CS 103000
Prof. Madeline Blount

Week 8:
MID-TERM & REVIEW

(no worries attendance)

Dall-E 2: cats learning C++ in the forest on '90's technology

🤖 **Mid-term exam**

- Take home, after class Wednesday - Friday 9AM
- In zyBooks platform, like labs
- You may:
  - Look @ zyBooks
  - Use resources linked in syllabus
  - Consult **documentation** online

🤖 **Mid-term exam**

- You may not:
  - Turn in the mid-term late
  - Work with others; ask others for help; this is solo work
  - Use search engines or websites to search ***specifically*** for problems + solutions
  - Use ChatGPT, other generative AI tools to code solutions

🤖 Mid-term exam

- Academic honesty
- Discord: no q's about mid-term Wed-Fri.; Tuesday I will have office hours

🚀 Grades

- Mid-term = 20% (same as all reading!)
- If helps class average, I will curve
- After mid-term, will learn current class grade in Blackboard


"CRAPS" AT CAMP
5116-11

🎲 PRACTICE: DICE GAME

Write a program that simulates a dice rolling game.

Your program should receive 3 integers as input:

```
3  4  5
```

The 1st number is the number of dice rolls. The 2nd number is the seed for a pseudorandom number generator. The 3rd number is what the user “bets,” the number they want.

The program should output the roll for each round on a separate line. The last line should show the number of times the users’ number (5, in example) was rolled.

🎲 PRACTICE:

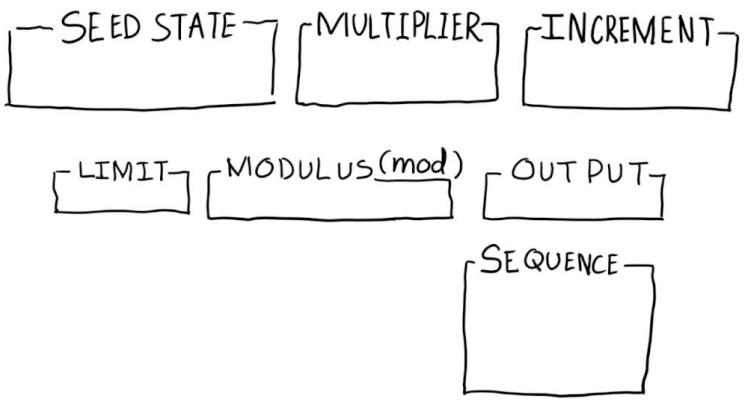
OUTPUT:

```
Roll 1: 3
Roll 2: 5
Roll 3: 6
5 was rolled 1 time
```

- rand() and srand()
- for loop
- Counter variable

pseudorandom!

- rand() = Linear Congruential Generator (LCG)
- x = ((a * x) + c) % m
- Next number based on the previous (**state**)



`srand() = SEED`

🌿 PRACTICE: DATA ANALYSIS

You have 2 parallel vectors: one is the scientific name of a species, and the other vector is whether that Latin name is animal (true) or plant (false).

```
{"Psittaciformes",  "Bubo virginianus", "Malus domestica",
"Rhinoceros unicornis", "Allium sativum", "Ficus benghalensis",
"Asteroidea"}
```

```
{true, true, false, true, false, false, true}
```

First print the size of my data set. Then print out the Latin name in all caps and whether it is animal or plant, on 1 line each, but starting with the end of the dataset. Then tell me the number of animals.

💬 **PRACTICE:**

- Vectors, parallel vectors, iterating
- For loops (including 1 nested …)
- Boolean variables
- String/char functions: toupper

🟩 PRACTICE: DRAWING GRIDS

Write a program that draws a square grid of 🟧 emojis. You can imagine this square is a room. One wall of this room will have a different color, written with 🟩 emojis.

The program takes 2 user inputs:

```
5 north
```

The integer is the size dimension of the square, and the string input is the wall which should be the green color. (Top = north, right = east, bottom = south, left = west.)