



**Return Calculation**  
**March 2014**



# RETURNS

Consider:

You have 2 gardens

Each produces 5 Roses

Which is better?

# RETURNS

In absence of any other information, both gardens are of equal value.

The roses are the returns you get from the gardens.

You get 5 roses. Your return is 5 roses.

This is called **Return**



# RETURNS - DEFINITION

The **RETURN** is a measure of the gain or loss on an investment portfolio



# RETURNS

Few Terms:

**Initial Investment:** The amount you had initially invested

**Final Value:** The Value of the said investment at the time of consideration



# RETURNS - FORMULA

So,

**Return** = Final Value – Initial Investment



# CREATE A FORMULA IN YOUR WORKSHEET

The screenshot displays the Microsoft Excel interface. The ribbon at the top includes the 'Clipboard' group with 'Paste', the 'Font' group with 'Calibri', '11', and bold/italic/underline options, the 'Alignment' group with text alignment icons, the 'Number' group with 'Accounting' and percentage options, and the 'Styles' group with 'Conditional Formatting', 'Format as Table', and 'Cell Styles'.

The worksheet grid shows columns A, B, and C. Row 1 contains headers: 'Initial Investment' in A1, 'Final Investment' in B1, and 'Return' in C1. Row 2 contains data: '100000' in A2, '120000' in B2, and the formula '=B2-A2' in C2. The formula bar at the top shows the active cell is C2 and the formula is '=B2-A2'.

|   | A                  | B                | C      |
|---|--------------------|------------------|--------|
| 1 | Initial Investment | Final Investment | Return |
| 2 | 100000             | 120000           | =B2-A2 |
| 3 |                    |                  |        |
| 4 |                    |                  |        |
| 5 |                    |                  |        |
| 6 |                    |                  |        |
| 7 |                    |                  |        |

# ABSOLUTE RETURN - PERCENTAGE

Let's go back to the garden analogy

What if one garden was a small patch of land in your backyard, and the other was a huge garden on acres of land?

Which would be a better garden?



# RETURNS - DEFINITION

The **ABSOLUTE RETURN** is a measure of the gain or loss on an investment portfolio expressed as a percentage of invested capital.



# ABSOLUTE RETURNS - FORMULA

So,

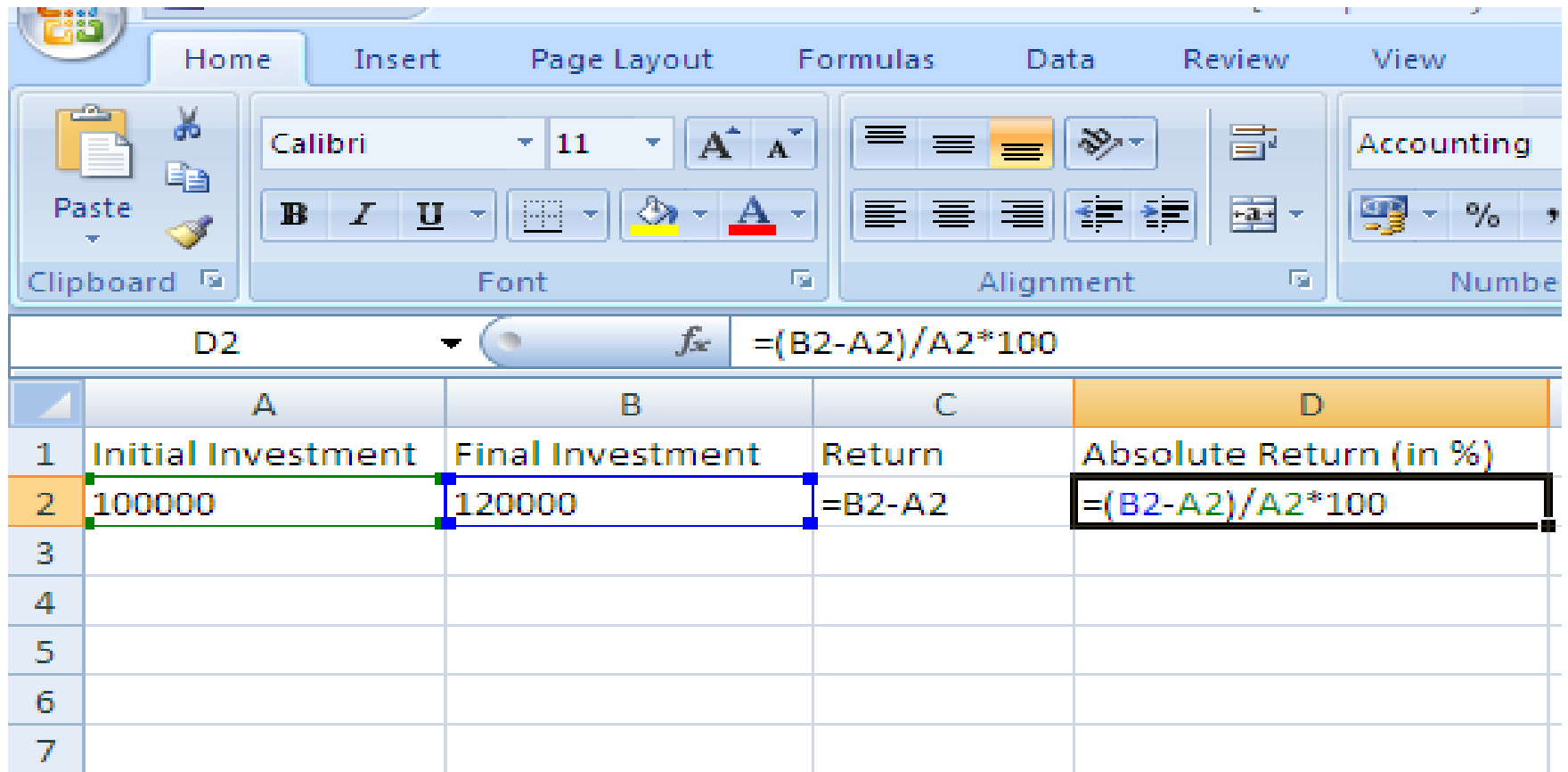
**Absolute Return** = (Final Value – Initial Investment) / Initial Investment

