ENGG1003 - Thursday Week 4
Using random numbers, and reading from spreadsheets

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Lecture overview

1. Using random numbers

2. Reading from spreadsheets

1) Using random numbers

- reminder and recap
- random integers
- random floats

Random integers: simulating fair coin toss

Example 1

- generate array of 0s and 1s length N
- 0=heads, 1=tails
- expected number of 0s (heads)?

Coin toss simulation

- Python code for coin toss
- headsTails.py
- live demo

Random floats: engineering tolerance

Example 2

- simulate values in a range
- need engineering application—part manufactured within a tolerance, calculate fraction outside range

Engineering tolerance simulation

- Python code for engineering tolerance
- live demo

Random floats: simulate dartboard

Example 3
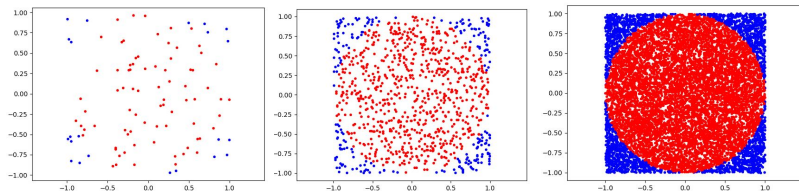
- values in circle
- plot red inside, blue outside

Dartboard simulation

- Python code for dartboard
- dartboard.py
- live demo

Dartboard simulation

- dartboard red/blue simulation output plots
- N=100,1000,10K

Random floats: estimate π

Example 4

- modify previous example to count points inside circle, hence. . .
- estimate π

2) Reading from spreadsheets