Assignment 3: Axiomatic Semantics

Prove that the following program is totally correct using the methods described in class. i.e. prove partial correctness using the standard Hoare axioms, and then total correctness using Floyd’s methods. You will first have to deal with the for loop (which uses a regular C or Java-like format) by showing its equivalence to a while loop with suitable additions. Do this, in as general a way as you can, by using operational semantic methods. Only when you have shown this equivalence can you use the while loop axiom to prove partial correctness.

\[
\{ n \geq 0 \}
\begin{align*}
x &= 0; \\
y &= 1; \\
z &= 6; \\
\text{for (i = 0; i less n; i++)} \\
\quad x &= x + y; \\
\quad y &= y + z; \\
\quad z &= z + 6; \\
\end{align*}
\text{end}
\{ x = n**3 \}