Homework 6 for CSE334/434: Software System Security

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Due date: Dec 6th 2:30pm in class or via CourseSite.

1. (4 points) Figure out an appropriate invariant at line 4 that makes symbolic evaluation of the following program successful. Then perform symbolic evaluation of the program with respect to your invariant.

```plaintext
1 assume (N >= 0);
2 X := N;
3 Y := 1;
4 INV (???)
5 while X>0 do {
6   Y := Y * X
7   X := X - 1
8 }
9 assert (Y = N!);
```

2. (4 points) Figure out an appropriate invariant at line 4 that makes symbolic evaluation of the following program successful. Then perform symbolic evaluation of the program with respect to your invariant.

```plaintext
1 assume (x >= 0)
2 a := x;
3 y := 0;
4 INV (???)
5 while (a != 0) do {
6   y := y + 1;
7   a := a - 1;
8 }
9 assert (x = y);
```