5. Connect to and consume Azure services and third-party services
└─ **5.1 Implement API Management**
    └─ **5.1.4 Implement policies for APIs**

1. What are API Management policies and where can they be applied?
2. How do you use the set-header policy to manipulate request/response headers?
3. How does the validate-jwt policy work for token validation?
4. How do you apply rate limiting using the rate-limit policy?
5. What's the difference between quota and rate-limit policies?
6. How do you rewrite URLs using rewrite-uri or set-backend-service?
7. How do you handle conditional logic in policies using choose and when?
8. How can you transform request or response bodies using set-body?
9. What tools are used to author, test, and debug APIM policies?
10. What are best practices for policy organization and reuse?

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1. What are API Management policies and where can they be applied?
- XML-based logic executed at runtime.
- Applied at four scopes: inbound, backend, outbound, and on-error.
- Can be configured at global, product, API, or operation levels.

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2. How do you use the set-header policy to manipulate request/response headers?
- Adds or updates headers.
- Example:
```
<set-header name="X-Custom-Header" exists-action="override">
  <value>my-value</value>
</set-header>
```

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3. How does the validate-jwt policy work for token validation?
- Validates JWT tokens in Authorization header.
- Requires configuration of issuer, audience, and signing keys.
- Example:
```
<validate-jwt header-name="Authorization" require-scheme="Bearer">
  <openid-config url="https://login.microsoftonline.com/<tenant>/v2.0/.well-known/openid-configuration" />
  <required-claims><claim name="aud"><value>api-client-id</value></claim></required-claims>
</validate-jwt>
```

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4. How do you apply rate limiting using the rate-limit policy?
- Restricts number of calls in a time window.
- Example:
```
<rate-limit calls="100" renewal-period="60" />
```
Limits client to 100 calls per minute.

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5. What's the difference between quota and rate-limit policies?
- rate-limit: short-term throttle (e.g., per minute).
- quota: long-term usage limit (e.g., daily/weekly).
- Both can be used together for layered control.

6. How do you rewrite URLs using rewrite-uri or set-backend-service?

- rewrite-uri: Changes request path.
  Example:
  `<rewrite-uri template="/v2/resource" />`
- set-backend-service: Redirects to a different backend.
  Example:
  `<set-backend-service base-url="https://api.contoso.com/v2" />`

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7. How do you handle conditional logic in policies using choose and when?

- Enables branching logic based on conditions.
  Example:
  ```
  <choose>
     <when condition="@(context.Request.Headers["x-version"] == "v2")">
        <set-backend-service base-url="https://api-v2.contoso.com" />
     </when>
     <otherwise>
        <set-backend-service base-url="https://api-v1.contoso.com" />
     </otherwise>
  </choose>
  ```

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8. How can you transform request or response bodies using set-body?

- Overwrites the payload.
  Example (JSON):
  `<set-body>@("{\"message\": \"Access denied\"}")</set-body>`
- Can also use Liquid templates for dynamic content.

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9. What tools are used to author, test, and debug APIM policies?

- Azure Portal policy editor with IntelliSense.
- Test console in Azure Portal.
- Developer portal (limited testing).
- Trace/debug by enabling "trace" and reviewing trace logs in the test console.

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10. What are best practices for policy organization and reuse?

- Keep logic centralized at product/API level when possible.
- Use named values for reusable values.
- Document policy use with `<comment>` blocks.
- Avoid deep nesting for readability.