**Absolute Return (%)** = {(Final Value – Initial Investment) / Initial Investment} \* 100

Usually, Absolute Return is expressed as a percentage



# CREATE A FORMULA IN YOUR WORKSHEET



The screenshot displays the Microsoft Excel interface. The ribbon is set to 'Formulas'. The formula bar shows the formula  $= (B2 - A2) / A2 * 100$  for cell D2. The worksheet below has columns A, B, C, and D. Row 1 contains headers: 'Initial Investment', 'Final Investment', 'Return', and 'Absolute Return (in %)'. Row 2 contains data: '100000' in A2, '120000' in B2, '=B2-A2' in C2, and the formula  $= (B2 - A2) / A2 * 100$  in D2. The formula in D2 is highlighted with a black border.

|   | A                  | B                | C      | D                        |
|---|--------------------|------------------|--------|--------------------------|
| 1 | Initial Investment | Final Investment | Return | Absolute Return (in %)   |
| 2 | 100000             | 120000           | =B2-A2 | $= (B2 - A2) / A2 * 100$ |
| 3 |                    |                  |        |                          |
| 4 |                    |                  |        |                          |
| 5 |                    |                  |        |                          |
| 6 |                    |                  |        |                          |
| 7 |                    |                  |        |                          |

# SIMPLE ANNUALISED RETURN

Back to the garden,

What if you had worked hard on one garden for an entire year, and the other for only 6 months?

Which then, would be a better garden?



# SIMPLE ANNUALISED RETURNS - DEFINITION

The **SIMPLE ANNUALISED RETURN** is a measure of the gain or loss on an investment portfolio expressed as a percentage of invested capital, per year.



# SIMPLE ANNUALISED RETURNS - FORMULA

Simple Annualised Return =  $\{(\text{Final Value} - \text{Initial Investment}) / \text{Initial Investment}\} * 100 * 365 / \text{No. of Days}$

