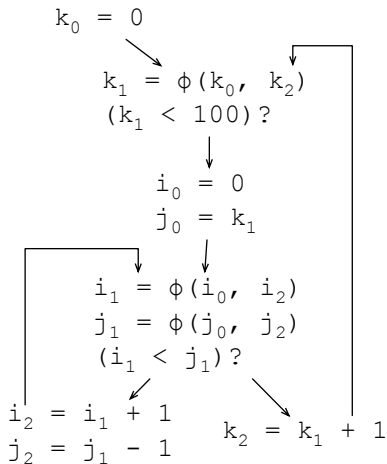


```

k = 0
while k < 100:
    i = 0
    j = k
    while i < j:
        i = i + 1
        j = j - 1
    k = k + 1

```

(a)



(b)

```

k_0 = 0
k_1 = \phi(k_0, k_2)
i_0 = 0
j_0 = k_1
i_1 = \phi(i_0, i_2)
j_1 = \phi(j_0, j_2)
i_2 = i_1 + 1
j_2 = j_1 - 1
k_2 = k_1 + 1

```

(c)

```

I[i_0] = [0, 0]
I[i_1] = [0, +\infty]
I[i_2] = [1, +\infty]
I[j_0] = [0, +\infty]
I[j_1] = [-\infty, +\infty]
I[j_2] = [-\infty, +\infty]
I[k_0] = [0, 0]
I[k_1] = [0, +\infty]
I[k_2] = [1, +\infty]

```

(d)