

16.216: ECE Application Programming

Fall 2013

Lecture 10 & 11: PE2
September 25 & September 27, 2013

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 for each of the following processes:
 - Reading the input character & integer until correct.
 - Computing $n!$
 - Computing 2^n if $n \geq 0$ and printing an error otherwise.
3. Convert the flowcharts to actual code (will continue into Friday's lecture).

Space to draw flowchart/code for overall program flow:

Flowchart/code for reading input character until correct:

Flowchart/code for n!

Flowchart/code for 2ⁿ