Assignment No. 7
EECS 210
Discrete Structures
Due: 11:59 PM, Tuesday, November 29, 2022
Submit deliverables in a single zip file to Canvas
Name of the zip file: FirstnameLastname_Assignment7 (with your first and last name)
Name of the Assignment folder within the zip file: FirstnameLastname_Assignment7

Deliverables:
1. Copy of Rubric7.docx with your name and ID filled out (do not submit a PDF).
2. Source code.
3. Screen print showing the successful execution of your code or copy and paste the output from a console screen to a Word document and PDF it.

Assignment:
- You may use any language you want, but if you want help from me or one of the SIs, you should probably use C++, Python, or Haskell.
- Topic: Distributing Objects into Boxes
1. Write a program for counting the number of ways to distribute distinguishable objects into distinguishable boxes.
    a) Debug your program by answering Example 8 in the Permutations & Combinations lecture slides.
    b) Test your program by answering this question: "A professor packs her collection of 40 issues of a mathematics journal in four boxes with 10 issues per box. How many ways can she distribute the journals if each box is numbered, so that they are distinguishable?"
2. Write a program for counting the number of ways to distribute indistinguishable objects into distinguishable boxes.
    a) Debug your program by answering Example 9 in the Permutations & Combinations lecture slides.
    b) Test your program by answering this question: "How many ways are there to distribute 12 indistinguishable balls into six distinguishable bins?"
3. Write a program for counting the number of ways to distribute distinguishable objects into indistinguishable boxes.
    a) Debug your program by answering Example 10 in the Permutations & Combinations lecture slides.
    b) Test your program by answering this question: "How many ways are there to put five temporary employees into four identical offices?"
4. Write a program for counting the number of ways to distribute indistinguishable objects into indistinguishable boxes.
    a) Debug your program by answering Example 11 in the Permutations & Combinations lecture slides.
    b) Test your program by answering this question: "How many ways are there to distribute five indistinguishable objects into three indistinguishable boxes?"
5. Provide comments that explain what each line of code is doing. See rubric below.

Rubric for Program Comments		
Exceeds Expectations (90-100%)	**Meets Expectations (80-89%)**	**Unsatisfactory (0-79%)**
Software is adequately commented with prologue comments, comments summarizing major blocks of code, and comments on every line.	Prologue comments are present but missing some items or some major blocks of code are not commented or there are inadequate comments on each line.	Prologue comments are missing all together or there are no comments on major blocks of code or there are very few comments on each line.

Adequate Prologue Comments:
- Name of program contained in the file (e.g., EECS 210 Assignment 3)
- Brief description of the program, e.g.:
  - Python code for demonstrating operations on relations and properties of relations.
- Inputs (e.g., none, for a function, it would be the parameters passed to it)
- Output, e.g.,
  - Print out of the name of each exercise, followed by the exercise's output.
- Author's full name
- Creation date: The date you first create the file, i.e., the date you write this comment

Adequate comments summarizing major blocks of code and comments on every line:
- Provide comments that explain what each line of code is doing.
- You may comment each line of code (e.g., using //) and/or provide a multi-line comment (e.g., using /* and */) that explains what a group of lines does.
- Multi-line comments should be detailed enough that it is clear what each line of code is doing.

Remember:
- Your Programming Assignments are individual-effort.
- You can brainstorm with other students and help them work through problems in their programs, but everyone should have their own unique assignment programs.