Optimization Worksheet. Part 1: Creating a flow-graph

Original code:
```
i = m-1; j = n; v = a[n];
while(1) {
    do i = i+1; while ( a[i] < v );
    do j = j-1; while ( a[j] > v );
    if (i >= j ) break;
    x = a[i]; a[i] = a[j]; a[j] = x;
}
x = a[i]; a[i] = a[n]; a[n] = x;
```

Three-address code:

(1)	$i := m-1$		(16)	$t_7 := 4*i$
(2)	$j := n$		(17)	$t_8 := 4*j$
(3)	$t_1 := 4*n$		(18)	$t_9 := a[t_8]$
(4)	$v := a[t_1]$		(19)	$a[t_7] := t_9$
(5)	$i := i+1$		(20)	$t_{10} := 4*j$
(6)	$t_2 := 4*i$		(21)	$a[t_{10}] := x$
(7)	$t_3 := a[t_2]$		(22)	goto (5)
(8)	if $t_3 < v$ goto (5)		(23)	$t_{11} := 4*i$
(9)	$j := j-1$		(24)	$x := a[t_{11}]$
(10)	$t_4 := 4*j$		(25)	$t_{12} := 4*i$
(11)	$t_5 := a[t_4]$		(26)	$t_{13} := 4*n$
(12)	if $t_5 > v$ goto (9)		(27)	$t_{14} := a[t_{13}]$
(13)	if $i >= j$ goto (23)		(28)	$a[t_{12}] := t_{14}$
(14)	$t_6 := 4*i$		(29)	$t_{15} := 4*n$
(15)	$x := a[t_6]$		(30)	$a[t_{15}] := x$

Create the flow-graph for the three-address code, based on the source code.