The Sum is the Product
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Find all integer pairs having the property that sum of the two integers is equal to their product.

The problem was solved by

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Discussion:
We need $x$ and $y$ integers so that $x + y = xy$. Clearly, none of them can be 1. It is easy to see that
\[
\frac{y}{y - 1} = x
\]
Thus, $y - 1$ divides $y$. Therefore, only possible values of $y$ are $y = 0$ and $y = 2$. Hence the solutions are $y = 2, x = 2$ and $y = 0, x = 0$. 