Homework II

1. [20 points]
Provide the (partial) correctness proof of the program fragment below using the proof rules in chapter 14 of Diller.

{INCH≥0}
FOOT:= INCH*12;
YARD := FOOT*3;
MILE:= YARD*1760
{INCH≥0 ∧ FOOT=INCH*12 ∧ YARD=INCH*36 ∧ MILE=INCH*63360}

2. [20 points]

Provide the (partial) correctness proof of the program fragment below for absolute value using the proof rules in chapter 14 of Diller.

```
     {true}
     B:= A;
if A < 0 then B:= -B else skip
 {(A ≥ 0 ∧ B=A)   (A<0 ∧ B=-A)}
```

3. [30 points]
Write a program fragment in Diller's language to compute the minimum M of the four Integer variables A, B, C, and D, and prove its partial correctness using the proof rules in chapter 14. The pre-condition is **true**, and the post-condition is
(M=A M=B M=C M=D) ∧ M≤A ∧ M≤B ∧ M≤C ∧ M≤D.
Of course, your program should not change A, B, C, or D.