

# AdventureWorks (2022) — String Functions Practice Problems

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This set covers beginner → advanced string-function challenges using the **AdventureWorks2022** database. No solutions are included unless you request them.

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## Beginner Level

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### 1. Extract First Name Initial

Return the **first letter** of each person's first name from `Person.Person`.

### 2. Uppercase Territory Names

Convert all territory names from `Sales.SalesTerritory` to **UPPERCASE**.

### 3. Clean Extra Spaces

Trim leading/trailing spaces from `AddressLine1` in `Person.Address`.

### 4. Find Names Containing "son"

Retrieve all people whose last name contains the substring `son` (case-insensitive).

### 5. Email Domain Extraction

From `Person.EmailAddress`, extract the email domain (everything after `@`).

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## Intermediate Level

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### 6. Proper Case Names

Convert first and last names to "Proper Case" (first letter uppercase, rest lowercase).

### 7. Build Full Address Line

Concatenate `AddressLine1`, `City`, and `PostalCode` into a single readable address.

## 8. Mask Credit Card Numbers

In `Sales.CreditCard`, display only the last 4 digits of the card number, masking the rest.

## 9. Extract Product Size Unit

From `Production.Product`, extract the unit part of the `Size` field when it contains text like `50 CM` or `20 L`.

## 10. Validate Phone Numbers

Return phone numbers from `Person.PersonPhone` that contain exactly **10 digits** after removing special characters.

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## Advanced Level

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## 11. Parse Product Numbers

Split the `ProductNumber` (e.g., `BK-M68B-42`) into its components using string functions.

## 12. Standardize Territory Codes

Format all territory codes as: `TERR-<uppercase-first-three-letters>` from `Sales.SalesTerritory.Name`.

## 13. Classify Cities by First Letter

Group cities from `Person.Address` by their **starting letter** and return counts for each.

## 14. Detect Abbreviations in Product Names

Identify product names containing uppercase sequences (like "XL", "GPS", "HD").

## 15. Generate URL Slugs for Product Names

Turn product names into web-friendly slugs:

- lowercase
- spaces replaced with hyphens
- remove non-alphanumeric characters

## 16. Extract Model Series

From `ProductNumber` , extract the **middle section** (e.g., `M68B` from `BK-M68B-42` ).

## 17. Fuzzy Product Search Using SOUNDEX

Find products whose names sound similar to a given input term (e.g., "helmet").

## 18. Detect Product Colors Embedded in Name

Identify colors (e.g., red, black, silver) mentioned inside product names.

## 19. Reverse Customer Names

Reverse each customer's full name using string functions only.

## 20. Generate Hashed Customer Identifier

Create a SHA hash (using `HASHBYTES` ) from concatenation of first name, last name, and business entity ID.

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