

# 16.216: ECE Application Programming

Fall 2015

## Lecture 10: Key Questions

September 25, 2015

In today's exercise, you will write a program that does the following:

- Prompts the user to enter a single input character followed by an integer,  $n$ .
  - If not correctly formatted, print error, clear rest of line, and repeat prompt
- Depending on the character entered, do the following:
  - 'F' or 'f': Compute and print the factorial of  $n$ ,  $n!$ 
    - For example, if the user enters **F 5**, print **5! = 120**
  - 'P' or 'p': Compute  $2^n$ , but only if  $n \geq 0$ .
    - For example, if the user enters **p 2**, print **2^2 = 4**
    - Print an error if  $n < 0$ .
  - 'X' or 'x': Exit the program
  - In all other cases, print an error:
    - For example: Invalid command Z entered
- If the user enters any command other than 'X' or 'x', return to the initial prompt and repeat the program.

### Steps in the programming exercise:

1. Draw a general flowchart for the overall program flow.
  - Treat each of the processes listed in part 2 as a single block—don't worry about the details just yet.
2. Draw smaller flowcharts and then write code for:
  - Reading the input character & integer until correct.
  - Computing  $n!$  (*in a later lecture*)
  - Computing  $2^n$  if  $n \geq 0$  and printing an error otherwise. (*in a later lecture*)

**Space to draw flowchart/code for overall program flow:**

**Flowchart/code for reading input character until correct:**