**Topic 4: Random Numbers**

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**Reading**

[Reading](https://dmacc.blackboard.com/webapps/blackboard/content/listContent.jsp?course_id=_102593_1&content_id=_7286812_1)

Random numbers

* + Microsoft:docs.microsoft.com
    - [Random Class](https://docs.microsoft.com/en-us/dotnet/api/system.random?view=netcore-3.1)
  + GeeksForGeeks: geeksforgeeks.com
    - [C# Random.Next() Method](https://www.geeksforgeeks.org/c-sharp-random-next-method/)
  + TutorialsPoint: tutorialspoint.com
    - [Generating random numbers in C#](https://www.tutorialspoint.com/generating-random-numbers-in-chash)
  + C# Corner: c-sharpcorner.com
    - [Generate Random Number in C#](https://www.c-sharpcorner.com/article/generating-random-number-and-string-in-C-Sharp/)

**Random Numbers in C#**

[Random Numbers in C#](https://dmacc.blackboard.com/webapps/blackboard/content/listContent.jsp?course_id=_102593_1&content_id=_7286812_1)

Generating random (pseudo-random) numbers is useful in programming

* + Rolling a die
  + Shuffling cards
  + Computer simulations.
  + Model people standing in line at a grocery
  + and many more possibilities.

To generate the pseudo-random numbers in C#, you have some options:

Integer random numbers

const int min = 0;

const int max = 10;

var random = new Random(); // New Random object

int randomNumber = random.Next(); // random number

int randomNumberLimited = random.Next(1000) // random number less that 1000;

int randomNumberInRange = random.Next(min, max) // random number between min and max

// NOTE: avoiding magic numbers

Double random numbers

// NOTE: avoiding magic numbers

const double MIN = 5.0;

const double MAX = 10.0;

var random = new Random(); // New Random object

double randomNumber = random.Next(); // random number between zero and one

double randomNumberLimited = random.Next() \* MAX; // random number between zero and MAX

double randomNumberInRange = random.Next() \* (MAX - MIN) + MIN; // random number between MIN and MAX

**Lotto Generator Practice**

[Lotto Generator Practice](https://dmacc.blackboard.com/webapps/blackboard/content/listContent.jsp?course_id=_102593_1&content_id=_7286812_1)

A picture containing text, sky, outdoor, sign

Description automatically generatedTime to play the lottery, without spending a dime! You can write your own random lottery numbers. You can give a try before looking at the solution!

Write and call the method

* + PowerBall()
    - generates 5 random numbers between 1 and 64
    - generates a random PowerBall between 5 and 64
    - stores numbers in an array with the PowerBall at index zero
    - returns the array

Display the powerball at the end when displaying the numbers in Main().

Give it a try before looking at a possible solution: [LottoGenerator.cs](https://dmacc.blackboard.com/bbcswebdav/pid-7286825-dt-content-rid-101466170_1/xid-101466170_1)

[**Random Numbers Quiz**](https://dmacc.blackboard.com/webapps/blackboard/content/launchAssessment.jsp?course_id=_102593_1&content_id=_7286827_1&mode=view)

This quiz covers random number generation. It is not timed, you have 2 attempts.