In[4]:=
```
SetDirectory[ParentDirectory[NotebookDirectory[]]];
Needs["SSSiCv100`"];
IC = IndexedConcatenate;   Cat = Concatenate;
```

Write a decimal in IC from, then do an operation on it

Simple multiplication 1

$\frac{1}{3} = 0.333\ldots = 0.\overline{3} = 0.\overset{\infty}{€}3$

$3\left(\frac{1}{3}\right) = 0.999\ldots = 0.\overline{9} = 0.\overset{\infty}{€}9$

$2\left(\frac{1}{3}\right) = 0.666\ldots = 0.\overline{6} = 0.\overset{\infty}{€}6$

Simple multiplication 2

$\frac{1}{7} = 0.\overline{142\,857} = 0.\overset{\infty}{€}(142\,857)$

$2\left(\frac{1}{7}\right) = 0.\overline{285\,714} = 0.\overset{\infty}{€}(285\,714)$

Simple multiplication 3

$0.010010001\ldots = 0.\overset{\infty}{\underset{i=1}{€}}\left(\left(\overset{i}{\underset{j=1}{€}}0\right)1\right)$

$5\,(0.010010001\ldots) = 0.\overset{\infty}{\underset{i=1}{€}}\left(\left(\overset{i}{\underset{j=1}{€}}0\right)5\right)$

Division 1: method = partially unpack

$\frac{1}{7} = 0.\overset{\infty}{€}(142\,857) = 0.142857\overset{\infty}{€}(142\,857)$

$\frac{1}{2}\left(\frac{1}{7}\right) = \frac{0.142857142857\overset{\infty}{€}(142\,857)}{2} = 0.\ \frac{142\,857\,142\,857}{2}\ \frac{\overset{\infty}{€}(142\,857)}{2}$

$= 0.\ 071\,428\,571\,428\ \frac{1\ \overset{\infty}{€}(142\,857)}{2} = 0.\ 071\,428\,571\,428\ 571\,428\ \frac{1\ \overset{\infty}{€}(142\,857)}{2}$

$= 0.\ 071\,428\ \overset{\infty}{€}(571\,428) = 0.0\ \overset{\infty}{€}(714\,285)$

Not simple! Relies on our recognizing that a pattern has been established.

Division 2:

$\frac{1}{3}\left(\frac{1}{7}\right) = \frac{0.142857\,142\,857\ \overset{\infty}{€}(142\,857)}{3} = 0.\frac{142\,857\,142\,857}{3}\ \frac{\overset{\infty}{€}(142\,857)}{3} = 0.\ 047\,619\ 047\,619\ \frac{\overset{\infty}{€}(142\,857)}{2} = 0.\ \overset{\infty}{€}(047\,619)$

Easier! But still requires human recognition.