Homework 1 Problem 2

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February 29, 2024

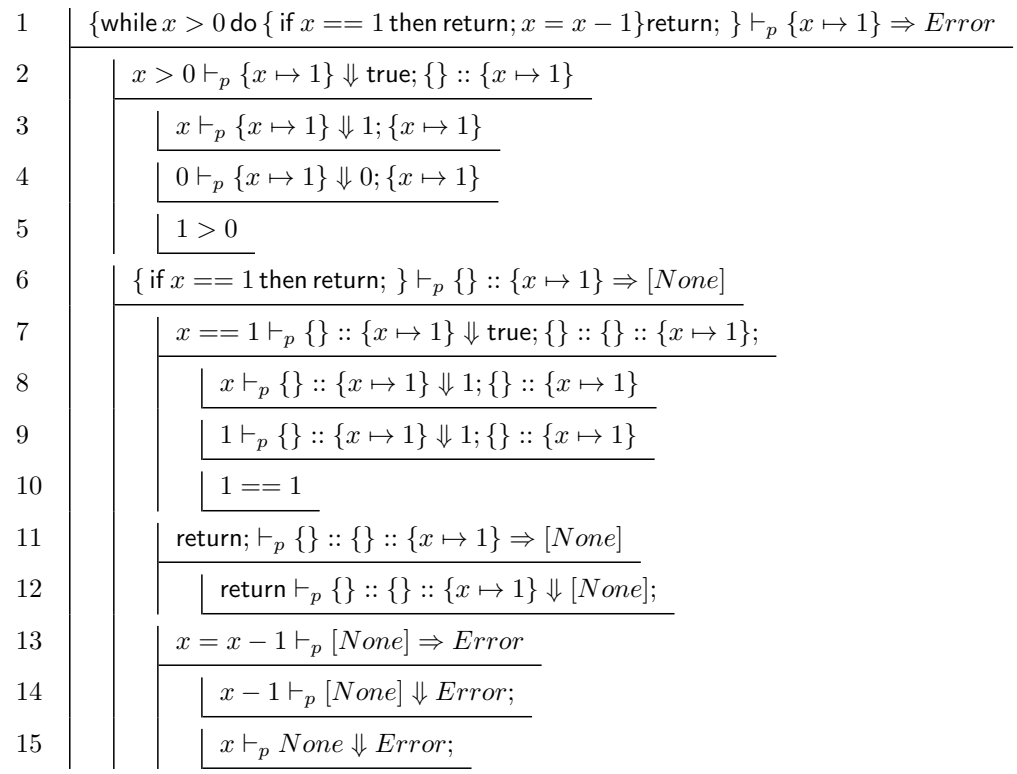
1 Pseudo-Code

Consider the following Pseudo-Code:

Algorithm 1 Main Function

```
function MAIN
    var x ← 1
    while x > 0 do
        if x == 1 then
            return
        end if
        x ← x − 1
    end while
    return
end function
```

2 Derivations



3 Inference Rule

To fix this issue, we can conclude the following inference rule.

$$\frac{\Sigma \vdash_p e \Downarrow \mathsf{true}; \Sigma' \quad s \vdash_p \Sigma' \Rightarrow [v]}{\mathsf{while}\, e\, \mathsf{do}\, s \vdash_p \Sigma \Rightarrow [v]}$$