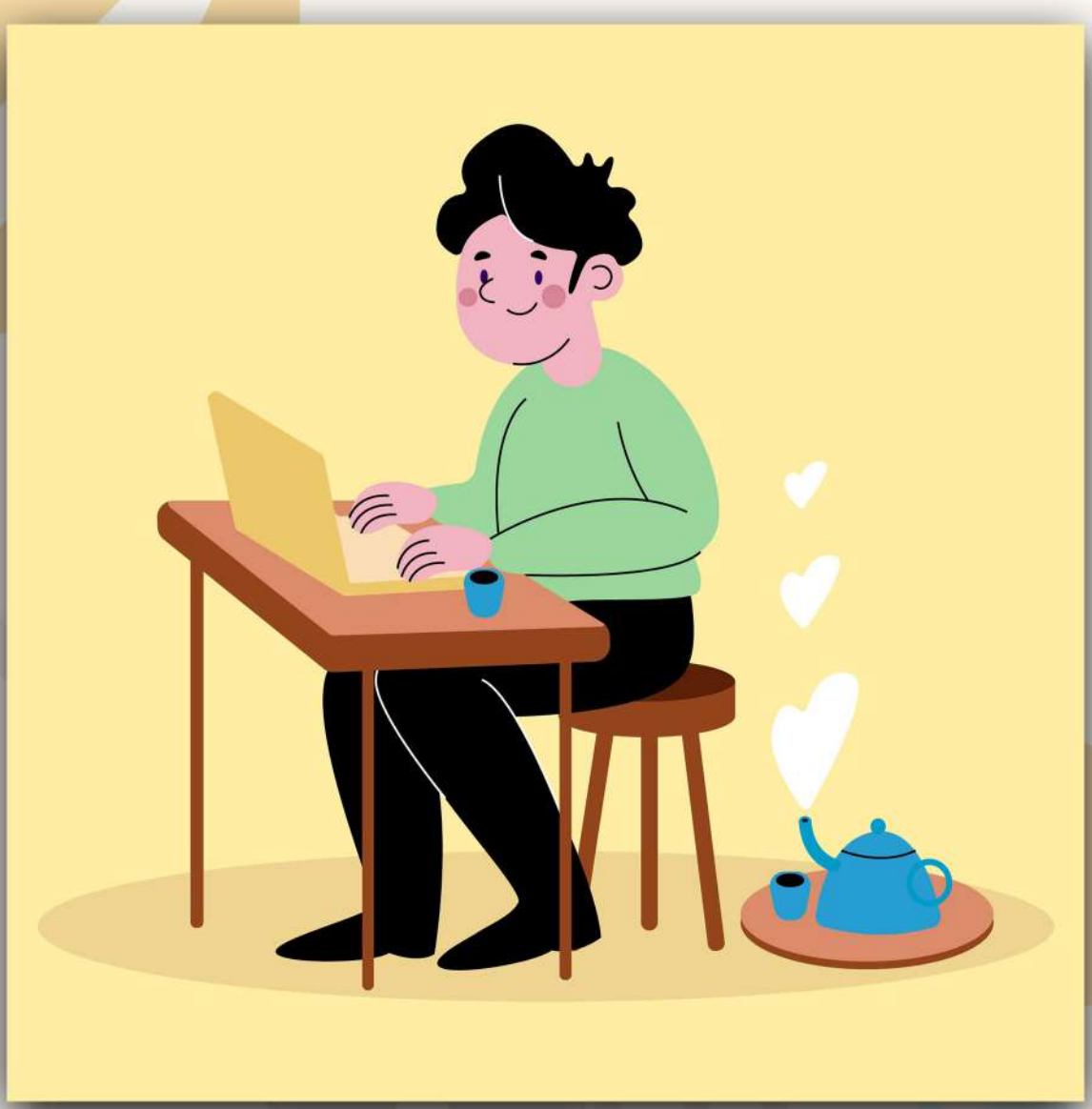

Online Course

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Course Modules

Development with AWS Services

1. **Develop code for applications hosted on AWS**
   - Architectural patterns (for example, event-driven, etc.,)
   - Idempotency
   - Differences between stateful and stateless concepts
   - Diffs between tightly coupled and loosely coupled components
   - Fault-tolerant design patterns
   - Differences between synchronous and asynchronous patterns

