Homework 1 Solutions

1. a) Note that since A, B, and C can be arbitrary C expressions, we must ensure that we execute them only if they would have been executed in C. Imagine that B is equal to "x/2 == 1" and you should see why we must use a nested if.

```c
if A -> s1;
    if ~B -> s2
        if C -> s3
            if ~C -> s4
                fi
    fi
[] ~A -> SKIP
fi
```

b)

```c
i:=0;
do i<n -> j:=i;
    do j<n -> k:=n-i;
        j:=j+1;
    od
    i:=i+1
od
```

c) Here I am introducing a new variable "_cont" which assumes that this variable has not already been used.

```c
_cont:=1
do _cont!=0 -> s1;
    if C -> _cont:=0
        if ~C -> s2;
            if A -> if B -> _cont:=1
                if ~B -> _cont:=0
                    fi
            fi
        fi
    fi
od
```

2. a) Given this implementation of assignment, both the l-value and the r-value of A[i] will be computed before i is modified.


3. a) 68 34

b) 68 61
4. a) 20, 61 20
b) 58, 58 58
c) 20, 61 61
d) 58, 58 58