Random Numbers in Modern C++ Solutions

Random Numbers in Modern C++

- Give an outline description of how to obtain random numbers in modern C++
  - Create a random number engine instance
  - Optionally, this can be seeded using a random_device instance
  - Create a suitable distribution instance, giving the range of numbers required as arguments
  - Call the () operator of the distribution, passing the engine instance as argument

Random Number Engine

- What is the purpose of a random number engine?
  - To generate a sequence of random numbers
  - Each time its () operator is called, the next number in the sequence is returned
- Which random number engine is usually the best one to use?
  - mt19937 (Mersenne Twister)

Distribution

- What is the purpose of a distribution type?
  - Given a sequence of numbers, it will convert them so that they are within a given range and the probability of getting a certain number follows a given statistical distribution
- Which distribution is the most useful when generating random numbers, and why?
  - The uniform distribution
  - Each number in the range is equally likely

Random Number Example

- Write a simple program which
  - Prints out 5 integers with random values between 0 and 10
  - Prints out 5 floating point numbers with random values between 0 and 10