Class 11

Nested Loops with Calculations, Library Functions
Exam 1 Room Change

• Exam 1 will be held in RO-230

• RO-230 is on the second floor of the library building

• Exam time is from 6:30 pm to 7:20 pm

• If you are late, the exam still ends at 7:20 pm for you. So please be on time.

• If you finish the exam early, you can bring it to the front, hand it in, and then exit quietly. Thanks!
Reminders:

• This is a closed book exam. Put away your calculator, cellphone, computer, headphone, notes, books, e.t.c.

• Use the bathroom before you start the exam.

• Have your CUNY ID ready. I will come by to check it.
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Screen (front)

- Take a seat for the one highlighted in yellow.
Example 1

- Write a complete C++ program that does the following:
  - It asks the user to enter a positive integer.
  - The program reads a value $n$ entered by the user. If the value is not legal, the program terminates.
  - The program prints a table with $n$ lines of output. On output line number $x$ the program should list the numbers from 1 to $x$ together with their sum.

Enter a positive integer: 4
1 the sum is 1
1 2 the sum is 3
1 2 3 the sum is 6
1 2 3 4 the sum is 10
Functions

- Functions have three parts:
  - name
  - return type
  - input arguments
Library Functions

- Some functions are already written for us
- These are stored in libraries
- In order to use these functions, we need to tell the computer which library to include
sqrt()

- Returns the square root of a number
- Member of the cmath library
Example 2

• Goal:
  • Write a program that calculates the square root of a number.
  • Ask the user if they would like to calculate another square root.
  • Run this process in a loop as long as the user enters a positive number.
rand()

• Returns a pseudo-random integer within the range 1 to some very large number
• Member of the cstdlib library
srand()

• Initializes the random number generator function rand() to some seed value
• Member of the cstdlib library

• We use time(0) as the seed value
• time() is a member of the ctime library
Example 3

- Goal: Simulate rolling a die five times
Example 4

- Goal: Simulate tossing a coin ten times.
  - Keep track of the number of heads and the number of tails tossed.
  - Use 1 for heads and 0 for tails.