2. **Use data stores in application development**
   - Relational and non-relational databases
   - Create, read, update, and delete (CRUD) operations
   - High-cardinality partition keys for balanced partition access
   - Cloud storage options (for example, file, object, databases)
   - Database consistency models (strongly consistent)
   - Differences between query and scan operations
   - Amazon DynamoDB keys and indexing
   - Caching strategies (write-through, read-through, lazy load, TTL)
   - Amazon S3 tiers and lifecycle management
   - Differences bet ephemeral and persistent data storage patterns

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3. Develop code for AWS Lambda

- Event source mapping
- Stateless applications
- Unit testing
- Event-driven architecture
- Scalability
- The access of private resources in VPCs from Lambda code

Security

4. Implement authentication / authorization for apps & AWS services

- Identity federation ([SAML], [OIDC], Amazon Cognito)
- Bearer tokens (JSON Web Token [JWT], OAuth, [AWS STS])
- The comparison of user pools & identity pools in Amazon Cognito
- Resource-based policies, service policies, and principal policies
- Role-based access control (RBAC)
- Application authorization that uses ACLs
- The principle of least privilege

5. Implement encryption by using AWS services

- Encryption at rest and in transit
- Certificate management (AWS Private Certificate Authority)
- Key protection (for example, key rotation)
- Diff between client-side encryption and server-side encryption
- Diffs bet AWS mngd & customer managed AWS (AWS KMS) keys

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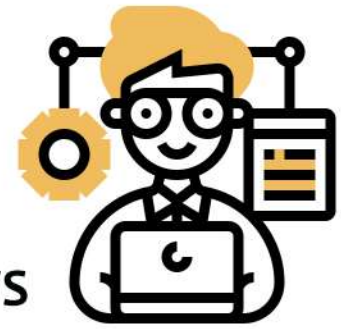
6. Manage sensitive data in application code

- Data classification ([PII], protected health information [PHI])
- Environment variables
- Secrets management (AWS Secrets , AWS Systems Manager
- Secure credential handling



Deployment

7. Prepare application artifacts to be deployed to AWS

- Ways to access application configuration data
- Lambda deployment packaging, layers, and configuration options
- Git-based version control tools (Git, AWS Code Commit)
- Container images

8. Test applications in Development Environments

- Features in AWS services that perform application deployment
- Integration testing that uses mock endpoints
- Lambda versions and aliases

9. Automate Deployment testing

- API Gateway stages
- Branches in continuous integration & delivery (CI/CD) workflow
- Automated software testing (unit testing, mock testing)

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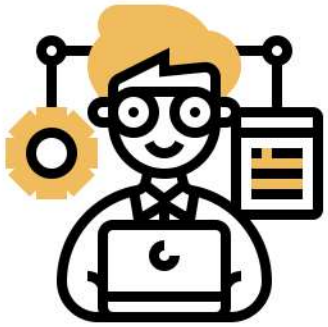
10. Deploy code by using AWS CI/CD services

- Git-based version control tools (Git, AWS CodeCommit)
- Manual and automated approvals in AWS CodePipeline
- Access app config frm AWS AppConfig & Secrets Manager
- CI/CD workflows that use AWS services
- Application deployment that uses AWS services and tools
- Lambda deployment packaging options
- API Gateway stages and custom domains
- Deployment strategies (for example, canary, blue/green, rolling)

Troubleshooting and Optimization



11. Assist in a root cause analysis

- Logging and monitoring systems
- Languages for log queries (Amazon CloudWatch Logs Insights)
- Data visualizations
- Code analysis tools&
- Common HTTP error codes
- Common exceptions generated by SDKs
- Service maps in AWS X-Ray

12. Instrument code for observability

- Distributed tracing
- Differences between logging, monitoring, and observability
- Structured logging

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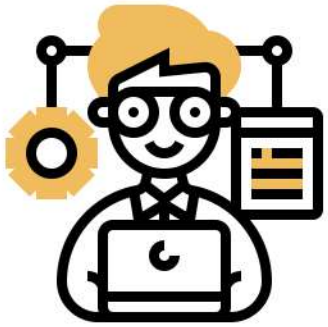
13. Optimize applications by using AWS services and features

- Caching
- Concurrency
- Messaging services ([Amazon SQS], [Amazon SNS])



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