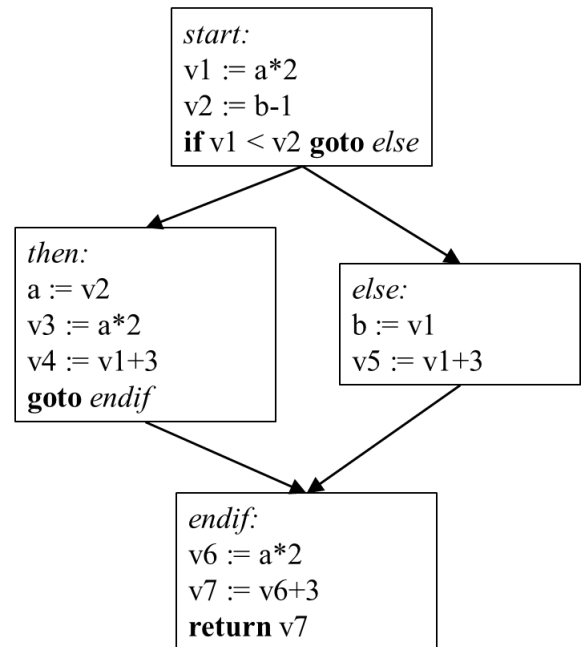1. [Available Expressions]. Perform global value numbering and available expressions dataflow analysis to this program:

```
start:
v1 := a*2
v2 := b-1
if v1 < v2 goto else
```

```
then:
a := v2
v3 := a*2
v4 := v1+3
goto endif
```

```
else:
b := v1
v5 := v1+3
```

```
endif:
v6 := a*2
v7 := v6+3
return v7
```

1. [Live Variables]. Perform live variable analysis on the program above, and eliminate dead code.