Homework 02 Solutions

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Course: 15-414 A
Due by: September 19, 2025

Task 7

Let ω, ν be program states. We can define

- $\omega[\![\text{repeat } \alpha \text{ until } Q]\!]^0 \nu$ iff $\omega[\![\alpha]\!]\nu$ and $\nu \not\models Q$
- $\omega[\![\text{repeat } \alpha \text{ until } Q]\!]^{n+1} \nu$ for $n \geq 0$ iff $\exists \mu$ s.t. $\omega[\![\alpha]\!]\mu$ and $\mu \models Q$ and $\mu[\![\text{repeat } \alpha \text{ until } Q]\!]^n \nu$.
- $\omega[\![\text{repeat } \alpha \text{ until } Q]\!]\nu$ iff $\exists n \geq 0$ s.t. $\omega[\![\text{repeat } \alpha \text{ until } Q]\!]^n \nu$

Task 8

$$\text{repeat } \alpha \text{ until } Q \triangleq \alpha; \text{ while } Q\ \alpha$$