Develop Azure Compute Solutions
 └─ **1.3 Implement Azure Functions**
   └─ **1.3.1 Create and Configure an Azure Functions App**

1. What hosting plans are available for Azure Functions, and when should each be used?
2. How do you create an Azure Function App using Azure CLI?
3. What are the key configuration settings for a Function App?
4. How do you configure the runtime stack and version?
5. What are the authentication options for securing Function Apps?
6. How do you configure application settings and connection strings?
7. How do you set and manage function-level timeouts?
8. What are the deployment options for Azure Functions?
9. How do you configure CORS for a Function App?
10. How do you configure monitoring and diagnostics?

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1. What hosting plans are available for Azure Functions, and when should each be used?
- Consumption Plan: Auto-scales and is cost-effective for sporadic workloads. Limited to 5 mins (default) or 10 mins (max) execution.
- Premium Plan: Supports VNETs, unlimited execution time, and pre-warmed instances. Use for high-load or enterprise apps.
- Dedicated (App Service) Plan: Use if consolidating services on the same App Service plan or for always-on requirements with full control.

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2. How do you create an Azure Function App using Azure CLI?
```
az functionapp create \
    --resource-group <rg> \
    --consumption-plan-location <region> \
    --runtime <dotnet|node|python|java|powershell> \
    --functions-version <version> \
    --name <app-name> \
    --storage-account <storage-name>
```

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3. What are the key configuration settings for a Function App?
- Runtime Stack & Version
- Platform Architecture (32-bit/64-bit)
- Always On (Premium/Dedicated only)
- Application Settings (APPINSIGHTS_INSTRUMENTATIONKEY, etc.)
- CORS
- Authentication

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4. How do you configure the runtime stack and version?
Use CLI or Portal:
```
az functionapp config set \
    --name <app-name> \
    --resource-group <rg> \
    --linux-fx-version "DOTNET|6.0"
```
Use "linux-fx-version" or "windows-fx-version" depending on OS.

5. What are the authentication options for securing Function Apps?
- App-level authentication: Use Microsoft Entra ID, Facebook, Google, etc.
- Function key/token: For per-function access control.
- Anonymous access: Only if explicitly enabled.
- Recommended: Use Entra ID for secure, enterprise-grade auth.

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6. How do you configure application settings and connection strings?

Use Azure CLI or Portal. Example with CLI:

```
az functionapp config appsettings set \
   --name <app-name> \
   --resource-group <rg> \
   --settings "MySetting=value" "MyConnStr=connectionstring"
```

Connection strings should be stored as app settings and referenced via `Environment.GetEnvironmentVariable()` in code.

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7. How do you set and manage function-level timeouts?
- Consumption Plan: Max 5 min by default, extendable to 10 min via host.json:
  ```
  {
    "functionTimeout": "00:10:00"
  }
  ```
- Premium/Dedicated Plan: No timeout limit.

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8. What are the deployment options for Azure Functions?
- Zip deployment: az functionapp deployment source config-zip
- Local Git or GitHub: Continuous integration via DevOps or GitHub Actions
- VS Code / Azure CLI: Direct push
- Azure DevOps Pipelines: Full CI/CD with environment config

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9. How do you configure CORS for a Function App?

```
az functionapp cors add \
   --name <app-name> \
   --resource-group <rg> \
   --allowed-origins https://example.com
```

Use * only for public or development APIs — avoid in production.

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10. How do you configure monitoring and diagnostics?
- Enable Application Insights during creation or via:
  ```
  az monitor app-insights component create \
  --app <app-name> --location <region> --resource-group <rg>
  ```
- Link to Function App:
  ```
  az functionapp config appsettings set \
  --name <app-name> --resource-group <rg> \
  --settings "APPINSIGHTS_INSTRUMENTATIONKEY=<key>"
  ```

Logs and metrics are available in App Insights, Azure Monitor, or via az monitor.