**🔹 REST API HTTP Status Codes and Their Usages**

Here’s a **comprehensive table** of **HTTP status codes** along with their **common usage in REST APIs**.

**✅ 1xx - Informational Responses**

| **Status Code** | **Meaning** | **Usage in REST API** |
| --- | --- | --- |
| 100 Continue | The server acknowledges the request and expects the client to continue. | Used when sending large payloads in chunks. |
| 101 Switching Protocols | The server is switching to a different protocol as requested. | Used when upgrading a connection (e.g., from HTTP to WebSockets). |
| 102 Processing | Server has received the request and is processing it. | Used in long-running requests to prevent timeouts. |

**✅ 2xx - Success Responses**

| **Status Code** | **Meaning** | **Usage in REST API** |
| --- | --- | --- |
| 200 OK | The request was successful. | Used for **GET, PUT, PATCH, DELETE** requests when the response contains data. |
| 201 Created | A new resource was created successfully. | Used for **POST** requests when a resource is created. |
| 202 Accepted | Request accepted for processing but not completed. | Used for **asynchronous processing**, like background jobs. |
| 204 No Content | Request was successful, but there is no data to return. | Used for **DELETE requests** where no body is needed. |

**✅ 3xx - Redirection Responses**

| **Status Code** | **Meaning** | **Usage in REST API** |
| --- | --- | --- |
| 301 Moved Permanently | The resource has been moved permanently to another location. | Used when **changing API endpoints** permanently. |
| 302 Found | Temporary redirection to another endpoint. | Used when a resource **temporarily moves** (e.g., for maintenance). |
| 304 Not Modified | The requested resource has not changed since the last request. | Used with **cache headers (ETag)** to save bandwidth. |

**✅ 4xx - Client Errors**

| **Status Code** | **Meaning** | **Usage in REST API** |
| --- | --- | --- |
| 400 Bad Request | The request is malformed or invalid. | Used when **missing parameters, invalid JSON, or incorrect formatting**. |
| 401 Unauthorized | Authentication is required but missing or incorrect. | Used when a user **has not logged in** (invalid/missing token). |
| 403 Forbidden | The user is authenticated but doesn’t have permission. | Used for **access control**, like **admin-only routes**. |
| 404 Not Found | The requested resource does not exist. | Used when a **record or endpoint doesn’t exist**. |
| 405 Method Not Allowed | The HTTP method used is not allowed for this endpoint. | Used when trying to **POST to a GET-only API**. |
| 409 Conflict | Request conflicts with the current state of the resource. | Used when **trying to create a duplicate entry** (e.g., duplicate username). |
| 410 Gone | The resource is no longer available. | Used when an API **endpoint is deprecated** and removed. |
| 415 Unsupported Media Type | The request format is incorrect. | Used when **JSON/XML is expected but another format is sent**. |
| 429 Too Many Requests | The client has exceeded the rate limit. | Used for **rate limiting APIs** (e.g., API abuse prevention). |

**✅ 5xx - Server Errors**

| **Status Code** | **Meaning** | **Usage in REST API** |
| --- | --- | --- |
| 500 Internal Server Error | A generic error occurred on the server. | Used when an **unexpected issue** happens (e.g., database crash). |
| 501 Not Implemented | The API does not support the request method. | Used when **an API method is not implemented yet**. |
| 502 Bad Gateway | The server received an invalid response from an upstream server. | Used when a **backend service is down or misconfigured**. |
| 503 Service Unavailable | The API is temporarily unavailable. | Used when **the server is overloaded or under maintenance**. |
| 504 Gateway Timeout | The server took too long to respond. | Used when **a request to an external service times out**. |

**🔹 Summary Table**

| **Category** | **Status Codes** | **Usage** |
| --- | --- | --- |
| **1xx (Informational)** | 100, 101, 102 | Acknowledging the request, protocol switching, or processing. |
| **2xx (Success)** | 200, 201, 202, 204 | Successful responses, including resource creation and deletion. |
| **3xx (Redirection)** | 301, 302, 304 | Resource moved permanently, temporarily, or cached. |
| **4xx (Client Errors)** | 400, 401, 403, 404, 405, 409, 429 | Authentication failures, bad requests, and rate limiting. |
| **5xx (Server Errors)** | 500, 501, 502, 503, 504 | Internal errors, service failures, and timeouts. |

Would you like a **FastAPI example handling these status codes dynamically?** 🚀