Specification and Verification I

Give a detailed proof using the method of verification conditions that:

\[ \vdash \{ N = n \land n \geq 0 \} \]

\[
\text{FACT} := 1; \\
\text{WHILE } N > 1 \text{ DO} \\
\quad X := \text{FACT}; \ Y := N; \\
\quad \text{WHILE } Y > 1 \text{ DO} \\
\quad \quad \text{FACT} := \text{FACT} + X; \ Y := Y - 1 \\
\quad \text{N} := \text{N} - 1 \\
\{ \text{FACT} = n! \} 
\]

You should write out an annotated specification and carefully list the verification conditions.  

[20 marks]