

Assignment 1114

Problem 1

```
n = 10;
i = 0;
LABEL_1:
    #0 = i < n
    if(! #0)
    then {#1 = #0}
    else {
        #2 = i * 8
        #3 = p + #2
        #4 = * #3
        #1 = (#4 != 0)
    };
    if(! #1)
    then {jmp LABEL_2}
    else {
        i = i + 1
    };
    jmp LABEL_1
LABEL_2:
    .....
```

Problem 2

```
BB:
    x = 10
    jmp BB_PRE

BB_PRE:
    if (x > 0)
    then {jmp BB_BODY}
    else {jmp BB_NEXT};

BB_BODY:
    x = x - 1
    jmp BB_PRE

BB_NEXT:
    y = x
    jmp END_INFO
```

Problem 3

```
u: #2 = read_int()
def(u) = #2
use(u) =

in(u) =
out(u) = #2
```

```
u: #4 = 0
def(u) = #4
use(u) =

in(u) = #2
out(u) = #2, #4
```

```
u: jmp 1
def(u) =
use(u) =

in(u) = #2, #4
out(u) = #2, #4
```

```
u: if (NE(#2, 0)) then jmp 2 else jmp 3
def(u) =
use(u) = #2

in(u) = # 2, #4
out(u) = #2, #4
```

```
u: #7 = Deref(#2)
def(u) = #7
use(u) = #2

in(u) = #2, #4
out(u) = #4, #7, #2
```

```
u: #4 = PLUS(#4, #7)
def(u) = #4
use(u) = #4, #7

in(u) = #4, #7, #2
out(u) = #2, #4
```

```
u: #8 = PLUS(#2, 8)
def(u) = #8
use(u) = #2

in(u) = #2, #4
out(u) = #8, #4
```

```
u: #2 = Deref(#8)
def(u) = #2
use(u) = #8

in(u) = #8, #4
out(u) = #2, #4
```

```
u: jmp 1
def(u) =
use(u) =

in(u) = #2, #4
out(u) = #2, #4
```

Problem 4

```
u: #3 = 0
def(u) = #3
use(u) =

in(u) =
out(u) = #3
```

```
u: #2 = read_int()
def(u) = #2
use(u) =

in(u) = #3
out(u) = #2, #3
```

```
u: jmp 1
def(u) =
use(u) =

in(u) = #2, #3
out(u) = #2, #3
```

```
u: if (NE(#2, 0)) then jmp 2 else jmp 3
def(u) =
use(u) = #2

in(u) = #2, #3
out(u) = #2, #3
```

```
u: #7 = #2
def(u) = #7
use(u) = #2

in(u) = #2, #3
out(u) = #2, #3, #7
```

```
u: #8 = PLUS(#2, 8)
def(u) = #8
use(u) = #2

in(u) = #2, #3, #7
out(u) = #8, #7, #3
```

```
u: #2 = Deref(#8)
def(u) = #2
use(u) = #8

in(u) = #8, #7, #3
out(u) = #7, #3, #2
```

```
u: #9 = PLUS(#7, 8)
def(u) = #9
use(u) = #7

in(u) = #7, #3, #2
out(u) = #3, #9, #7, #2
```

```
u: * #9 = #3
def(u) =
use(u) = #3, #9

in(u) = #3, #9, #7, #2
out(u) = #7, #2
```

```
u: #3 = #7
def(u) = #3
use(u) = #7

in(u) = #7, #2
out(u) = #2, #3
```

```
u: jmp 1
def(u) =
use(u) =

in(u) = #2, #3
out(u) = #2, #3
```