

*. forbidden sub-permutations

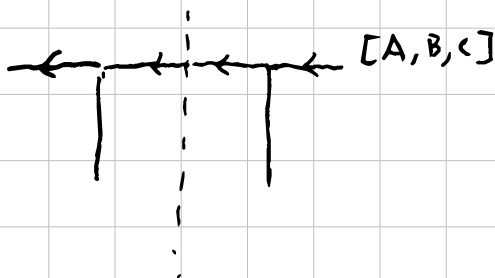


Avoid $[C, A, B]$

\searrow 231 (one-line)
 (123) (cycles).

taking $\sqrt{(123)} = (132)$ accepted.

$$\text{so } (\sqrt{(123)} \circ \sqrt{(123)}) [A, B, C] = [C, A, B]$$



$$[A, B, C] \xrightarrow{(123)} [C, A, B]$$

$$\begin{array}{ccc}
 & & \nearrow (132) \\
 (132) \searrow & [B, C, A] & \\
 & & \nearrow (132)
 \end{array}$$

* security channel & signal processing.

$$\boxed{A} \quad x \xrightarrow{f} fx \xRightarrow{\quad\quad} fx \quad \boxed{B} \quad \textcircled{fx}$$

$$\boxed{A} \quad x \xRightarrow{\quad\quad} x \xrightarrow{f} fx \quad \boxed{B} \quad \textcircled{x}$$

$$\boxed{A} \quad x \xrightarrow{\sqrt{f}} \sqrt{f}x \xRightarrow{\quad\quad} \sqrt{f}x \xrightarrow{\sqrt{f}} fx \quad \boxed{B} \quad \textcircled{\sqrt{f}x}$$

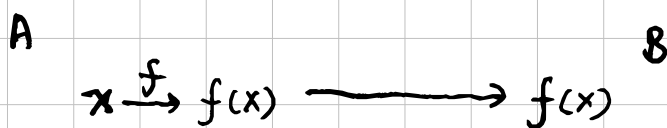
↑
encrypted.

with $(\sqrt{f})^{-1}$ and \sqrt{f} , B can get:

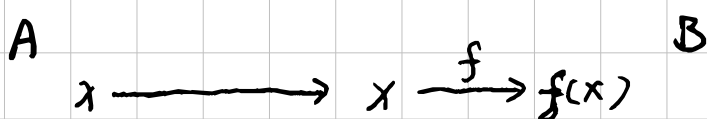
- $\sqrt{f} \cdot \sqrt{f}x = fx$ (fully processed data)
- $(\sqrt{f})^{-1} \cdot \sqrt{f}x = x$ (unprocessed data)

* distribution of "computation labor"

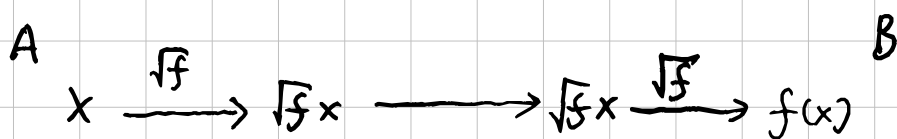
$f(x)$: heavy task.



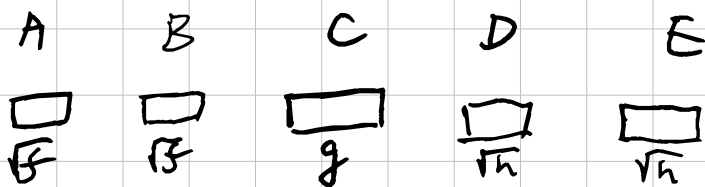
A computes $f(x)$, B just receives result.



A just sends x , B computes $f(x)$.



A computes $v = \sqrt{f}(x)$, B computes $\sqrt{f}(v)$



fully
computed.

$(h \circ g \circ f)(x)$.

for A, B, C, D, E.