Module 12: Random Numbers

Intro to Computer Science 1 - C++

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Textbook

Random numbers are covered in section 3.9 of the text

Random Numbers

- C++ include a random number generator (RNG)
- RNG is an algorithm that generates a random *sequence* of numbers
- Calling `rand()` returns the *next* random number
  - The return value will be any number between 1 and RAND_MAX (typically around 10,000)
  - Each time you call it, a new “random” number is returned

We must include cstdlib for the rand and srand functions

Seeding the RNG

- The random sequence is not truly random
  - Always the same sequence on a given computer

- To make it really random, you must *seed* it
  - Sets the first number in the sequence, which will change all the rest in the sequence
  - Seed with something that always changes

```
// seeds the RNG with the current time
srand(time(0)) ;  // requires <ctime>
int randomNumber = rand();
```

Range

- Often, you will want a random number in a certain range:
  - ex. between 1 and 100
  - rand() returns numbers between 1 and 10,000 or so

Use Modulus: rand() % 100
if rand() return 78723, the result of % will be 23

Programming Example 12

- Addition Tutor:
  - Print out two random numbers
  - Ask user for the answer
  - Display confirmation if they answer correct
  - Display correct answer if wrong