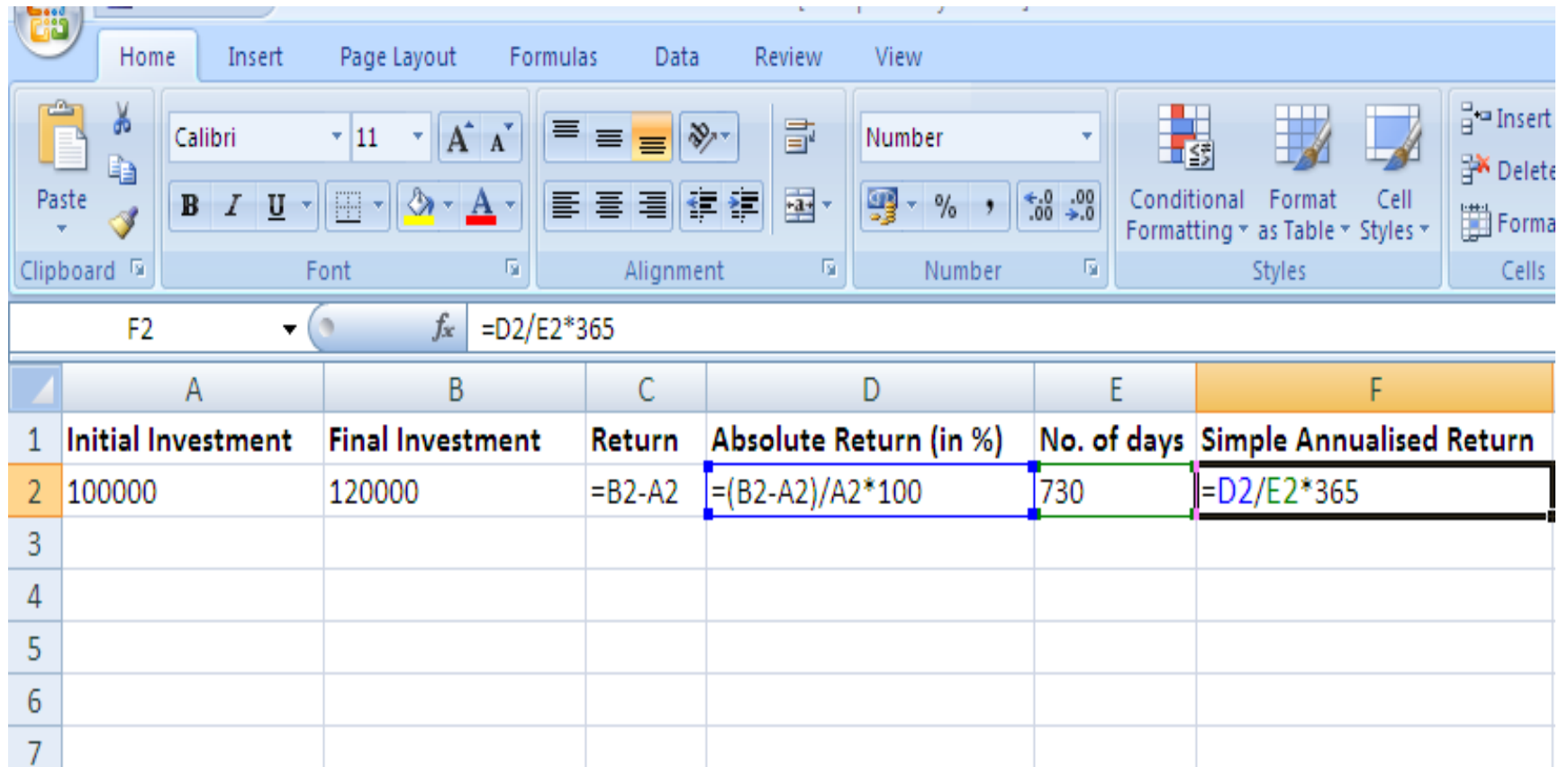
Or

Simple Annualised Return =  $\text{Absolute Return} * 365 / \text{No. of Days}$

No. of Days = No. of days the money has been invested



# CREATE A FORMULA IN YOUR WORKSHEET



The screenshot shows the Microsoft Excel interface. The ribbon at the top includes Home, Insert, Page Layout, Formulas, Data, Review, and View. The Home ribbon is active, showing Font, Alignment, Number, and Styles groups. The formula bar at the top displays the formula  $=D2/E2*365$  for cell F2. The worksheet below has the following data:

|   | A                  | B                | C      | D                      | E           | F                        |
|---|--------------------|------------------|--------|------------------------|-------------|--------------------------|
| 1 | Initial Investment | Final Investment | Return | Absolute Return (in %) | No. of days | Simple Annualised Return |
| 2 | 100000             | 120000           | =B2-A2 | =(B2-A2)/A2*100        | 730         | =D2/E2*365               |
| 3 |                    |                  |        |                        |             |                          |
| 4 |                    |                  |        |                        |             |                          |
| 5 |                    |                  |        |                        |             |                          |
| 6 |                    |                  |        |                        |             |                          |
| 7 |                    |                  |        |                        |             |                          |

# COMPUDED ANNUALISED RETURNS - DEFINITION

The **COMPOUNDED ANNUALISED RETURN** is a measure of the gain or loss on an investment portfolio expressed as a percentage of invested capital, per year, given that the Gain / Loss percentage is cumulative.



