1998 Paper 8 Question 1

Specification and Verification I

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

$\vdash$ $\{$N $= n \; \wedge \; n \; \geqslant \; 0\}$
```
   FACT := 1;
   WHILE N>1 DO
     X := FACT; Y := N;
     WHILE Y>1 DO
       FACT := FACT+X; Y := Y-1
     N := N-1
```
$\{$FACT $= n!\}$

You should write out an annotated specification and carefully list the verification conditions. [20 marks]