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F3

Manual translation of gcd.py

```
            BR        program
a:          .BLOCK 2
b:          .BLOCK 2
gcd:        LDWA a,d
            CPWA b,d
            BREQ end
            BRLE else
if:         SUBA b,d
            STWA a,d
            BR gcd
else:       LDWA b,d
            SUBA a,d
            STWA b,d
            BR gcd
end:        RET
program:    DECI a,d
            DECI b,d
            CALL gcd
            DECO a,d
            .END
```

How if statements were implemented

In the AST 'If-Else' statements show up as Nodes with names If and orElse. The visitor Top level program was changed to add functionality for if statements by adding the function visit_If(). It works similarly to visit_While(). It generates the instruction in the visitor in the same way, thus the generator need not be changed. The function works by iterating through the subtree after accessing the variables used by the operators. The instruction for the condition used is found from the dictionary (the conditions are inverted in the AST). The body of the statement is visited, and if there is an else statement, that is visited as well.