# COMPUNDED ANNUALISED RETURNS - DEFINITION

Say, every 100 Rs. gives you a return of 10 Rs.

Which means a return of  $10/100 = 10\%$

So, end of the 1<sup>st</sup> year, you have  $100 + 10$  Rs.

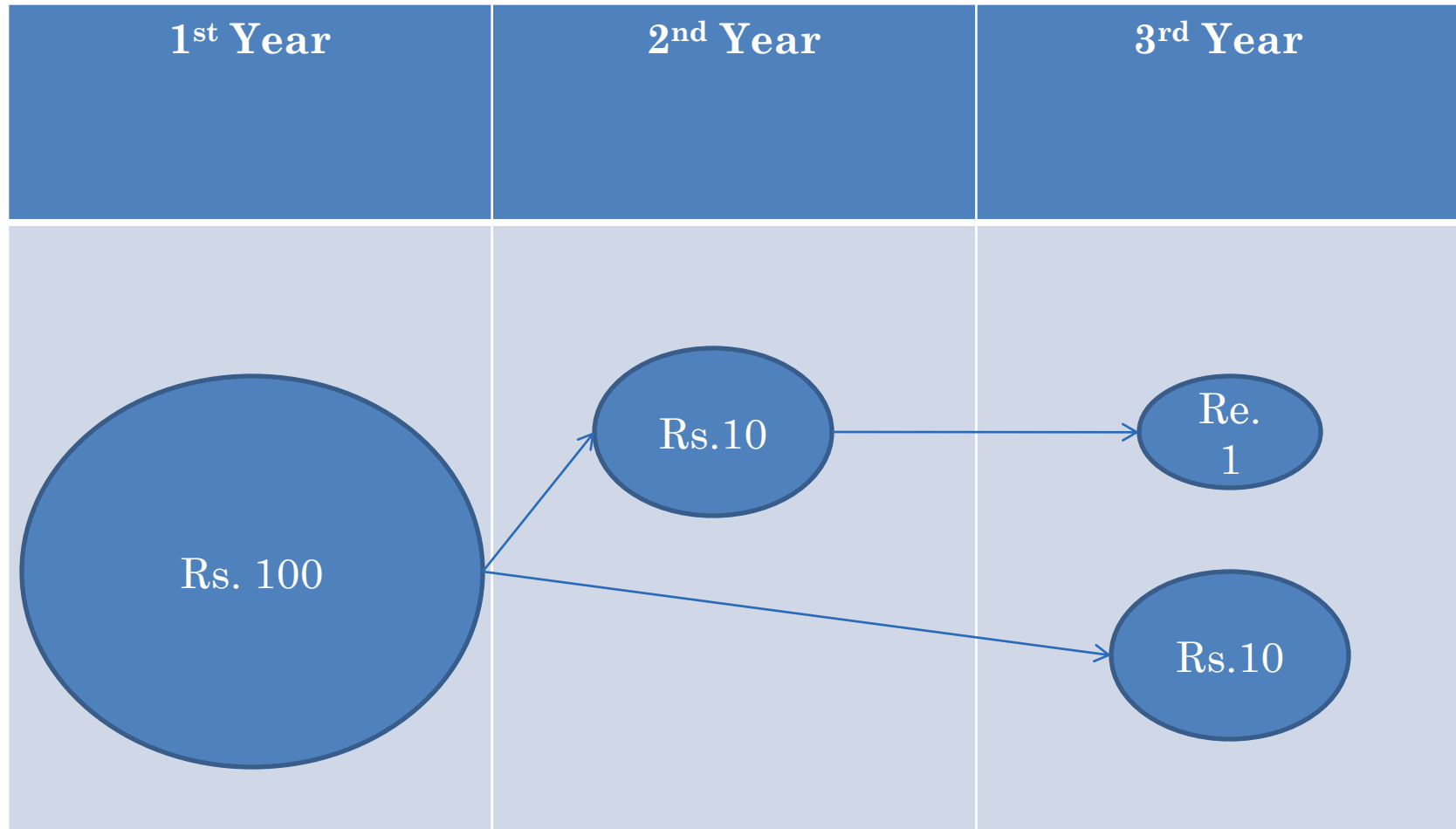
End of second year, if the money was still invested, you would get 10 Rs. for the original 100 Rs.

invested, and another 1 Re. for the 10 Rs. which you had earned as return in the 1<sup>st</sup> year

So you would have  $100 + 10 + 10 + 1$



# COMPUNDED ANNUALISED RETURNS - DEFINITION



# COMPOUNDED ANNUALISED RETURNS - FORMULA

What happened there?

