

$$\begin{array}{ccccc}
X^{k_{1,1}}, & X^{k_{1,2}}, \dots, & X^{k_{1,a_1}} & & X^{k_{2,1}}, & X^{k_{2,2}}, \dots, & X^{k_{2,a_2}} & \dots & & X^{k_{n,1}}, & X^{k_{n,2}}, \dots, & X^{k_{n,a_n}} \\
\downarrow h_{1,1} & \downarrow h_{1,2} & \downarrow h_{1,a_1} & & \downarrow h_{2,1} & \downarrow h_{2,2} & \downarrow h_{2,a_2} & & & \downarrow h_{n,1} & \downarrow h_{n,2} & \downarrow h_{n,a_n} \\
X \times X \times \overbrace{\dots}^{a_1\text{-times}} \times X & & & & X \times X \times \overbrace{\dots}^{a_2\text{-times}} \times X & & \dots & & & X \times X \times \overbrace{\dots}^{a_n\text{-times}} \times X \\
& \searrow g_1 & & & \downarrow g_2 & & & & \swarrow g_n & & & \\
& & X \times X \times \dots \times X & & & & & & & & & \\
& & \downarrow f & & & & & & & & & \\
& & X & & & & & & & & &
\end{array}$$