

Spring Boot REST API – Basic Level (15 Problem Statements)

With only Web Starter

1. Welcome Message API

Problem Statement:

Create a REST API that returns a welcome message from the service layer.

Endpoint:

GET /welcome

Logic:

Service returns "Welcome to Spring Boot REST API"

2. Simple Calculator – Addition

Problem Statement:

Create an API to add two numbers.

Endpoint:

GET /add?a=10&b=20

Logic:

Service performs addition and returns result.

3. Simple Calculator – Even or Odd

Problem Statement:

Check whether a given number is **even or odd**.

Endpoint:

GET /evenodd/{num}

Logic:

Service checks $\text{num} \% 2$.

4. Age Category API

Problem Statement:

Determine age category: Child, Adult, or Senior Citizen.

Endpoint:

GET /age/{age}

Logic:

- $<18 \rightarrow \text{Child}$
 - $18-59 \rightarrow \text{Adult}$
 - $\geq 60 \rightarrow \text{Senior}$
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5. Grade Calculation API**Problem Statement:**

Calculate grade based on marks.

Endpoint:

GET /grade/{marks}

Logic:

- $\geq 90 \rightarrow \text{A}$
 - $\geq 75 \rightarrow \text{B}$
 - $\geq 60 \rightarrow \text{C}$
 - $\text{else} \rightarrow \text{Fail}$
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6. Temperature Conversion API**Problem Statement:**

Convert Celsius to Fahrenheit.

Endpoint:

GET /celsius-to-fahrenheit/{celsius}

Logic:

$(\text{celsius} * 9/5) + 32$

7. String Reverse API**Problem Statement:**

Reverse a given string.

Endpoint:

GET /reverse/{text}

Logic:

Use `StringBuilder.reverse()`.

8. Palindrome Check API**Problem Statement:**

Check whether a string is a palindrome.

Endpoint:

GET /palindrome/{word}

Logic:

Compare original and reversed string.

9. Factorial Calculation API**Problem Statement:**

Calculate factorial of a number.

Endpoint:

GET /factorial/{num}

Logic:

Loop-based factorial calculation.

10. Prime Number Check API**Problem Statement:**

Check whether a number is prime.

Endpoint:

GET /prime/{num}

Logic:

Check divisibility up to \sqrt{n} .

11. Discount Calculation API**Problem Statement:**

Calculate final price after discount.

Endpoint:

GET /discount?price=1000&discount=10

Logic:

price - (price * discount / 100)

12. Login Validation API**Problem Statement:**

Validate username and password.

Endpoint:

POST /login

Logic:

- Username = admin
 - Password = admin123
 - Return success or failure
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13. Simple Interest Calculator API**Problem Statement:**

Calculate simple interest.

Endpoint:

GET /interest?p=1000&r=10&t=2

Logic:

$(p * r * t) / 100$

14. Word Count API**Problem Statement:**

Count number of words in a sentence.

Endpoint:

POST /wordcount

Logic:

Split string by spaces.

15. Maximum of Three Numbers API

Problem Statement:

Find maximum of three numbers.

Endpoint:

GET /max?a=10&b=20&c=15

Logic:

Use conditional comparisons.

Architecture (Same for All)

controller

└ RestController

service

└ Business logic