

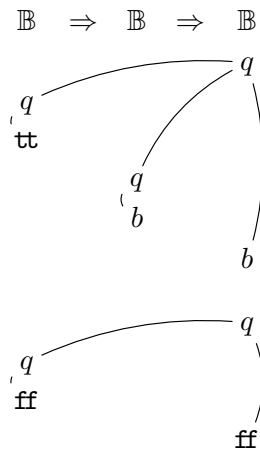
Subject 4: Hyland-Ong game semantics

Question 1*. Prove that well-bracketed strategies are preserved by composition. (Hint: adapt the proof that P-visible strategies are preserved by composition.)

Question 2. Calculate the P-view function of

$$\lambda f (f \text{ tt})(f \text{ ff tt}) : (\text{bool}^2 \rightarrow \text{bool}) \rightarrow \text{bool}$$

Question 3. Apply definability to find the normal form that denotes the following P-view function:



Question 4. Calculate the composite strategy defining the substitution of the term of Question 3 for the variable f in the term of Question 2.

Question 5. Find an Idealized Algol context that distinguishes between $\lambda x (\text{if } x \text{ then tt else ff})$ and $\lambda x (\text{if } x \text{ then } (\text{if } x \text{ then tt else ff}) \text{ else ff})$ of type $\text{bool} \rightarrow \text{bool}$.