

Name:

Compiler Construction, Spring 2017

Student ID:

Quiz 4

Given the code segment in C, please draw its **Control Flow Graph** (CFG). Please construct the CFG with the *efficient version* of each BB; that is, add as much statements as possible to a BB without violating the CFG rules that we discussed in the class, as illustrated in the example blow.

C code:

```
int x = 0;
int y = 0;
int a[100] = {0};

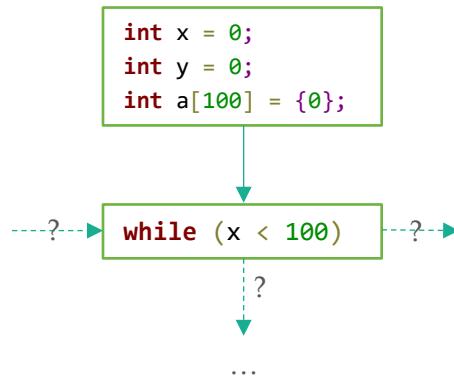
while (x < 100) {
    if (a[x] & 1)
        y++;
    else
        y--;

    while (y < x)
        a[++y]++;

    x++;
    y = 0;
}

printf("Make America Great Again\n");
```

Example of the CFG:



Answer:

Node	Statement
(1)	<code>int x = 0;</code> <code>int y = 0;</code> <code>int a[100] = {0};</code>
(2)	<code>while (x < 100) {</code>
(3)	<code>if (a[x] & 1)</code>
(4)	<code>y++;</code>
(5)	<code>else</code>
(6)	<code>y--;</code>
(7)	<code>while (y < x)</code>
(8)	<code>a[++y]++;</code>
(9)	<code>x++;</code> <code>y = 0;</code> <code>}</code> <code>printf("Make America Great Again\n");</code>

