CSCE 330 Fall 2005

Homework 4

Assigned Wednesday, 05-09-21. Due Wednesday, 05-09-28

1. Do exercises 9, 13, and 17 in Chapter 2 of the Ghezzi and Jazayeri textbook.

2. Prove that $x = 2^{2^{i-1}} \wedge i \leq n + 1$ is a loop invariant for the program fragment given below, with precondition $n \geq 1$ and postcondition $x = 2^{2^n}$. Recall that you must show that the invariant holds before the loop statement, that the invariant together with the negation of the loop implies the postcondition, and that the invariant is indeed invariant with respect to the body of the loop.

```
x := 2;
i := 1;
while (i <= n) do
  begin
    x := x*x;
    i := i+1
  end
```