Say the initial amount was X

So X was added to 10% of itself:

$X + 10\% X$  or  $X * (1+10/100)$  or  $X * 1.1$

In the second year the resultant was now added to 10% of itself

So  $(X*1.1) (1.1)$



# COMPOUNDED ANNUALISED RETURNS - FORMULA

What we get is, for every year that progresses, we have one more 1.1 multiplied to the resultant of the last year. So in the third year, the answer should look like  $X \times (1.1) \times (1.1) \times (1.1)$  or  $X \times (1.1)^3$

And 1.1 is nothing but  $(1 + 10 / 100)$  or  $(1 + r/100)$

Where  $r$  = rate of return (%)



# COMPOUNDED ANNUALISED RETURNS - FORMULA

Thus we come to the formula as Final Value = Initial Investment \*  $\{(1 + r/100)^{\text{No. of Years}}\}$

Or

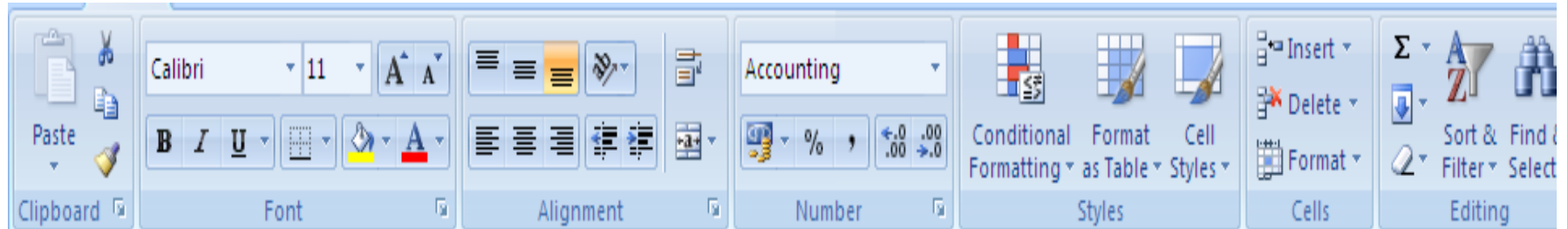
= Initial Investment \*  $\{(1 + r/100)^{(\text{No. of Days}/365)}\}$

We can find the Rate of return from the above formula by solving for r

So,  $r = \{(\text{Final Value} / \text{Initial Investment})^{(365 / \text{No. of Days})} - 1\} * 100$



# CREATE A FORMULA IN YOUR WORKSHEET



|   | A                  | B                | C      | D                      | E           | F                        | G                            |
|---|--------------------|------------------|--------|------------------------|-------------|--------------------------|------------------------------|
| 1 | Initial Investment | Final Investment | Return | Absolute Return (in %) | No. of days | Simple Annualised Return | Compounded Annualised Return |
| 2 | 100000             | 120000           | =B2-A2 | =(B2-A2)/A2*100        | 730         | =D2/E2*365               | =((B2/A2)^(365/E2) - 1)*100  |
| 3 |                    |                  |        |                        |             |                          |                              |
| 4 |                    |                  |        |                        |             |                          |                              |
| 5 |                    |                  |        |                        |             |                          |                              |
| 6 |                    |                  |        |                        |             |                          |                              |
| 7 |                    |                  |        |                        |             |                          |                              |



# USE AND REUSE THE WORKSHEET

Save the Worksheet!

Or, copy the formulae from the embedded Worksheet

|                                           |     |            |
|-------------------------------------------|-----|------------|
| <b>Initial Investment</b>                 | Rs. | 100,000.00 |
| <b>Final Investment</b>                   | Rs. | 120,000.00 |
| <b>Return</b>                             | Rs. | 20,000.00  |
| <b>Absolute Return (in %)</b>             |     | 20.00      |
| <b>No. of days</b>                        |     | 730.00     |
| <b>Simple Annualised Return (in %)</b>    |     | 10.00      |
| <b>Compounded Annualised Return(in %)</b> |     | 9.54       |



GET IN TOUCH IF YOU HAVE ANY QUERIES

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