

**CSCE 330 Fall 2007**  
**HOMEWORK 4**  
Assigned Tuesday, 07-10-09

Give the denotational semantics for this program:

```
read(n);  
fact := 1;  
i := 1;  
while (i <= n) do  
  fact := fact * i;  
  i := i+1;  
od  
write(fact)
```

Assume that the initial input stream contains only one integer,  $z$ , and  $z \geq 1$ .

Show the main steps of your work. It is not sufficient to provide the value of the *out* function: you must show at least the recursive rule for the **while do** loop and the state resulting from applying  $dsem_{PROG}$  to the whole program.